LIFE+ Nature

TECHNICAL APPLICATION FORMS

Part A – administrative information

LIFE+ 2013

FOR ADMINISTRATION USE ONLY

LIFE13 NAT/UK/000443

LIFE+ Nature project application

Language of the proposal:

English (en)

Project title:

Restoration of degraded lowland raised bogs on three Cumbrian SCI/SACs

Project acronym:

Cumbrian BogsLIFE+

The project will be implemented in the following Member State(s):

United Kingdom North West (UK)

Expected start date: 01/08/2014 **Expected end date:** 31/12/2019

LIST OF BENEFICIARIES

Name of the **coordinating** beneficiary: Natural England

LIST OF CO-FINANCIERS

PROJECT BUDGET AND REQUESTED EU FUNDING

Total project budget:	6,585,236 Euro	
Total eligible project budget:	6,585,236 Euro	
EU financial contribution requested:	3,292,618 Euro	(= 50.00% of total eligible budget)

Coordinating Beneficiary Profile Information

Legal Name	Natural England			
Short Name	NE	**Legal Status**		
VAT No	551065074	**Public body**	**X**	
Legal Registration No	N/A	**Private commercial**		
Registration Date	27/06/2007	**Private non- commercial**		

Legal address of the Coordinating Beneficiary

Street Name and No	Foundary House, 3 Millsands, Riverside Exchange		
Post Code	S3 8NH	**PO Box**	
Town / City	Sheffield		
Member State	United Kingdom		

Coordinating Beneficiary contact person information

Title	Ms	**Function**	External Funding
Surname	Isaac		
First Name	Dawn		
E-mail address	NeexternalFunding@naturalengland.org.uk		
Department / Service	Natural England - Landscape and Biodiversity		
Street Name and No	Suite D, Unex House, Bourges Boulevard		
Post Code	PE1 1NG	**PO Box**	
Town / City	Peterborough		
Member State	United Kingdom		
Telephone No	00443000600477	**Fax No**	

Website of the Coordinating Beneficiary

Website	http://www.naturalengland.org.uk

Brief description of the Coordinating Beneficiary's activities and experience in the area of the proposal

Natural England is an independent statutory Non Departmental Public Body (NDPB) dealing with the natural environment. It was formally established through the NERC Act 2006 that combined English Nature, Countryside Agency and the Rural Development Service.

The NERC Act sets out our purpose "to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development" and includes:
1)Promoting nature conservation and protecting biodiversity
2) Conserving and enhancing the landscape
3) Securing the provision and improvement of facilities for the study, understanding and enjoyment of the natural environment
4) Promoting access to the countryside, open spaces and encouraging open air recreation, and
5) Contributing to social and economic wellbeing through management of the natural environment.

Natural England is responsible for selecting and designating Sites of Special Scientific Interest for the Natura 2000 network as well as advising the Government on which sites qualify as Special Protection Areas and Special Areas of Conservation. National Nature Reserve (NNR) is a designation given to England’s very best wildlife and geological sites many of which are also Natura 2000 sites. Of the 224 National Nature Reserves in England the majority (143) are managed by Natural England and cover some 66,000ha. There are 14 NNRs with lowland raised bog features and approximately three quarters of this interest (by area) is managed by Natural England.

Natural England has held and managed NNRs for 60 years. With a range of sites that are reflects England's rich natural heritage, and with many decades of management experience, Natural England has considerable practical experience in conservation management. This is augmented by a substantial 'in-house' pool of specialists that support the organisation's wider conservation remit.

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COORDINATING BENEFICIARY DECLARATION

The undersigned hereby certifies that:

1. The specific actions listed in this proposal do not and will not receive aid from the Structural Funds or other European Union financial instruments. In the event that any such funding will be made available after the submission of the proposal or during the implementation of the project, my organisation will immediately inform the European Commission.

2. My organisation Natural England has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 93.1 and 94 of Council Regulation 1605/2002 of 25/06/2002 (OJ L248 of 16/09/2002).

3. My organisation (which is legally registered in the European Union) will contribute 3,292,618.00€ to the project. My organisation will participate in the implementation of the following actions: A1, A2, A3, A4, A5, C1, C2, C3, C4, C5, D1, D2, D3, D4, E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, F1, F2, F3, F4. The estimated total cost of my organisation's part in the implementation of the project is 6,585,236.00 €.

4. Should one or more associated beneficiary or co-financier reduce or withdraw its financial contribution, my organisation will ensure that a corresponding additional contribution is made available.

5. My organisation will conclude with the associated beneficiaries and co-financiers any agreements necessary for the completion of the work, provided these do not infringe on their obligations, as stated in the grant agreement with the European Commission. Such agreements will be based on the model proposed by the European Commission. They will describe clearly the tasks to be performed by each associated beneficiary and define the financial arrangements.

6. I am aware that my organisation is solely legally and financially responsible to the Commission for the implementation of the project (Article 4 of the Common Provisions).

   I am legally authorised to sign this statement on behalf of my organisation.

   I have read in full the Common Provisions (attached to the Model Grant Agreement provided with the LIFE+ application files).

   I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

   At ..... on.....

   Signature of the Coordinating Beneficiary:

   Name(s) and status of signatory:

* When the form is completed, please print, sign, scan and upload it in eProposal

OTHER PROPOSALS SUBMITTED FOR EUROPEAN UNION FUNDING

Please answer each of the following questions:

- Have you or any of your associated beneficiaries already benefited from previous LIFE cofinancing? (please cite LIFE project reference number, title, year, amount of the co-financing, duration, name(s) of coordinating beneficiary and/or partners involved):

As Natural England we have lead on 1 LIFE+ project-

1)LIFE11NAT/UK/000389 IPENS- Improvement Programme for England's Nature 2000 sites. 3 year Duration. 3,575,345€. Partners- Environment Agency. Project started summer/autumn 2012.

As Natural England we are an associated beneficiary to the following submitted LIFE+ 2012 project (the decision on this is not yet known)-

1) LIFE12NAT/UK/00869 Little Terns- Improving the conservation status of the little tern in the UK through targeted action at the most important colonies. 5 year Duration. Coordinating beneficiary- RSPB. Other associated beneficiaries-Cumbria Wildlife Trust, Denbighshire County Council, Durham CC, Northumberland CC, National Trust, Lincolnshire Wildlife Trust, Spurn Bird Observatory Trust Ltd.

As English Nature (our predecessor body) we have led on 6 LIFE+ projects as listed below. One of these projects- STREAM (LIFE05 NAT/UK/000143) was nominated as 1 of the 6 'Best of the Best' LIFE Nature Projects in 2010.

1) LIFE05 NAT/UK/000143 STREAM - River Avon cSAC: demonstrating strategic restoration and management. 4 year Duration. 628,065€. Partners- Environment Agency, Hampshire and Isle of Wight Wildlife Trust, Wiltshire Wildlife Trust (WWT) & Wessex Water.

2) LIFE03 NAT/UK/000042 Cornwall Moors- restoration of the mid Cornwall Moors for the Euphydryas aurinia. 5 Year Duration. 921,751€. Partners-Highways Agency, Environment Agency, Butterfly Conservation & Cornwall Wildlife Trust.

3) LIFE00 NAT/UK/007071 - Salisbury Plain- Improving the management of Salisbury Plain Natura 2000 sites. 4.5 year duration. 1,741,361€. Partners- Defence Estates, Defence Evaluation Research Agency, RSPB, Butterfly Conservation & Centre for Ecology and Hydrology.

4) LIFE99 NAT/UK/006081 - Living with the sea: Managing Natura 2000 sites in dynamic coastline. $ year duration. 1,117,217 4€. Partners- Environment Agency, Natural Environment Research Council & Defra.

5) LIFE99 NAT/UK/006088 - Safeguarding Natura 2000 rivers in the UK. 4 year duration. 1,120,519€. Partners- Scottish Natural Heritage, Environment Agency, Countryside Council for Wales, Scottish Environment Protection Agency & Scotland and Northern Ireland Forum for Environmental Research.

6) LIFE96 NAT/UK/003053 - UK Marine SACs- to develop and promote the necessary conservation measures for UK marine SACs. 5 year Duration. 2,457,042€. Partners- The joint Nature Conservation Committee, Scottish Natural Heritage, Environment and Heritage Service (DoE NI), Countryside Council for Wales & Scottish association for Marine Science.

We have also been an associated beneficiary both as Natural England and as English Nature for another 13 LIFE+ projects- the most recent being LIFE09 NAT/UK/000020- Reintroducing Otis tarda- reintroducing the great bustard Otis tarda to Southern England which had the RSPB (NGO Foundation) as the lead.

- Have you or any of the associated beneficiaries submitted any actions related directly or indirectly to this project to other European Union financial instruments? To whom? When and with what results?

Natural England has not sought any other European Union funding for this project or its associated actions.

- For those actions which fall within the eligibility criteria for financing through other European Union financial instruments, **please explain in full detail** why you consider that those actions nevertheless do not fall within the main scope of the instrument(s) in question and are therefore included in the current project.

This project takes into account the objectives set out in the LIFE+ Nature & Biodiversity 'Guidelines for Applicants 2013' and we have endeavoured to ensure a close alignment between the project's actions and the types of projects that the LIFE+ unit might be interested in. This project will focus on the practical 'on the ground' habitat management and enhancement of Natura 2000 sites and as such is a very good fit for the LIFE+ Nature strand. However, we have assessed the actions of this project against the criteria of the other main European Union financial instruments and concluded that as far as we are aware, none of the actions in this project could be financed by other European Union financial instruments.

The details of this assessment are as follows:

European Regional Development Fund (ERDF)

The primary focus of ERDF is to "strengthen economic and social cohesion in the European Union by correcting imbalances between its regions". This project is interested in the socio-economic benefits associated with restoring raised bogs and National Nature Reserves, however, this project itself does not directly deliver the necessary levels of economic outcomes, to qualify for ERDF. For the environmental measures that do feature within the ERDF programmes, this project would not provide the necessary outcomes in relation to improved economic performance, for example job creation, business support or improved business infrastructure to qualify for ERDF support. In addition, many of the sites fall outside ERDF programme areas, making them ineligible for support.

European Agricultural Fund for Rural Development (EAFRD)

In England the EAFRD is delivered via the Rural Development Programme for England (RDPE). The headline objectives of this fund are to improve:

1. the competitiveness of agriculture and forestry sectors;

2. the environment and the countryside;

3. the quality of life in rural areas and diversification of the rural economy;

4. and delivery of the LEADER approach.

Objective 2 is delivered via Agri-environment schemes and other land management schemes such as EWGS (England Woodland Grant Scheme for forestry management). RDPE funding for objectives 1, 3 and 4 is allocated to Local Action Groups for the purpose of making agriculture and forestry more competitive and sustainable, and increasing opportunities in rural areas.

None of the 3 Natura 2000 sites within this application is eligible for agri-environment funding because the land is owned or leased by Natural England, which is a government funded body. Natural England is also ineligible for the single farm payment because the sites are not grazed.

South Solway Mosses SAC and Bolton Fell Moss SCI fall within the Solway, Border and Eden Local Action Group area. Roudsea Wood and Mosses SAC falls within the Cumbria Fells and Dales Local Action Group area. However this funding is directed at rural socio-economic activity such as farm diversification, rural business and tourism development. The environmental actions within this LIFE+ bid would not be eligible because they lack sufficient socio-economic outputs. Furthermore there is

little or no funding remaining under these Local Action Group programmes.

European Social Fund (ESF)

The ESF is not relevant to this project as it is focused on employment and social inclusion. In particular, it is intended to “increase the adaptability of workers and enterprises, enhance access to employment and participation in the labour market, reinforce social inclusion by combating discrimination and facilitating access to the labour market for disadvantaged people, and promote partnership for reform in the fields of employment and inclusion”.

This project does not fit the above criteria nor does it contain any of the required training or skills development work that the ESF supports.

Seventh Framework Programme

This project does not contain any research elements that would enable it to qualify for this programme. While some of the evidence gathering actions may be classified as research, it is not work that would have sufficient levels of innovation or be “scientific” enough that would make it suitable for FP7/Horizon 2020 funding.

European Fisheries Fund

This project does not contain any work that will improve the sustainability of European Fisheries industries and is therefore not eligible for this programme.

Cohesion Fund

This funding mechanism does not operate in the UK.

Competitiveness and Innovation Framework Programme

This project does not contain any elements of work to support SMEs and would not therefore qualify for this fund.

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DECLARATION OF SUPPORT FROM THE COMPETENT AUTHORITY

Optional: in addition to the support of the necessary competent authorities as described in the guidelines for applicants, this form may also be used to indicate any other support to the project by important stakeholder bodies, administrative bodies or individuals that may be concerned by the project.

Name and legal status:
Department for the Environment, Food and Rural Affairs

Full address: Nobel House, 17 Smith Square London, SW1P 3JR

Tel: 0117 372 3533..... Fax: N/A..... E-mail: richard.findon@defra.gsi.gov.uk

Contact person (name and function): Richard Findon Life+ Policy Lead

Please specify whether, why and how you will support this project:

Defra strongly supports this project as it fits within the England Prioritised Action Framework for Natura 2000 (PAF). The PAF identifies restoration of the hydrology of raised bogs (a priority habitat), mires and fens as one of the priority measures for securing ecosystem benefits of Natura 2000, especially in relation to wetlands (including peatlands) and climate change mitigation and adaptation. This includes the need to reinstate semi-natural hydrology in order to encourage peat formation to sequester carbon (mitigation).

The management and restoration of heaths and bogs is recognised as a priority under the EU Atlantic Biogeographic Seminar process (the UK led for these particular habitat types). The Seminar identified a number of issues for these habitats including inappropriate hydrology, recommending the development of best practice examples to aid future restoration. This project directly looks at these areas and will produce a best practice guide.

It is anticipated that the projected outputs of this project will be of benefit to both the UK and other EU Member States.

Signature and date: 30 May 2013

Name and status of signatory:

Defra

LIFE13 NAT/UK/000443

TECHNICAL APPLICATION FORMS

Part B - technical summary and overall context of the project

SUMMARY DESCRIPTION OF THE PROJECT (Max. 3 pages; to be completed in English)

Project title:

Restoration of degraded lowland raised bogs on three Cumbrian SCI/SACs

Project objectives:

This project delivers the restoration of previously unrestored areas of degraded lowland raised bog within three sites that account for 2,807 ha of the Natura network – Bolton Fell Moss SCI (BFM), South Solway Mosses SAC (SSM) & Roudsea Wood & Mosses SAC (RWM). Lowland raised bogs are a threatened habitat in England and all the sites have been damaged by past operations such as local peat winning, landscape-scale peat extraction via surface milling and land drainage to facilitate agricultural conversion. This has resulted in areas of the raised bogs being hydrologically impaired, denuded of natural raised bog vegetation and in areas recolonised by scrub and Rhododendron. This project proposes to tackle areas where the restoration process of *Habitat 7120- Degraded raised bog capable of natural regeneration* needs to be started in order to achieve Favourable SAC conservation status within the expected 30 year period. A variety of restoration techniques will be used across the three sites and together with the presence of Active raised bog (H 7110) these sites will provide an excellent platform to show the complete restoration process of lowland raised bog habitat to a wide audience.

The projects four main objectives are:

1. To restore and work on 507ha of unrestored areas of 'Degraded raised bog capable of natural regeneration' (Habitat-7120) which will lead to the direct improvement of 751 ha of habitat on SSM, RWM and BFM and 2,807 ha of the Natura network.

Restoring the sites' water levels to optimum levels, combined with the re-introduction of Sphagnum species where this has been totally lost will help stimulate the peat-forming vegetation to re-colonise within a 5 year period. Scrub and tree removal is needed to reduce evapo-transpiration problems and invasive species need to be eradicated or controlled. Favourable SAC condition status is expected to be attained by 2039 on Bolton Fell Moss and 2035 on Roudsea Woods and Mosses and South Solway Mosses sites.

2. To use the sites to illustrate a range of restoration techniques to managers of similar habitats and to wider audiences.

3. To monitor the recovery process and disseminate best practice guidance associated with the restoration techniques.

4. To raise public and professional awareness about the importance and value of the sites and lowland raised bog habitats.

All three sites are located in Cumbria in NW England. RWM & SSM lie in the coastal area and BFM at an altitude of 110m some 40 km from the coast.

Actions and means involved:

Action A- Preparatory Actions- will help achieve Objectives 1, 2 and 3.

A1 Project establishment

A2 Revision of SSM and RWM Management Plans

A3 Creation of new Bolton Fell Moss Management Plan

A4 Undertake all necessary work to ensure all consents/permissions/felling licenses, leases and ownership rights are in place to start physical restoration work

A5 Undertake high resolution aerial photography of restoration areas to provide baseline data

Action C: Concrete conservation actions- will primarily help to achieve Objectives 1 and 2 (restoration of land and demonstrating processes and techniques). All actions will be based on best practice techniques.

C1 Scrub, woodland and plantation clearance to reduce evapo-transpiration

C2 Control/ eradication of Rhododendron

C3 Groundworks and raising water levels on degraded/vegetated peat surfaces

C4 Groundworks and raising water levels on milled peat surfaces with no vegetation

C5 Application of Sphagnum spp and protective mulches to milled peat areas.

Action D: Monitoring the impact of the project actions- mainly relates to Objective 3 i.e. monitoring and dissemination of results. All knowledge gained will feed into the restoration work (Objective 1) and the use of these sites as demonstration platforms (Objective 2).

D1 Production of a Monitoring Plan including undertaking initial baseline monitoring within the areas being restored

D2 Ongoing and final post restoration monitoring

D3 Assess socio-economic impact of the project and contribution to ecosystem function restoration

D4 Monitoring impact on local communities, other user groups and professional engagement.

Action E: Public awareness and dissemination of results- these actions will feed into Objectives 2, 3 and 4.

E1 Notice boards

E2 Newsletters

E3 Website

E4 Layman's' report

E5 Production of a Communications Plan that covers sharing best practice and dissemination of information with UK and EU audiences and necessary media methods.

E6 Leaflet for BFM

E7 Community engagement programme

E8 Scientific audience programme

E9 Mid Project Workshop to give participants the opportunity to view the restoration, provide feedback and encourage networking

E10- End of project conference.

Action F: Overall project operation and monitoring- actions are all necessary for the successful delivery of the project and help achieve all the projects objectives equally.

F1 Overall Project Management

F2 Networking with other LIFE and /or non-LIFE projects

F3 Audit

F4 AfterLIFE Plan.

Expected results (outputs and quantified achievements):

Action A:

A1 Project successfully established with 4 new posts (2.83 FTE) supplementing internally seconded staff

A2 & A3 RWM and SSM Management Plans revised and a new BFM Plan produced that integrates the restoration work with the sites wider objectives

A4 All consents/permissions/felling licenses, leases and ownership rights in place to enable restoration work to start

A5 Aerial and infrared photography of BFM undertaken by a contractor.

Action C: All actions will be based on best practice techniques and will restore 507 ha of H7120 habitat

C1 120 ha of scrub and woodland/plantation removed on all three sites

C2 84ha Rhododendron removed from RWM

C3 Groundworks and water retention structures in place over 193 ha on degraded/vegetated peat surfaces on BFM, RWM & SSM

C4 Groundworks and water retention structures in place on 314 ha of milled peat surfaces with no vegetation on SSM & BFM

Both C3 & C4 will raise water levels to +- 10cms of ground level

C5 Sphagnum and protective mulches applied to 314 ha of BFM & SSM with 5-10 % peat forming vegetation re-established within the first 5 years.

Action D:

D1 Project Monitoring Plan produced and all initial baseline ecology and hydrology monitoring completed

D2 Post operation monitoring and final survey completed, analysed against baseline data and report produced

D3 Socio-economic impacts and ecosystem services monitoring and report completed

D4 Engagement monitoring completed and summary report produced.

Action E:

E1 Erect 7 notice boards – at site entrances, local communities and NE offices

E2 Produce and distribute 42 newsletters

E3 Website presence in place

E4 Layman’s report produced

E5 Communications Plan implemented with measures to disseminate key messages and results to both technical and non technical audiences

E6 Leaflet produced for Bolton Fell Moss

E7 Deliver at least 62 Community engagement events

E8 Deliver 9 scientific events or restoration demonstrations and have a presence at important conferences.

E9 Hold a 2.5 day Demonstration workshop for 100 people

E10 Hold 1 day end of project conference for 100 people to present project findings and evaluation of

pre and post restoration techniques.

Action F:

F1 Project Management and monitoring will follow standard project management best practise. All reporting and documentation will be produced on time and be fit for purpose

F2 Networks established with similar LIFE and other non-LIFE projects

F3 Final audit undertaken by independent auditors

F4 Completed AfterLIFE Plan.

Can the project be considered to be a climate change adaptation project? Yes [X] No [ ]

This project will help in the following ways-

1. Avoiding further carbon loss

Degraded peatlands are clearly more vulnerable to climate change and lose carbon at a much faster rate than healthier, more resilient peatlands. Restoration is therefore urgently required, not only to deliver clear carbon savings, but also to ensure that our peatlands and the wider services they provide are more resilient to the impacts of unavoidable climate change.

2. Supporting restoration of the wider natural environment

Restoration of these three sites will ensure they function as core sites, supporting biodiversity in the wider landscape. England's Biodiversity Strategy - Biodiversity 2020 has identified that improvement of the quality of 'core' wildlife sites is one of the most important priorities in supporting the wider restoration of the natural environment and thereby increased resilience to climate change for species and habitats.

3. Creating refugia and 'stepping stones' for species

Restoration will lead to more diverse, heterogenic habitats (mosaics) and therefore provide more refugia for current species and 'climate space' for species on the move from elsewhere. There are areas of active raised bog and less degraded habitat areas within all three SAC sites and these will act as refugia for the key peatland species on site. Re-establishing peat forming vegetation will allow these species to move around the sites and be more resilient in the face of climate change.

4. Increasing resilience of peat habitats to climate change

Restored sites with good hydrological integrity are more able to cope with climate change. Undamaged peatlands are thought to be more resilient to long term threats of climate change, owing to the unusual water-holding properties of peat and its associated plants. Certainly, intact peat is likely to be less vulnerable to dramatic drying and erosion that could be caused by hotter and drier summer conditions and warmer, wetter and intense rainfall events in winter. This project deals with degraded peatlands which are, in their current state, less able to store water for the drier summer periods. Further drying and shrinkage of the peat as a result of current land management activities or through warmer summers will speed up the rate of decomposition, oxidation and erosion of the peat and therefore lead to increased loss of its carbon.

SUMMARY DESCRIPTION OF THE PROJECT (Max. 3 pages; to be completed in national language)

Project title:

See previous sheet

Project objectives:

see previous sheet

Actions and means involved:

See previous sheet

Expected results (outputs and quantified achievements):

See previous sheet

Can the project be considered to be a climate change adaptation project? Yes [X] No [ ]

See previous sheet

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Roudsea Wood & Mosses

Surface area (ha):	470.450
Surface description:	The restoration involves 119 ha of LRB. The engagement and community work covers the whole site.

EU protection status:

SPA ☐ **NATURA 2000 Code :**

pSCI ☒ **NATURA 2000 Code :** UK0019834

Other protection status according to national or regional legislation:

The whole of Roudsea Wood & Mosses SAC site is also designated as a Site of Special Scientific Interest (SSSI) under the Wildlife & Countryside Act 1981 (as amended). A proportion of the site (423 ha) is also designated as Roudsea Wood & Mosses National Nature Reserve and declared under the National Parks and Access to the Countryside Act 1949.

The site is also protected through the Lake District National Park designation.

Main land uses and ownership status of the project area:

The land included in this project is all part of a National Nature Reserve and is under the management of Natural England for the purposes of conservation. The land is managed as intact and degraded lowland raised bog and lagg with ongoing management to restore the entire bog habitat to active lowland raised bog/lagg. The area also has sporting rights that are retained by the owner.

The land (100%) is owned by the Holker Estate and leased to Natural England on a long term lease until 2026.

Scientific description of project area:

Roudsea Wood and Mosses is located North East of Barrow in Furness, in the coastal strip at the head of Morecambe Bay. The site is part of the South Cumbria Low Fells National Character Area, two-thirds of which is covered by the Lake District National Park designation. To the east the area extends to cover the River Lune valley. The area lies to the south and south-east of the central core of the Lake District, but the sudden change from the tough Ordovician Borrowdale Volcanics to the softer Silurian slates and mudstones provides a dramatic change in landscape: the rugged high fells give way to gentler undulating hills, dissected by pastoral river valleys, woodland and linear lakes.

The majority of the SAC site lies between 5 to 20 metres above sea level. Roudsea Wood and Mosses lies on two ridges of contrasting geology which consist of Carboniferous limestone and greywackes of the Bannisdale Slate Series supporting calcareous and acidic woodland types respectively, and has in addition a number of low-lying wet peaty areas containing bog and fen vegetation.

Roudsea Wood & Mosses is a composite site consisting of exceptionally diverse woodland lying almost at sea-level, which merges in the east into an extensive estuarine lowland raised mire system and in the west into saltmarsh along the Leven Estuary. Roudsea is designated as a SAC for the following habitats 7110*- Active Raised Bogs, 7120- Degraded raised bogs still capable of natural regeneration, 9180* Tilio-Acerion forests of slopes, screes and ravines and 91J0*-Taxus baccata woods in British Isles

(* are all European priority habitats). According to the SAC Standard Data Form 50% of the site is 7110*-Active raised bog, 17% 7120 -degraded raised bog and 6% 9180* Tilio-Acerion forests on slopes, screes & ravines with a small area of 91J0* Taxus baccata woodland. The site also has other SSSI and UK Biodiversity Action Plan habitats including swamp, acid marshy grassland and reedbeds.

The lowland raised bogs (Fish House Moss, Burnbarrow Moss, Deer Dike Moss, Stribers Moss and Ellerside Moss) are located on the eastern side of the SAC and together they represent one of the best examples of active raised bog in the UK as well as being one of the qualifying features for Roudsea Woods and Mosses SAC. According to *Lindsay et al. 1992*, the total area of peat at Roudsea is 383 ha, which represents 1% of the total in England, while the area of active primary raised mire, 35 ha, is 7.5% of that in England. Given the national losses of intact peat bodies and the scarcity of this habitat, the survival of the two Roudsea Mosses provides a significant nature conservation resource. Raised bog systems were formerly widespread around Morecambe Bay but have been reduced in extent due to peat extraction, agricultural reclamation and afforestation. Although the mosses at Roudsea have been damaged in the past by peat cutting and drainage, causing drying out of the peat with subsequent scrub encroachment, much of the original peat surface remains. It is therefore considered that restoration is possible on Units 4, 5 & 6 (which are currently assessed by Natural England as 'unfavourable declining') through careful management of the water tables and by scrub control and it is this work that this LIFE+ project concentrates on.

The lowland raised bogs at the site comprise two hydrologically distinct units. At one time both of these bogs would have been hydrologically linked through an area of fen, but they have been partly separated for many years by marginal peat-cutting, agricultural drainage and deepening of Skelwith Pool. Although there is currently no hydrological monitoring undertaken on this site, restoration work undertaken on a small part in 2013 demonstrated that the water table is depressed and water levels need to be restored appropriately.

The centres of the bogs retain a high water table and support good actively growing bog communities including characteristic species cranberry *Vaccinium oxycoccos*, round-leaved sundew *Drosera rotundifolia*, bog-asphodel *Narthecium ossifragum*, bog-rosemary *Andromeda polifolia*, common cotton grass *Eriophorum angustifolium* and hare's-tail cotton grass *Eriophorum vaginatum*. Moss species form a major part of this community and include carpets of *Sphagnum cuspidatum, S. pulchrum, S. capillifolium and S. subnitens*. Where there has been a drying-out of this community a modified bog vegetation which is more typical of wet heath, is present with a reduction in the above species and a subsequent increase in the amounts of heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix* and hare's-tail cottongrass *Eriophorum vaginatum*.

At the peripheries of both bogs there has been extensive small-scale peat cutting. This cutting, associated with drainage ditches across the bogs, has led to a drying out of the peat followed by a change in and loss of diversity of the bog communities. This change starts at the outside and spreads inwards. The balance of plant species changes with a reduction in the above species and an increase in the abundance of heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, deer grass *Trichophorum cespitosum*, bilberry *Vaccinium myrtillus*. Where the peat is either very dry or has a lot of water movement the vegetation is dominated by heather, purple moor grass *Molinia caerulea* and/or bracken *Pteridium aquilinum*. The whole bog has been colonised to varying degrees by birch *Betula sp*., pine Pinus sylvestris and Rhododendron (*Rhododendron ponticum*). These species accelerate the decline of the bog communities through lowering the water table through transpiration and rainfall interception and via shading and accumulation of leaf litter by encroaching scrub and tree species.

Roudsea Wood is another primarily reason for its SAC designation. The woodland lies on two ridges of contrasting geology that supports calcareous and acidic woodland types, and also has a number of low-lying wet peaty areas containing fen vegetation. It is considered to be the most diverse woodland in south Cumbria and one of the most varied in the British Isles.

The acidic woodland (dominated by sessile oak *Quercus petraea* and birch *Betula pubescens)* is managed as high forest, whilst the limestone woodland (NVC W8 & W9) is managed by coppicing and supports a population of dormice *Muscardinus avellanarius*. Red squirrels *Sciurus vulgaris* are also present in the woodland though numbers are decreasing due to the presence of grey squirrels *Sciurus carolinensis*. There are also areas of alder (*Alnus glutinosa*), some of which is very old coppice that dominate the scattered peat-filled waterlogged hollows.

The SAC site also has tarn and fen habitats where the peat is more eutrophic. On the western side of the oak and alder woods there is a wet marshy transition zone. Beyond this zone is a fringe of saltmarsh supporting only a small range of plants capable of tolerating the hostile salty condition. Such plants include sea rush *Juncus maritimus*, sea club-rush *Scirpus maritimus*, sea arrow-grass *Triglochin maritima*, sea aster *Aster tripolium*, common saltmarsh-grass *Puccinellia maritima* and common cord-grass *Spartina anglica*

The site displays a rich fauna associated with the variety of habitats that are available. In particular, the site has long been recognised as being of exceptional entomological importance with a high proportion of the British species of macrolepidoptera as well as flies, beetles and snails. The area is also important for its breeding birds, reptiles, amphibians and mammals.

Ref: SSSI citation, JNCC website, NNR Management Plan, Lindsay *et al* 1992.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

Roudsea is one of the key lowland raised bog resource in Cumbria and therefore contributes to England's resource. Roudsea's European importance relates to the site being designated as a SAC under the Habitats Directive because it holds internationally important reserves of 7110*- Active Raised Bogs, 7120- Degraded raised bogs still capable of natural regeneration, 9180* Tilio-Acerion forests of slopes, screes and ravines and 91J0*-Taxus baccata woods in British Isles. Habitats 7110, 9180 and 91J0 are all European priority habitats. This project concentrates on the restoration of 7120-Degraded raised bog as this is where the majority of the work still needs to be undertaken.

Nationally the lowland raised bog, yew woodland, limestone woodland (NVC types of W8/10/16) and adjacent saltmarsh are all very important, are reasons for the national SSSI designation and are National Biodiversity Action Plan (BAP) habitats. The tarn and fen habitats on the site are also a National BAP priority habitat. Dormice that occur as an isolated population on the site are also a BAP species. Roudsea Wood and Mosses National Nature Reserve (NNR) supports populations of nationally rare large yellow sedge *Carex flava* and Lancashire white beam *Sorbus lancastriensis*, and nationally scarce fingered sedge *Carex digitata*, elongated sedge *Carex elongata* and true fox sedge *Carex vulpina.* Species listed in the UK Biodiversity Action Plan (UK BAP) and present on the site include juniper *Juniperus communis* and bluebell *Hyacinthoides non-scripta*.

The site is nationally designated for its invertebrate assemblage associated with its fen habitat and has long been recognised as being of exceptional entomological importance. A high proportion of the British species of macro-Lepidoptera (larger moths and butterflies) occur here with 314 species recorded (out of a total of approximately 900 species). Of these 32 species are considered to be nationally vulnerable, or nationally scarce, and include the high brown fritillary *Argynnis adippe*, the small eggar *Eriogaster lanestris*, the saxon *Hyppa rectilinea*, the large heath *Coenonympha tullia* and the small grass emerald *Chlorissa viridata*. In addition to these species Roudsea NNR supports the only known breeding population of the rosy marsh moth *Coenophila subrosea* in England, which was discovered in 2005. Twenty-six species of flies recorded at the site are considered to be nationally endangered, nationally vulnerable or nationally scarce, and include *Ctenophora atrata* and *Cheilosia nebulosa*. Beetles have also been well studied and 29 species are considered to be nationally vulnerable or nationally scarce including D*irhagus pygmaeus* and *Xyloterus signatus*. Other notable species include the snails *Acicula fusca*, *Limax cineresniger* and the bog-bush cricket *Metrioptera*

brachyptera. Spiders with locally restricted distribution include the raft spider *Dolomedes fimbriatus* and *Pardosa purbeckensis*.

Locally the SAC site supports a list of 39 other vascular plant species of regional importance according to the criteria of the Northwest Biodiversity Audit.

Among the species of bird known to breed within the NNR, at least seven are listed as priority species within the UK BAP: nightjar *Caprimulgus europaeus*, skylark *Alauda arvensis*, song thrush *Turdus philomelos*, spotted flycatcher *Muscicapa striata*, linnet *Carduelis cannabina*, bullfinch *Pyrrhula pyrrhula* and reed bunting *Emberiza schoeniclus*. There are also at least 34 bird species listed as of conservation concern within the UK BAP and known to breed on the site such as curlew *Numenius arquata*, goldcrest *Regulus regulus*, and goldfinch *Carduelis carduelis*. Nightjar, shelduck *Tadorna tadorna*, curlew and barn owl *Tyto alba* are also listed in the Red Data Book.

Roudsea supports a broad range of reptiles and amphibians including adder *Vipera berus*, grass snake *Natrix natrix*, slow worm *Anguis fragilis*, common frog *Rana temporaria* and common toad *Bufo bufo* which are all listed as of conservation concern in the UK BAP. Adder is protected under schedule 5 of the Wildlife and Countryside Act 1981. In 2005 a single female great crested newt *Triturus cristatus* was found but has not been found since.

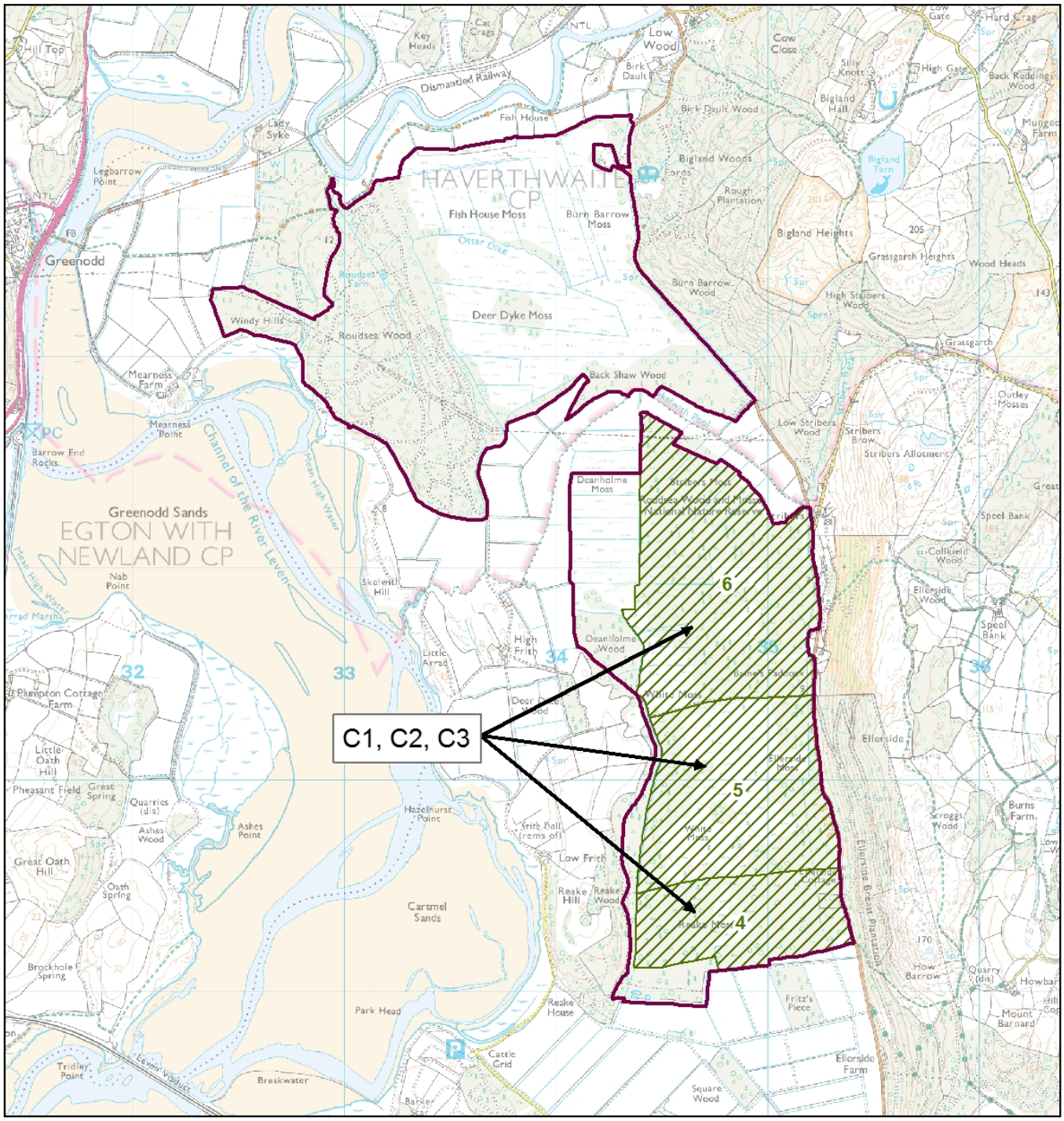
A number of priority listed UK BAP mammal species, have been recorded at Roudsea, these include dormouse *Muscardinus avellanarius* (an isolated population at the northwest edge of its European range), red squirrel *Sciurus vulgaris*, otter *Lutra lutra*, hare *Lepus europaeus*. These species are also categorised under the Red Data Book as species of international interest and of concern to nature conservation. Along with brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii*, badger *Meles meles*, common shrew *Sorex araneus* and pygmy shrew *Sorex minutus* which are also listed as being of conservation concern in the UK BAP have been recorded on site.

In addition to these species the following species recorded on site are also listed as being of conservation concern at a local level within the local biodiversity action plans: Harvest mouse *Micromys minutus*, stoat *Mustela erminea*, weasel *Mustela nivalis*, roe deer *Capreolus capreolus*, red deer *Cervus elaphus* and fallow deer *Dama dama.*

Ref: SSSI citation, JNCC website, NNR Management Plan

Name of the picture: Map illustrating SAC and areas of proposed concrete action

Roudsea Wood and Mosses SAC: UK0019834(2005)



Roudsea Wood and Mosses SAC

Area where concrete actions are taking place (plus SSSI Unit Reference)

Concrete actions:
C1 – Tree & scrub removal
C2 – Rhododendron removal
C3 – Groundwork & raising water levels on degraded/vegetated peat

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

South Solway Mosses

Surface area (ha):	1,962.360
Surface description:	The restoration work covers 108 ha of LRB. Engagement and community work covers the whole SAC.

EU protection status:

SPA ☐ **NATURA 2000 Code :**

pSCI ☒ **NATURA 2000 Code :** UK0030310

Other protection status according to national or regional legislation:

The SAC comprises of four Sites of Special Scientific Interest (SSSIs) -Wedholme Flow (781 ha), Bowness Common, Glasson Moss and Drumburgh Moss. 992 hectares of the SAC is also designated as a National Nature Reserve under the National Parks and Access to the Countryside Act 1949. The Solway Coast Area of Outstanding Natural Beauty (ANOB) covers part of the SAC but not Wedholme Flow.

This project only includes the areas within Wedholme Flow that need the most restoration work.

Main land uses and ownership status of the project area:

The Project area covers part of Wedholme Flow SSSI (Units 4 and 27). Natural England owns Unit 4, owns 55% of Unit 27 and has a lease on the other 45% until at least 31 December 2033.

The land is managed for conservation as intact and degraded lowland raised bog and lagg with ongoing management to restore the peatland to active lowland raised bog/lagg.

Scientific description of project area:

South Solway SAC consists of a complex of estuarine raised bogs to the south of the Solway. The SAC lies within the Solway National Character Area (NCA). National Character Areas (NCAs) divide England into 159 distinct natural areas. Each is defined by a unique combination of landscape, biodiversity, geodiversity and cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries, making them a good decision making framework for the natural environment. Solway NCA consists of a shallow glacial exposed basin with superficial deposits of glacial till overlain in large areas by more recent deposits of estuarine materials and peats. Post-glacial isostatic lift on the salt marshes that border the Solway has resulted in a defined terraced structure. One of the principal habitats of note in the NCA is lowland raised bog along with coastal and fresh water wetland.

The SAC Data Form states that 75% of the SAC is active raised bog and 23% is classed as degraded raised bog still capable of natural regeneration. South Solway SAC consists of 4 distinct sites – Duddon Moss, Glasson, Bowness and Wedholme Flow with the latter three sites have all developed over a terrace of estuarine alluvium. Peat depth varies depending on the underlying topography and Wedholme Flow and Bowness Common in particular consist of a number of basins separated by areas of shallower peat where there are underlying ridges of mineral soil. In some areas these ridges rise above the peat surface and form islands of dry ground within the moss.

This project centres on Wedholme Flow which is the largest lowland raised bog (781 ha) within the South Solway Mosses SAC and in particular units 4 and 27 where the majority of the degraded raised bog habitat still needs to have the restoration process started. The description below relates to Wedholme Flow.

Wedholme Flow's dome rises more than 15 m above Sea Level and the peat deposits, which overlie alluvial silts, are believed to be up to 10m deep in places.

With the last area of commercial peat working only ending in 2002 the workings extends across the middle of the site from east to west. This area has been intensively drained and peat removal has affected remaining peat depths and topography. Where bare peat has not been exposed, heather *Calluna vulgaris* and cross-leaved heath *Erica tetralix* dominate an impoverished flora with scattered clumps of purple moor-grass *Molinia caerulea* and tufted hair-grass *Deschampsia cespitosa*. Bog rosemary *Andromeda polifolia* and round-leaved sundew *Drosera rotundifolia occasionally occur* on bare peat, but bog mosses are scarce and very poorly represented.

To the north and south of the central area are large sections of intact raised mire. These intact mire surfaces retain a characteristic micro-topography of Sphagnum hummocks, ridges, wet hollows, shallow pools and lawns, and support rich assemblages of a peatland vegetation which is nationally rare. The micro-topography is well developed with substantial *Sphagnum* hummocks, particularly *S. magellanicum*. There are extensive lawns comprising a close mixture of species including *S. rubellum*, *S. tenellum*, *S. magellanicum*, *S. papillosum* and *S. cuspidatum*. Round-leaved and great sundew *Drosera anglica* are locally abundant with bog rosemary and occasional creeping mats of cranberry *Vaccinium oxycoccus*. Patches of bog asphodel *Narthecium ossifragum* occur frequently with cottongrass *Eriophorum vaginatum* and *E. angustifolium* and white beak sedge *Rhynchospora alba*. Heather and cross-leaved heath are present throughout but their growth is seldom more than 30 cm above the mire surface.

The edge of the mire has been cut on a small scale for fuel peat along much of its length, and several larger areas of old cuttings are particularly interesting because of the extent to which bog mosses and associated species have recolonised the uneven cutaways. A gradual slope towards the south-west produces an interesting gradation towards wet heath over deep peat, and the southern edge shows clearly the topography and vegetation of a typical rand and lagg.

A variety of grassland types are found at the margin of the peatland. Purple moor-grass *Molinia caerula* and tufted hair-grass dominate old marginal peat cuttings. Where the peat is thinner and usually undisturbed by past cutting, summer grazing and occasional mowing has favoured the development of a species rich marshy grassland which merges with drier grassy heath at the edge of the raised mire. Yorkshire fog *Holcus lanatus* and marsh foxtail *Alopecurus geniculatus* are frequent among the grasses in wetter areas with a range of sedges including star *Carex echinata*, oval *C. ovalis* and carnation sedge *C. panicea*. Typical of the associated herbs are marsh cinquefoil *Potentilla palustris*, marsh-marigold *Caltha palustris* and ragged-robin *Lychnis flos-cuculi* with occasional plants of northern marsh-orchid *Dactylorhiza purpurella*. On the drier ground, tormentil *Potentilla erecta* occurs frequently with devil's-bit scabious *Succisa pratensis* and heath milkwort *Polygala serpyllifolia*, while heath spotted-orchid *D. Maculate* spp. *ericetorum* and common twayblade *Listera ovata* are locally abundant.

A range of other habitats occur on the margins of the raised mire including fen and broadleaved and mixed secondary woodland, all of which add to the diversity of the site. Wedholme Flow also has a good range of breeding birds as well as some invertebrate interest.

Ref: S Solway Management Plan, JNCC website and SSSI citation. Lindsay, R.A. & Immirzi, C.P. 1996. *An inventory of lowland raised bogs in Great Britain.* Scottish Natural Heritage Research, Survey and Monitoring Report No.78. SNH, Edinburgh).

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

The North West is a particularly important area in England for lowland raised bogs- holding almost 56% of England's resource by area. (*State of the Environment* (2008). Natural England report). South Solway Mosses is one of the largest lowland raised bog complexes in England and Wedholme Flow where the restoration work is taking place is one of the ten most important bog sites in the country (Friends of the Earth).

South Solway's European importance relates to its primary SAC designation under the Habitats Directive and because it holds internationally important reserves of habitat 7110*- Active Raised Bogs

which is a priority habitat type. The site also has a qualifying feature relating to habitat 7120- 'Degraded raised bogs still capable of natural regeneration' as well as supporting two species of European importance- Pipistrelle bats *Pipistrellus pipistrellus* and otters *Lutra lutra*.

Nationally the site is designated as a SSSI for its Biodiversity Action Plan (BAP) habitat- lowland raised bog. The sites breeding bird assemblage is also nationally important and at least 13 species of bird recorded on the site are UKBAP Priority Species. The majority of species are either associated with open water created as part of lowland raised bog rehabilitation works or with the scrub woodland associated with cut over edge bog and newly recreated lagg.

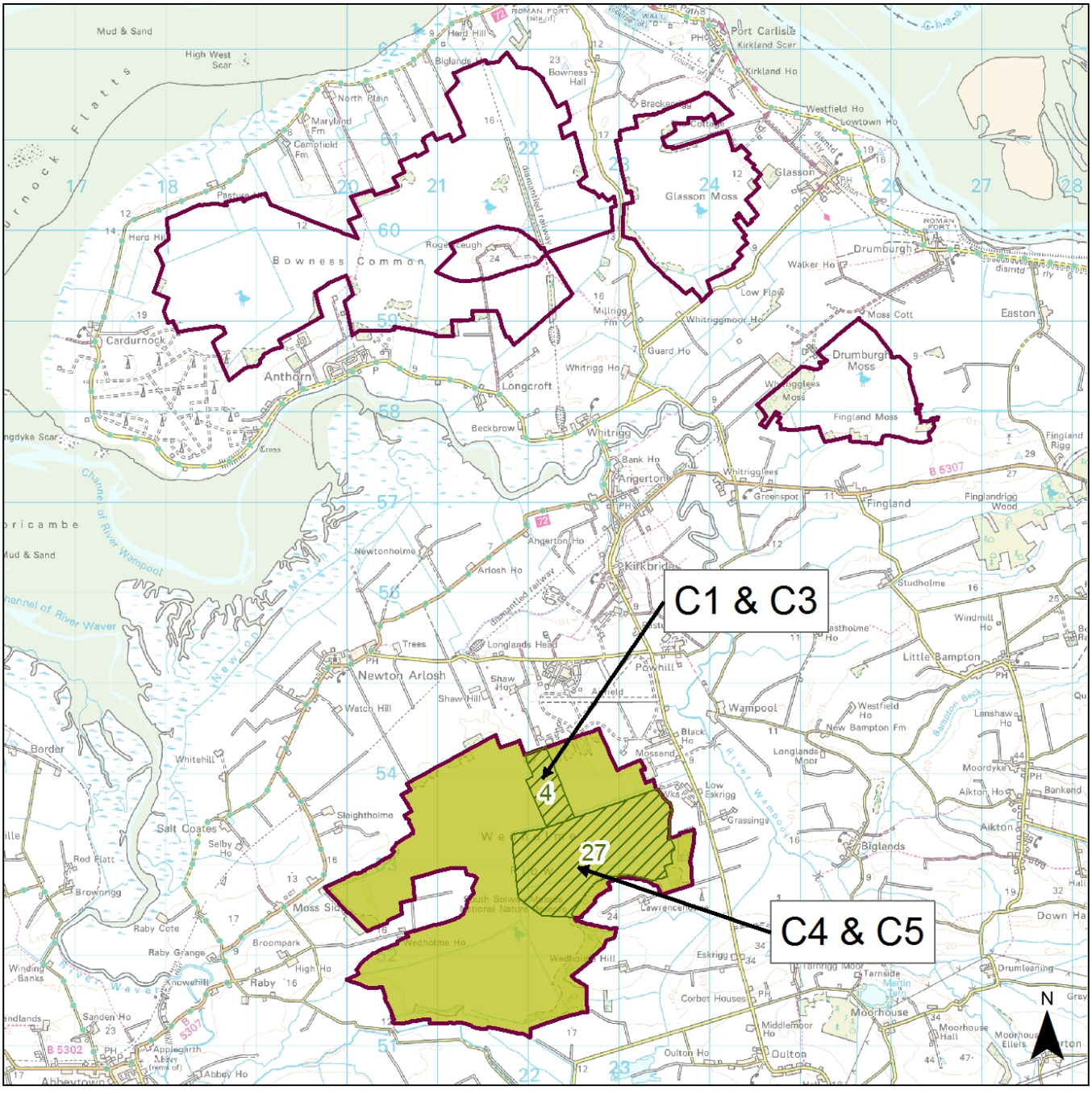
Other species of National BAP importance include its vascular plant assemblage- Lesser butterfly Orchid *Platanthera bifolia* and 3 UKBAP invertebrate species- large heath butterfly Coenonympha tullia, argent and sable moth *Rheumaptera hastata*, square spotted clay moth *Xestia rhomboidea*. The site also supports 13 UKBAP bird species, 3 BAP reptiles/amphibians (adder *Vipera berus*, common toad *Bufo bufo*, and common lizard *Zootoca vivipera*), and red squirrel *Sciurus vulgaris* and brown hare *Lepus europaeus. T*he latter 5 species are all UKBAP Priority Species and tend to be found around the peripheries of the bogs either in former lagg areas or at the interface with farmland.

Vascular plants of local importance includes Chickweed Wintergreen *(Trientalis europaea)*, Oblong-leaved Sundew *Drosera intermedia* and a number of uncommon mosses such as *Sphagnum pulchrum, Dicranum undulatum* and *Dicranum polysetum*. The majority of the locally important invertebrates are associated with the pools that have formed in response to bog rehabilitation works as well as the small areas of remnant lagg and newly recreated lagg habitat and include species such as the bog bush cricket, *Centromerus laevitarsis* spider and the banded demoiselle which occurs at the northern limit of its range.

Ref: S Solway Management Plan, JNCC website, *State of the Environment* (2008). Natural England report and SSSI citation.

Name of the picture: Map illustrating the SAC and where concrete actions will take place

South Solway Mosses SAC: UK0030310(2005)



4 Area where concrete actions are taking place (plus SSSI Unit Reference)

South Solway Mosses SAC

Wedholme Flow SSSI

0 1 2 km

Concrete actions:
C1 – Tree & scrub removal
C3 – Groundwork & raising water levels on degraded/vegetated peat
C4 – Groundwork & raising water levels on degraded milled peat with no vegetation
C5 - Application of sphagnum & protective mulches

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area:

Bolton Fell Moss

Surface area (ha):	374.740
Surface description:	Restoration work is taking place on 280.35 ha of the above SCI.

EU protection status:

SPA ☐ **NATURA 2000 Code :**

pSCI ☒ **NATURA 2000 Code :** UK030362

Other protection status according to national or regional legislation:

254 hectares of Bolton Fell Moss SCI is currently designated as Bolton Fell Moss Site of Special Scientific Interest (SSSI) under the Wildlife & Countryside Act 1981(as amended). The remaining area will be designated as a SSSI and this process will start in 2013 and be confirmed by 2015.

Main land uses and ownership status of the project area:

Land within Bolton Fell Moss SCI consists of around 259ha of actively milled peat (69%) with the remaining land either intact and degraded Lowland Raised Bog and Lagg. All milling on this site will cease by December 2013. There are approximately 68 ha of woodland on the degraded peat (18%) and 9 ha of deciduous woodland on mineral soil and about 5 ha of improved areas of pasture on deep peat.

The majority of Bolton Fell Moss (BFM) is currently privately owned with a large portion of land owned/leased by William Sinclair's Ltd which is a peat extraction company. Natural England currently owns 5 ha and is aiming to manage around 80-90% and is in the process of purchasing or leasing this land and mineral rights within the SCI so that the site can be restored to active lowland raised bog or lagg.

The land is currently managed for 30% conservation, 69% peat extraction (all milling ceases in 2013) and 1% grazing.

Scientific description of project area:

Lying to the North East of Carlisle, Bolton Fell Moss (BFM) is situated on relatively flat interfluves between the tributaries of the Rivers Irthing and Lyne. BFM is located approximately 40km away from the South Solway Mosses SAC. Both sites are located in the low lying coastal area associated with Solway National Character Area (NCA). The site lies at around 110m above sea level. Solway NCA consists of a shallow glacial exposed basin with superficial deposits of glacial till overlain in large areas by more recent deposits of estuarine materials and peats. Post-glacial isostatic lift on the salt marshes that border the Solway has resulted in a defined terraced structure. One of the principal habitats of note in the NCA is lowland raised bog along with coastal and fresh water wetland.

Around 90% of Bolton fell Moss has been impacted by either domestic, light industrial or large peat milling/cutting operations. In the milled areas the remaining peat depth varies from 0-5m. About 250ha site is either actively milled or milling has recently stopped. In theses area the water table tends to be near the surface because the peat has not yet started to decompose. Even so the water table is around -25cm which is below that required for successful Sphagnum re-colonisation. Nearer the field drains (that are about 11m apart) the water table is depressed further. The field drains in turn exit into larger carrier drains which exit the site into the more natural drainage system.

Another 60ha has been cut for peat for domestic use and animal bedding, leaving between 1 and 4 metres depth of peat, steep cut peat faces and a varied topography. This area is drained and covered in Birch *Betula pubescens* and Scots Pine *Pinus sylvestris* growth which has invaded because the peat surface has dried out. In these areas the water table is up to 1m below ground level and fluctuates wildly because the upper peat surface has dried out, is decomposing and is full of tree roots all of which aid drainage and lowers the water table.

The peat deposits on the site overlie Carboniferous sandstones and mudstones.

Bolton Fell Moss consists of an extensive area of remnant raised bog and is designated as a potential SAC solely for its degraded raised bogs still capable of natural regeneration (7120). The SAC Standard Data Form states that 15% of the site is active raised bog (7110*) and 85% is degraded 7120 habitat.

Peat has been commercially extracted from the site since 1959 and the majority of the site has now been milled. This process does not allow vegetation to re-establish itself between cuts. Until 1994 the traditional block cutting method allowed an impoverished wet heath flora to establish, comprising heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, hare's-tail cottongrass *Eriophorum vaginatum*, wavy hair grass *Deschampsia flexuosa* and the bog mosses *Sphagnum papillosum* and *S. palustre*. Similar wet and dry heath communities still exist on the edge of the site where the peat remains uncut, but it has a drier regime as a result of the adjacent drainage and extraction.

On the peripheries of the moss piecemeal peat-cutting by hand has led to a mosaic of boggy hollows, some of which resemble the vegetation on the intact part of the moss, whilst others comprise acidic marshy grassland dominated by purple moor-grass *Molinia caerulea* or soft-rush *Juncus effusus.* These types of grassland are representative of the edge or lagg community which, under more natural conditions, would be expected to occupy the boundary between raised bog and the wet flushed ground at the foot of the adjacent valley sides. Here, due to agricultural reclamation, these vegetation types have now regressed more towards the bog centre than would have been the case under natural conditions.

Where grasslands have been affected by peripheral drainage they dry out for much of the year and become invaded by birch *Betula pubescens*, Scots pine *Pinus sylvestris* and rowan *Sorbus aucuparia.* The ground flora within these scrubby woodlands is species poor and is dominated by tussocky purple moorgrass *Molinia caerulea*, bilberry *Vaccinium myrtillus* and bracken *Pteridium aquilinum* with hummocks of the mosses *Sphagnum recurvum, S. palustre and Polytrichum commune.*

Approximately 28 ha of vegetation typical of intact raised bog remains in the north-western corner with another 10 ha occurring in scattered strips between the edge of the bog and the peat extraction area. The intact part of the moss supports good examples of the original bog communities with heather, *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, hare's-tail cottongrass *Eriophorum vaginatum* and an unusual abundance of Crowberry *Empetrum nigrum,* probably reflecting the high altitude and exposed nature of the site. Other typical species include round-leaved sundew *Drosera rotundifolia,* common cottongrass *Eriphorum angustiofolium* and cranberry *Vaccinium oxycoccus.* These species occur amongst the "lawns" of the bog mosses *Sphagnum papillosum, S. palustre, S. magellanicum, S. tenellum, S. subnitens, S. capillifolium, S. recurvum* and usually *S. cuspidatum.* More rarely, white beak-sedge *Rhynchospora alba,* bog rosemary *Andromeda polifolia*, and oblong-leaved sundew *Drosera intermedia* occur.

Bolton Fell Moss has considerable potential to be restored back to lowland raised bog flora. This project concentrates on starting to restore the degraded areas of the site i.e. Units 1 (33.76 ha), Unit 2 (71.79 ha) and Unit 3 (148.24 ha). Units 1-3 are currently classified by Natural England as 'Unfavourable recovering'. However, the 'recovering' classification is only due to the site having a plan to restore its 7120 habitat. This plan describes what work needs to be done but not how it will be resourced. If these plans are not actioned through this LIFE+ project or there are no other means of financing this work at the proposed scale and rate then the site will revert back to 'Unfavourable No change' or Unfavourable declining'. This project aims to tackle the areas where restoration is still needed.

Ref: JNCC website, NBN.

Importance of the project area for biodiversity and/or for the conservation of the species /habitat types targeted at regional, national and EU level (give quantitative information if possible):

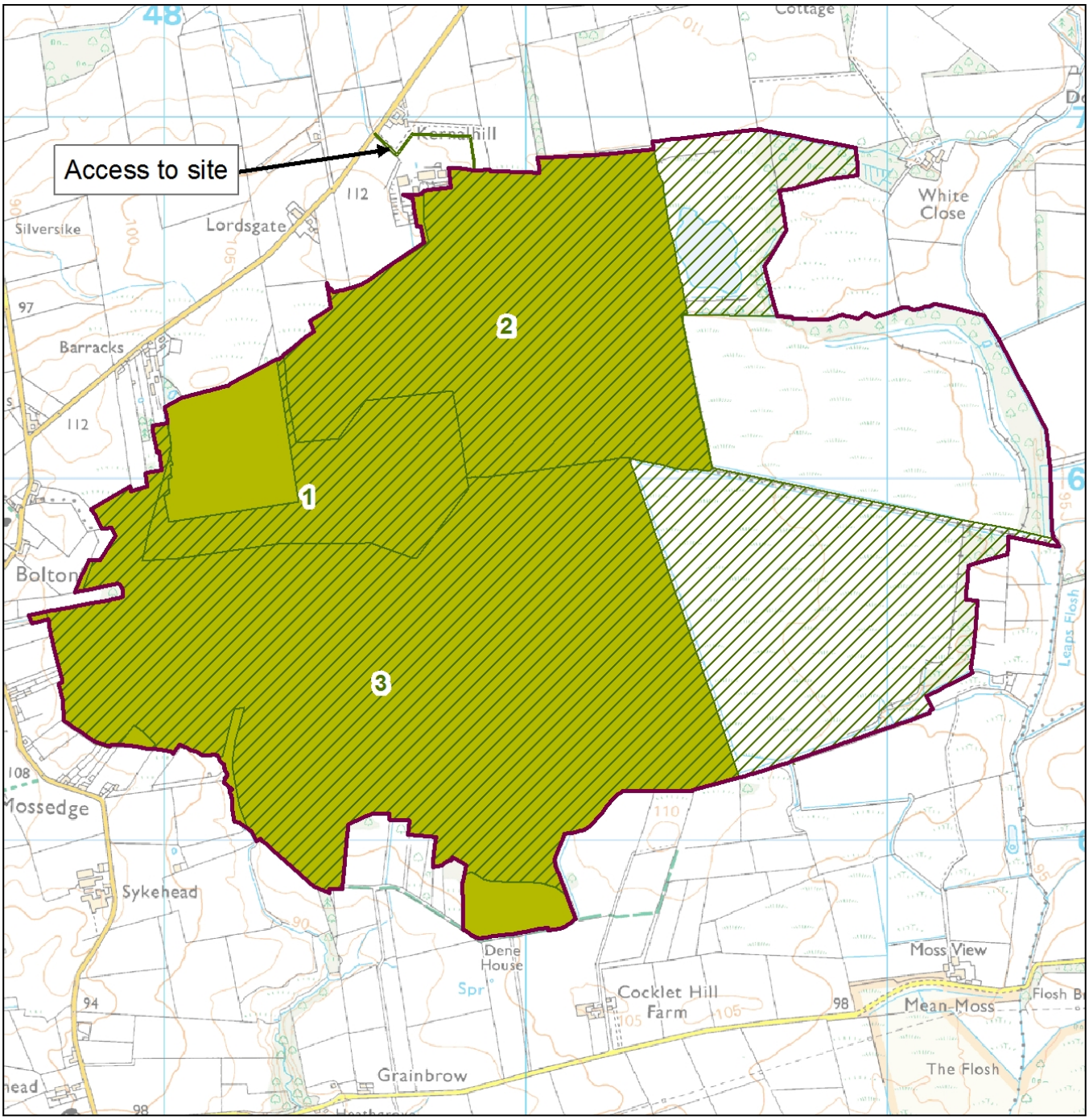
The North West is a particularly important area in England for lowland raised bogs- holding almost 56% of England's resource by area. (*State of the Environment* (2008). Natural England report). Bolton Fell Moss (BFM) is the largest lowland raised bog in East Cumbria, the fourth largest in NW England and the 10th largest in England.

Bolton Fell Moss is of European importance and has been designated as a SCI under the Habitats Directive because it holds internationally important reserves of 7120- 'Degraded raised bogs still capable of natural regeneration'. The site's national importance also relies on its raised bog habitats - both degraded and small area of intact raised bog that were once widespread in England. Past land management activities however have left only remnants of lowland raised bog within the UK including those found in the Solway and around Morecambe Bay.

Despite recent milling operations the site supports a number of species of national interest. In terms of UK priority Biodiversity Action Plan bird species the site supports skylark *Alauda arvensis* and bullfinch *Pyrrhula pyrrhula* and Red Data Book species curlew *Numenius arquata* and shelduck *Tadorna tadorna*. Species of Conservation concern within the UK such as buzzard *Buteo buteo*, chiffchaff *Phylloscopus collybita*, blackcap *Sylvia atricapilla*, barn owl *Tyto alba* and redstart *Phoenicurus phoenicurus* also occur on the site. Other species of 'Principal Importance in England' include red squirrel Sciurus vulgaris, Noctule *Nyctalus noctula,* Soprano Pipistrelle *Pipistrellus pygmaeus and* Brown Long-eared bat *Plecotus auritus.*

Name of the picture: Map illustrating SCI and areas of proposed concrete action

Bolton Fell Moss SCI: UK0030362(2009)



Bolton Fell Moss SCI

Bolton Fell Moss SSSI (plus SSSI Unit Reference)

Area where all concrete actions listed below are taking place

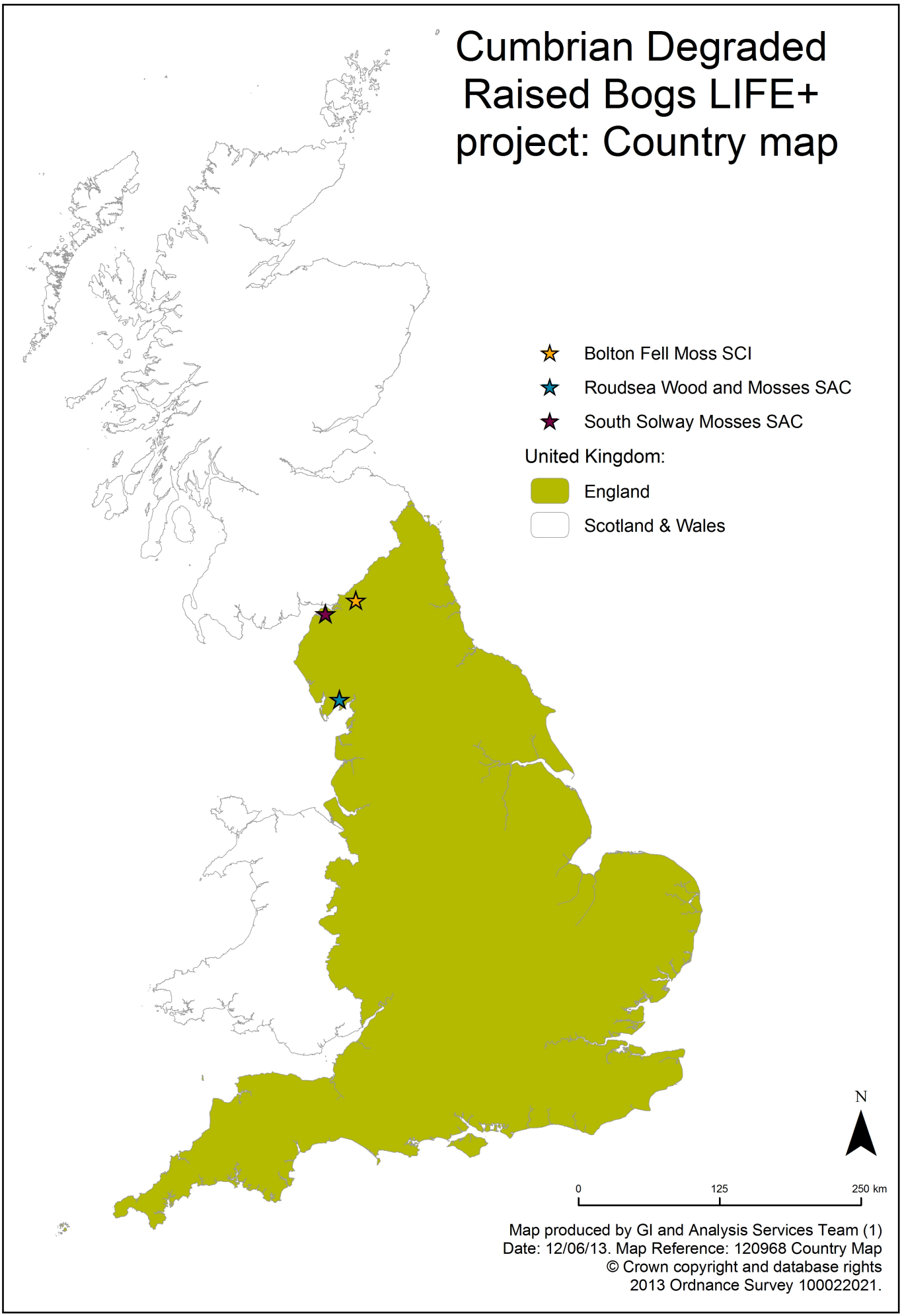
0 250 500 m

N

Concrete actions:
C1 – Tree & scrub removal
C3 – Groundwork & raising water levels on degraded/vegetated peat
C4 – Groundwork & raising water levels on degraded milled peat with no vegetation
C5 - Application of sphagnum & protective mulches

MAP OF THE COUNTRY LOCATION OF THE PROJECT AREA

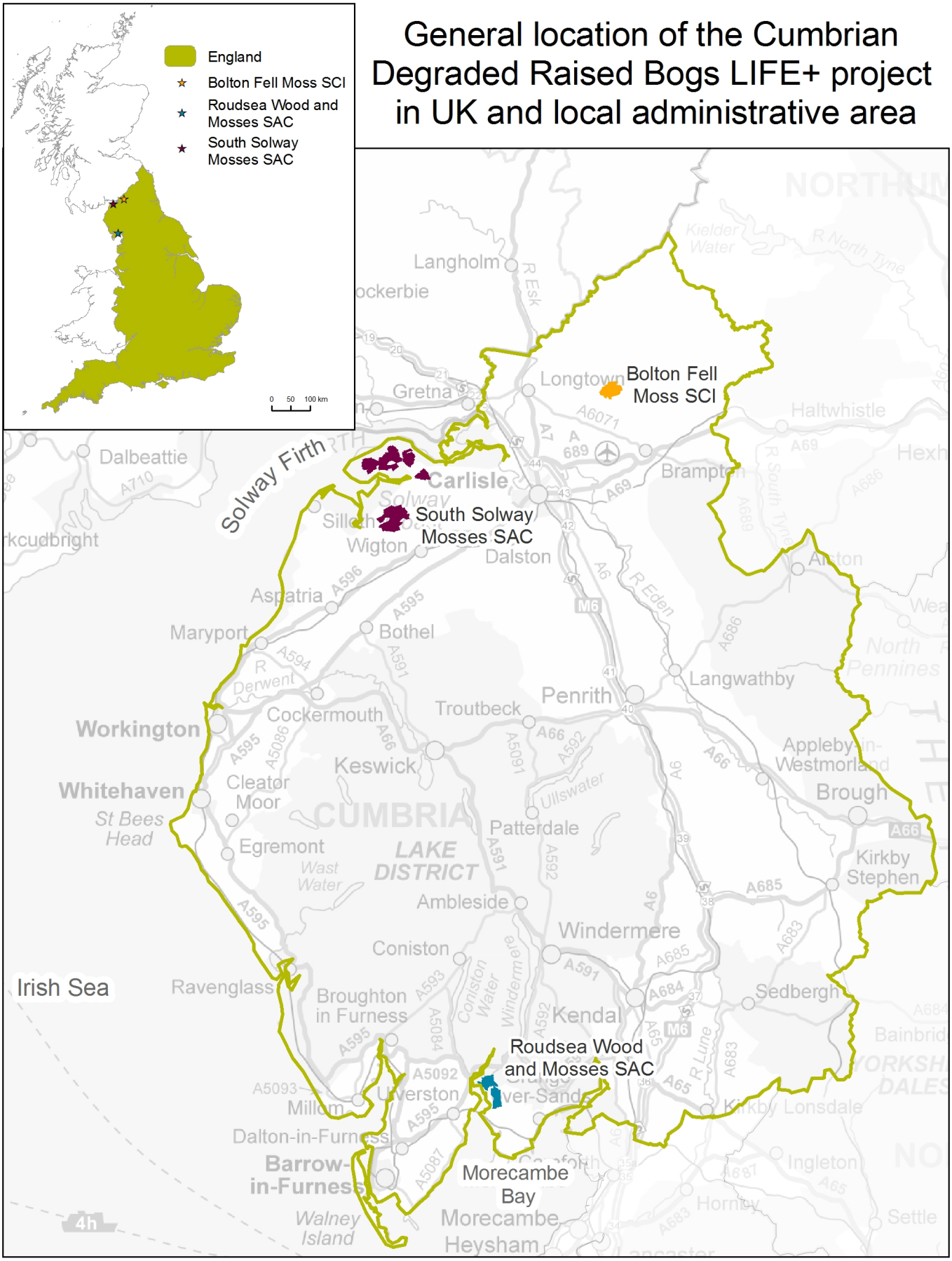
SCALE 1:4000000



MAP OF THE REGION LOCATION OF THE PROJECT AREA

SCALE 1:600000

General location of the Cumbrian Degraded Raised Bogs LIFE+ project in UK and local administrative area



Map produced by GI and Analysis Services Team (1)
Date: 11/06/13. Map Reference: 120968 C. Loc. Map

DESCRIPTION OF SPECIES / HABITATS ISSUES TARGETED BY THE PROJECT

Lowland raised bogs are amongst the most threatened and uncommon habitats in the UK. This project is specifically targeting habitat type 7120- Degraded raised bog capable of natural regeneration. Restoration of 7120 habitat is relatively technically challenging, time consuming and expensive and it is for these reasons that it is the focus of this project.

Currently 90% of the UK's lowland raised bogs have been modified, damaged or destroyed by past management activities such as milling, cutting, drainage, forestry or agriculture and three quarters of the habitat are deemed to be in a poor condition. Over the past 100 years it has been estimated that the area of relatively undisturbed lowland raised bog in the UK has diminished by around 94% from 95,000 ha to 6,000 ha. The remnant sites often tend to be small - less than 30 ha in size. The largest sites occur in England, then Wales whilst Scotland's sites tend to be mainly small.

England's resource of lowland raised bogs is concentrated within Shropshire, Cheshire-Lancashire plain, around the estuaries of the Humber in the East and Solway and Morecambe Bay in the NW and Somerset area. On a county level only Lancashire and Somerset have more lowland raised bog than Cumbria (SNH 96 report).

Although all English lowland raised bogs have been damaged to a lesser or greater extent they still have substantial nature conservation interest due to the rarity of the habitat type both on a national and European level and the species they support. Within Cumbria losses of raised mire have been mainly to agriculture and peat extraction with 68% loss up to 1978 in South Cumbria and 32% loss in Solway (EN 96- Moffat). On a county level Cumbria has 5,480 ha of lowland raised bog or about 1% of Cumbria's land cover. Of the 5,480 ha around a fifth or 1,178 ha are in a degraded state and this project aims to restore nearly 50% of this amount.

Condition of lowland raised bog

The key Cumbrian designated sites that hold lowland raised bog and an indication to their condition are as follows-

Solway National Character Area

Bolton Fell Moss – 374 ha -Unfavourable recovering condition

Walton Moss- 287 ha -Favourable

South Solway Mosses – Total of 1962ha (Bowness Common*, Drumburgh Moss (Favourable), Glasson Moss*, Wedholme Flow*)

South Cumbria Low Fells National Character Area

Roudsea Woods and Mosses* 470.5ha adjacent to Foulshaw Moss* (347ha), Meathop Moss (68ha) Favourable condition, Duddon Mosses* (355ha)

*these sites have a range of conditions.

The current condition of the habitat being targeted by this project can be summarised as-

• Bolton Fell Moss -Units 1, 2 &3 are 'Unfavourable recovering' as there is a plan to restore the site. The remainder of the area is not currently unitised (this will occur when the remainder of the site is designated as a SSSI in 2015). However, if an assessment of the 'non SSSI' part of the site was undertaken today it would be classed as 'Unfavourable declining'.
• South Solway Mosses SAC- Wedholme Flow Unit 4 is 'Unfavourable declining' with Unit 27 'Unfavourable recovering' (later is due to a plan in place but not necessarily the means to undertake the restoration).
• Roudsea Woods and Mosses SAC Units 4, 5 & 6 are all classed as 'Unfavourable declining'.

The condition categories referred to in this application are those used by Natural England for Sites of Special Scientific Interest and this is different from the categories used in the Article 17 reporting to Europe. These categories reflect a common standards monitoring approach across the Joint Nature Conservation Committee and other UK conservation agencies. The currently IPENs project will allow us to monitor and report at a Natura 2000 level in the next few years. In the meantime all monitoring and reporting is done on a SSSI and unit by unit basis.

Vegetation types

According to JNCC, a number of plant communities defined by the National Vegetation Classification (NVC) can be found on lowland raised bogs. Those associated with the Mire Expanse are M1 to M3 bog pool communities and M18 Erica tetralix – *Sphagnum papillosum* raised and blanket mire. The aim of this project is to move all the degraded raised bog towards a M18 habitat community. M18 is generally dominated by *Sphagnum* spp. Ericoid sub-shrubs and monocotyledons are often subordinate. This vegetation is characteristic of waterlogged ombrogenous peats, typically at low altitudes in moderately oceanic parts of Britain.

On the rand we expect the following habitats to develop;

- M15 *Scirpus cespitosus – Erica tetralix* wet heath,
- M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire,
- M20 *Eriophorum vaginatum* blanket and raised mire
- M25 *Molinia caerulea – Potentilla erecta* mire

English Nature report No 96- Moffat, A- Habitat conservation in England. JNCC website.

T. Elkington, N. Dayton, D.L. Jackson and I.M (2001). Strachan National Vegetation Classification: Field guide to mires and heaths. Peterborough

CONSERVATION PROBLEMS AND THREATS

Provide this information for those species and habitat types directly targeted by the project

This LIFE+ project will address the on-going problems resulting from past operations and activity on the sites and the main threats relating to the expense of restoration and climate change.

Problem - Past operations

All three Lowland Raised Bogs in the project have been damaged by past management in the following way-

• Loss of Lagg/Lagg stream. The majority of the lagg on all three sites has been drained and modified either to aid the drainage of farmland on the adjacent mineral soils and/or to start the process by which the lagg and eventually the bog can be managed either for peat extraction or cultivation/grazing. The lagg stream is often modified into an extremely wide and deep drain which can hydrologically split the Lowland Raised Bog from the adjacent mineral soil habitats.
• Active peat cutting/milling and associated drainage – Since the 1960s major commercial companies have 'mined' the peat by machine which has led to vast areas of bare un-vegetated black peat. This is in contrast to the slightly more sustainable hand cutting by previous generations which led to a varied topography as each individual landowner cut peat at different levels and to different extent into the bog. The commercial milling and its associated drainage not only removes the peat and its vegetation from the site but also significantly changes the hydrology of the sites.
• The drainage of the peat mass through drains cut to aid the drying and extraction of peat has led to the rapid removal of water from the bog surface resulting to a free draining degraded peat layer and loss of the peat forming Sphagnum mosses.
• At the head of the domestic peat cuttings there may be a steep cut peat face up to 3m high, as on Bolton Fell Moss. These cut faces can slump forward with gravity and in doing so create parallel cracks on the above intact peat surface. Each of these parallel cracks acts as a 'drain' and this further exacerbates the drying out of the peat surface and leads to the loss of the peat forming Sphagnum mosses.
• With the cessation of peat extraction and drainage, the active M18 vegetation is replaced by Purple moor grass (*Molinia caerulea*) and/or Heather (*Calluna vulgaris*) and Silver Birch (*Betula pendula*). This vegetation exacerbates the degradation of the top 50- 75cm of the remaining peat through rainfall interception, transpiration and the development of flow paths associated with root system. On the unrestored milled peat areas of Wedholme and Bolton Fell Moss there is still no vegetation 5 years after milling has stopped except for some occasional stands of soft rush and some birch (*Betula pubescens*) scrub where the peat is very thin.
• Planting of trees and rhododendron either for landscape or game management purposes has lead to these species seeding and invading both active and degraded bog surfaces at various densities. The Rhododendron on Roudsea Woods and Mosses for example reaches 15m high and occurs in dense impenetrable clumps. This prevents the re-colonising of peat-forming species and the natural vegetation of these habitats. and also exacerbates the drying out of the peat.

Bolton Fell Moss in particular suffers from the following past operations-

• Drainage of lagg for agricultural purposes
• Small scale domestic peat cutting
• Large scale commercial peat milling.

Roudsea Woods and Mosses particularly suffers from-

• Drainage of lagg for agricultural purposes
• Small scale domestic peat cutting
• Large scale commercial peat extraction.
• Preparatory drainage for peat extraction
• Planting of Rhododendron and Scots Pine *Pinus sylvestris*

South Solway Mosses – Wedholme Flow SSSI has issues with-

• Drainage of lagg for agricultural purposes

• Large scale commercial peat extraction

The above activities all impact the various parts of the raised bog in slightly different ways as described below-

Dome – Loss of the active peat forming Sphagnum moss dominated surface, loss of bog pools and other features which is replaced by a varied topography. The drying out of the upper surfaces of the peat leads to the Sphagnum being replaced by Heather *Calluna*, Birch (*Betula pubescens*), and Scots Pine *Pinus sylvestris*.

Rand – Loss of a smooth active peat forming Sphagnum moss dominated surface which is replaced by a varied topography. The drying out of the upper surfaces of the peat results in Heather *Calluna vulgaris*, Birch (*Betula pubescens*) and Scots Pine *Pinus sylvestris* invasion. On lower lying areas Purple Moorgrass *Molinia caerula*, Birch *Betula pubescens* and Scots Pine *Pinus sylvestris* dominate.

This project addresses the impacts on the dome and rand through the removal of tree and scrub encroachment, re-profiling cut peat faces in order to reduce gravitational slumping and cracking, construction of linear bunds to rewet areas, and supplementing bare areas with Sphagnum moss spores and locally propagated Sphagnum propagules.

Lagg –Wet woodlands and reed beds are lost when the lagg is drained and the nutrient rich mineral soil wet/soggy interface becomes invaded by Purple Moorgrass *Molinia caerula*, Birch *Betula pubescens* and Scots Pine *Pinus sylvestris.* The solution to the lagg issues will be achieved on this project by blocking the drains with peat and /or clay. The lagg stream although modified by human intervention is shallow and naturalised enough that is does not require any additional work. Rhododendron, which is a extremely persistent non native invasive, will be mechanically flailed and have a follow up herbicide treatment programme.

Concrete Actions C1-C5 will achieve the project's primarily objective (Objective 1) of restoring 507 ha of 7120 habitat. The processes and techniques used in this project will be monitored (Objective 3) and disseminated (Objective 2) and we will engage with a wide audience to achieve Objective 4.

Threats

The conservation threats to these sites mainly relate to lack of resources, lack of action and threats from climate change. Unless remedial action is taken now the sites will continue to be threatened by:

-Further encroachment by Birch, Rhododendron and Scots Pine – leading to further degradation of the peat through drying and increasing the future cost burden of rectifying this situation.

-Steady decline in the conservation quality of the remaining active raised bog areas on the sites due to their small, isolated and fragmented nature and due to the impacts of on-going and increasing hydrological change on adjoining land.

-Continued hydrological change due to impacts of slumping (peat faces) and lowered water table leading to loss of peat structure and material. These will exacerbate future conservation problems and costs.

-Climate change is expected to amplify the impacts of these threats by leading to increased winter-time precipitation and drier hotter summers (UKCIP- 2009). This threat applies across all three sites. More frequent summer droughts will lead to lower water tables and this will have a similar impact to drainage and encourage undesirable species to outcompete the Sphagnum and cause further scrub encroachment. Warmer drier conditions will encourage peat decomposition and the release of dissolved organic carbon into downstream water courses.

(Ref: UKCIP- 2009)

PREVIOUS CONSERVATION EFFORTS IN THE PROJECT AREA AND/OR FOR THE HABITATS / SPECIES TARGETED BY THE PROJECT

In the 1980's and 90's the majority of the lowland raised bog restoration work in the UK was done on a small scale. In the last twenty to thirty years restoration has moved to a landscape scale approach that has helped bring about major peatland restoration. Previous projects in Scotland on lowland raised bogs, restoring active blanket bog in Wales, projects such as 'Moors for the Future' and work already undertaken on the South Solway Mosses have provided an extensive resource of good practice and learning for this type of restoration work.

Both South Solway Mosses and Roudsea Woods & Mosses SAC sites have been subject to a range of conservation interventions and trials over the years but all this activity has largely occurred outside of the units that this LIFE+ project covers and has been dependent on the availability of funding. A small area of Bolton Fell Moss has also had restoration trialled. More detail on the previous conservation effect on a site by site basis is given below-

South Solway Mosses

Restorative conservation work has been undertaken on significant parts of the South Solway Mosses SAC. Work started in the early 1990's used volunteers and minimal equipment. In the 2000's techniques and equipment improved to the point where around 400 hectares of degraded bog had had some restoration activity and is slowly recovering with vegetation appropriate to a re-colonising M18 (NVC) and or a lagg/fen type habitat.

At Wedholme Flow large dams were put in on the principal drains in 2003/4 (but not in the smaller field drains) in order to bring the water table to +-10cm to areas subject to previous peat milling. However, due to a number of problems with topography, a change in weather patterns to more heavy episodic rainfall, and drainage issues this water table target was never achieved. Indeed in some places there is 1-2m of water above ground level. Work has taken place over the last five years to modify these dams and bring some form of control over water levels in the main drains. As a result Natural England is now in a position to undertake restorative work on the former milling fields safe in the knowledge that any restored areas will not be flooded and damaged.

Successful re-vegetation trials using Sphagnum has taken place on about 40ha of Unit 27. At least 50% is currently showing positive recovery and have therefore been excluded from this project's concrete actions. Hydrological monitoring using a network of water level loggers that were put in place 10 years ago show that the water table in the re-vegetated locations has stabilised on the whole to around +-10cm of ground level.

Around 40ha of Wedholme Flow in Units 3 (outside the Project's restoration area) & Unit 4 is intact M18 on top of up to 8m of peat. Although these areas have in the past been part drained they were never actively extracted for peat. Re-wetting work by NE has taken place since 2009 bringing the water table to +-10cm of ground level. The 12 ha which is the subject of this Project is cut over peat extracted for domestic use and animal bedding and has left between 1 and 4metres depth of peat, steep cut peat faces and a varied topography. This area has been drained and invaded by Birch *Betula pubescens* and Scots Pine Pinus sylvestris. The water table is up to 1m below ground level and fluctuates wildly because the upper peat surface has dried out, is decomposing and is full of tree roots all of which aid drainage and lower the water table.

Roudsea Wood & Mosses- Units 4, 5 & 6

A start has been made on restoration of the site in Winter 2013 (30 ha of Unit 5) and involved tree and scrub removal, flailing of Rhododendron, the creation of bunded cells constructed over cut over degraded peat areas, re-profiling of the cut peat face and the construction of bunded cells along the upper edge of intact but cracked and partially degraded peat surface. Follow up spraying of the Rhododendron on this 30 hectares plot is not included in this project. The next phase of restoration work will start on a proportion of Unit 6 in Winter 2014. These previous and planned restoration areas are excluded from any costed restoration work within this project but still leaves substantial areas that require restoration action.

Bolton Fell Moss

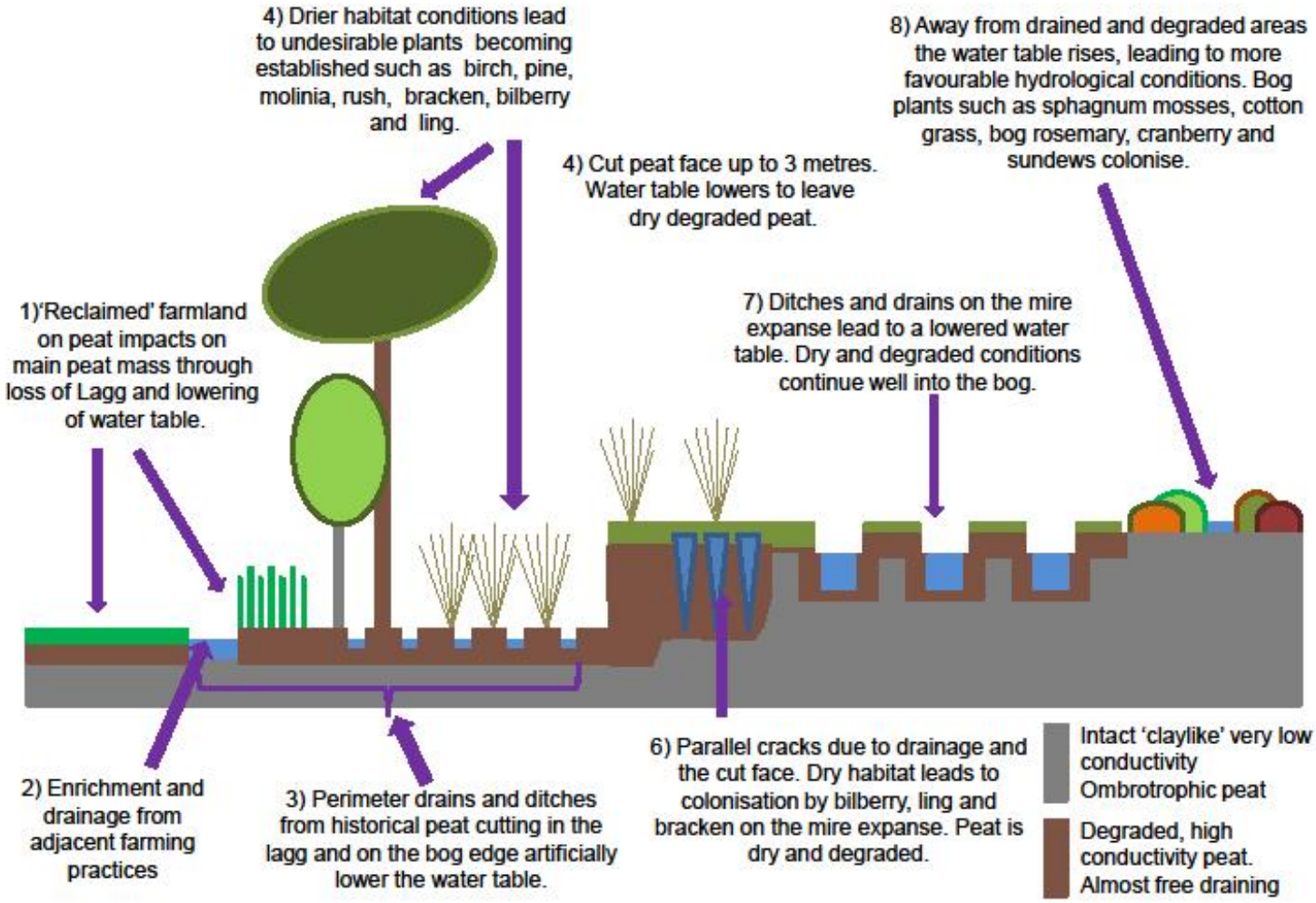
In 2003/4 a 6 hectares restoration trial was undertaken. This involved the construction of bunded cells which are currently holding water. This work did not include any re-vegetation work and although some Sphagnum has re-colonised the edges very little of the trial has target vegetation re-colonising it as yet. This initial trial work is excluded from any costed restoration work within this project.

Natural England is currently negotiating a ‘buy out’ of the milling operations on Bolton Fell Moss with the milling operator with the agreement that all milling operations will cease by the end of November 2013.

Whilst a good start has been made on the conservation of raised bog within the Project area, substantial areas still require restoration action. The funding required for this work is significant and currently not available without the help of this LIFE+ project.

Name of the picture: Example of previous restoration work on SSM- year 1

Name of the picture: Lowland Raised Bog problems and issues



Name of the picture: Example of previous restoration work on SSM- year 5

EU ADDED VALUE OF THE PROJECT AND ITS ACTIONS

The EU's Biodiversity 2020 Strategy aims to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 and restore them in so far as is feasible, whilst stepping up the EU's contribution to averting global biodiversity loss. This project will contribute to the actions sets out in the EU's Biodiversity 2020 Strategy in the following ways-

Action 1- ensure good management of the Natura 2000 network

This project help restore 507 ha of lowland raised bog i.e. 2.1% of UK resource (UK 24,203 ha- JNCC 2nd report on implementation of the Habitat Directive) and 3.7% of England's resource (based on 13,684 ha). Lowland Raised Bog habitat is a EU priority habitat and, recognising its conservation imperative and potential, the only one to have a degraded category proposed in the Habitats Directive.

The extent of lowland raised bogs has been widely fragmented over time both in the UK and elsewhere in Europe and restoring the area of this degraded habitat (7120) will help reduce the fragmentation issues associated with the much smaller areas of H7110- Active bog*. This will ensure that H7110 which is a priority EU habitat is less vulnerable to climate change and any further losses. The project sites provide the potential to act as stepping stones between the lowland raised bogs in NE England and Northern Ireland's similarly important habitat resource.

This project will bring about a sustained and direct improvement on 507 ha of bog, improve the condition on 751 ha of lowland raised bog within the associated units on all three sites and thus increase the overall resource of the European priority habitat 7110. This is particularly important as the current level of management and restoration effort is only sufficient to at best achieve localised improvements in condition. Failure to implement the project will result in this EU feature 7120 remaining in an unfavourable condition, with only a slow improvement in its overall trend. With all three sites being part Natura 2000 sites the restoration work will help benefit 2807 ha of the Natura network as a whole.

Action 3-increase stakeholder awareness and involvement

Given the extensive current and historic involvement of local communities in these sites – principally through the peat milling industry – there is both considerable local interest in and a need to engage these audiences in the future of these sites. The project accordingly has a significant communications objective, programme and resourcing, planned into it. Collectively these provide the opportunity to engage the strongly interested community and broader stakeholder groups in the project and its aims.

Action 5-improve the knowledge of ecosystems and their services in the EU

Lowland raised bog sites offer relatively tangible opportunities to explain and demonstrate ecosystem services to the public and stakeholders (notably in terms of carbon storage and water management, as well as biodiversity). This will be a key element of the Project's Communications Plan and will also form part of the brief for Action D3 ecosystems study.

Action 7- No net loss of biodiversity and ecosystems

Degraded lowland raised bog has a reduced ability to store carbon. By restoring these sites it will in the long term reduce the amount of CO2 being released in the atmosphere i.e. it is thought that the restoration of degraded peatlands could reduce emissions by up to 2.4 million tonnes of CO2 each year, with approximately 50% being delivered as a result of rewetting. The projects work through Action D3 will provide additional information on the value and benefit of this type of restoration on ecosystem services and it is hoped that the findings will be relevant to the EU as a whole.

In helping to restore lowland raised bog it is expected that it will also increase the habitat extent for a whole range of species that depend or use this habitat. There are twenty three BAP species that are associated with lowland raised bogs with twelve being are restricted to this habitat type. Bryophytes such as Sphagnum species and invertebrates including some of our rarest invertebrates are supported by this habitat.

Target 5- combat invasive alien species.

This project will help to control 84 ha of Rhododendron and all best practise will be disseminated to help the whole of the Natura 2000 network combat this species.

There have been a number of peat restoration projects funded through LIFE+. This project will build on these both in terms of drawing together the learning from different previous approaches and by updating this knowledge through the further trials and development of the techniques for lowland raised bog site restoration. The Project will provide significant additional demonstration value to practitioners generally by providing a range of different restoration phases both within and between the sites. This will create a unique platform to illustrate messages and techniques to a wide audience and be especially relevant to other land managers elsewhere in Europe. Information from this project will be captured in both technical and end of project reports and along with information from workshops, events and the end of project conference will be available for use by other member states after the project finishes. The project will also illustrate the role that lowland raised bogs have in sequestering carbon and helping to reduce the UK total Carbon emissions.

LIFE+ funding will allow this important restoration work to be kick started on all three sites within a much quicker time frame. It will also contribute towards work required by the Water Framework Directive.

SOCIO-ECONOMIC EFFECTS OF THE PROJECT

This project has a wide range of socio economic impacts as listed below-

- **Economic benefits**

The stoppage of peat milling at Bolton Fell Moss will have an economic impact locally. This action is being taken irrespective of this project and an appropriate compensation package being is being agreed by Government in recognition of this economic loss. By providing and substantially implementing a positive future vision for this site, the project is a significant component in helping the local community to move on from a past set of experiences and perceptions of the bog to one that is based on the wider values provided by the site (its ecosystem services).

The additional employment and spend created by this project will have a positive effect on local economy. Both Cumbria and locations near to the sites have significant multiple deprivation. Barrow in Furness, not far from RWM, is the 32nd most deprived district in England and falls in the bottom 10% nationwide and is the 14% most deprived in terms of employment. The project will employ 2.83 new FTE for 5 years in an area that traditionally has high unemployment and seasonal work. To reduce the projects carbon we will look to employ contractors that have a low carbon footprint as possible and if these contractors are locally based this will also add value to the local economy. Events and conference will be based in the area and increased visitor numbers, use of local facilities and overnight accommodation will help the local economy.

Looking at the broader economic benefits, the Project will help protect and enhance the ecosystem services provided by these bogs. The most impact and significant benefit related to carbon storage in the peat and carbon sequestration (in the long term of carbon dioxide it is estimated that the restoration of England’s degraded peatlands could reduce emissions by up to 2.4 million tonnes of CO2-e each year (from c3 million tonnes of CO2 per year), with approximately 50% being delivered as a result of rewetting. Although we do not have any figures directly relating to the three sites the project findings through Action D3 will help to put these sites into context. A well functioning lowland raised bog can help reduce downstream flooding and problems associated with rapid runoff by helping to level out flow rates during storm events. There is also a possible increased water storage capacity but this depends on the raised bogs current saturation level.

- **Recreational potential**

Both Bolton Fell Moss and South Solway Moss have recreational potential and this is estimated to be in the region of 10,000 visits per annum. Bare peat, particularly when wet is unsuitable for walking over. Restoration will help ensure that the experience and quality of the visits are improved. At Bolton Fell Moss in particular we plan to improve the provision of trackways and access routes on to and around the sites that will enable many more people to enjoy this site. At South Solway Mosses, there is some existing visitor infrastructure but the restoration of Wedholme Flow (RWM) with increase the scale of potential sites within the area for visitors to access and enjoy.

• **Cultural Benefits**

Lowland raised bogs have a strong sense of place, have a strong cultural element, provide important landscape features and are valued through the European Landscape Convention. However, unrestored milled peat has a low visual and cultural historic value and may evoke negative emotions including guilt associated with the human destruction of the environment. The project will again help develop a positive vision for these sites and engages local people and visitors in the rich heritage value of these places. Peat can often be rich in archaeology as humans have used these sites for thousands of years. Although no archaeology has been recorded from the three sites the pollen content has provided useful from a historical sequencing point of view and has also indicated the historical land uses of the non bog areas.

• **Increased learning, education and knowledge**

Increased learning, education and knowledge arising from this project will benefit local, national and European audiences. Dissemination will enable this project's 'lessons learnt' to be passed on and help reduce any potential expensive mistakes by others doing similar work. We will monitor how effective the project's dissemination has been and register any potential positive change.

BEST PRACTICE CHARACTER OF THE PROJECT

There has been considerable work done previously to restore lowland raised bog sites in England, Wales and Scotland and more widely across Europe and in Canada. The project's starting point is to draw on this existing learning and good practice gained from previous attempts to restore peat bogs in the UK and elsewhere in Europe. Through Action F2 (networking) we will liaise with projects such as: Restoring Active Blanket Bog in the North of Scotland (LIFE-funded), Restoring Raised Bog in Coillte, in the Irish Midlands (LIFE-funded), Restoring active blanket bog in Berwyn and Migneint in Wales (LIFE-funded) and Restoration of raised bogs in Denmark (LIFE-funded).

During the development of this bid, there has been close liaison with the LIFE-funded IPENS project currently being run by Natural England. This project is developing a programme of actions to identify how England will restore its Natura network to favourable condition. This project and Natural England's other peatland LIFE project (Humberhead) that is being submitted this year are both part of this programmed approach. This project will work closely with the IPENS team to ensure all actions will reflect the latest best practise guidelines and maximise the potential for other projects across the UK and elsewhere in Europe to learn from this approach.

Natural England employs national specialists whose experience and knowledge has helped in the development of this project. In addition, Natural England's Site Managers are part of the 'Major Peatlands Manager Network within England' which organises site visits to peatlands in order to demonstrate best practice techniques.

The IUCN UK Peatland Programme exists to promote peatland restoration in the UK and advocates the multiple benefits of peatlands through partnerships, strong science, sound policy and effective practice. The work of the Peatland Programme is overseen by a coalition of environmental bodies including the Wildlife Trusts, the RSPB and the University of East London amongst others. The IUCN UK Peatland Programme runs a network that encourages site managers to discuss best practice techniques.

Central to the project will be the need to disseminate the results of this LIFE+ project to other practitioners and land owners both in the UK or other member states. This is an area that we have not adequately covered when undertaking the small trial plots on the individual sites. This Project will fully monitor the results of the various best practise techniques employed and will be used to promote learning and highlight good practice for other projects within the member states to use.

All information and experiences and lessons learnt will be captured and reported in both the technical documents and Mid Project workshop and end of project conference and final best pratise note. A well thought out and comprehensive training programme will be developed as part of the projects demonstration aspects. The three sites are able to demonstrate different restoration phases from recently milled bare peat right through to Active raise bog (H7110). This information will be of interest to a range of people and organisations and will provide an excellent platform to illustrate restoration succession. All evaluation will continue after the life of this project as the restoration of H7120 is a long process and we will strive to disseminate information in the future through our normal publication channels.

Without LIFE+ funding we would not be able to contempt the active promotion and use of this sites for an educational and demonstration purpose to the level envisaged.

DEMONSTRATION CHARACTER OF THE PROJECT

Although this project falls under best practice its second aim (Objective 2) is to demonstrate the techniques and results to a wide audience including similar landowners and managers both locally, nationally and internationally. Information on how this will be achieved is detailed further in the 'Best Practice' section. Without LIFE+ funding we would not be able to contempt the active promotion and use of these sites for educational and demonstration purpose to the level envisaged.

EFFORTS FOR REDUCING THE PROJECT'S "CARBON FOOTPRINT"

Natural England is committed to reducing its carbon footprint not only within the organisation but also through the contractors it uses. Its sustainability policies cover all areas of the organisation and aim to drive change and focus efforts whilst providing everyone with clarity on how we will reduce our carbon footprint. By implementing these policies it has successfully reduced CO2 emissions from 6936 tonnes/year (2007 baseline) to just over 3000 tonnes/year in March 2011. This reduction was externally validated by PricewaterhouseCoopers and the National Audit Office. In doing so it became the 1st Departmental Public Body to gain the prestigious Carbon Trust Standard in 2010. It has continued to remain well within its 50% carbon target, and are three years ahead of schedule. In doing so Natural England has already met the newly introduced Government-wide targets (the 'Greening Government' commitments) for reducing carbon emissions by 2015. On 6th Feb 2012 Natural England won the sustainability award "Best Corporate Social Responsibility Initiative in a Travel Programme" at the prestigious European Travel Buyer Awards in recognition of its success in managing travel to reduce its carbon.

Natural England will employ our own best practice methods to reduce this project's carbon footprint in the following ways-

a) Methods of working

All staff employed within the Project will abide by Natural England's sustainability policies and use a range of technical equipment to reduce travel to meetings and workshops such as teleconferencing, webinars and video conferencing. New staff will be located near to the project to help reduce travel. All information on our methods of working will be available for all new staff as part of their induction process.

b) Transport

We have a Green Travel Policy and all project staff will be expected to meet and do business without always relying on travelling to face-to-face meetings. Our Green Travel Plan encourages a hierarchical approach, first assessing whether travel is actually necessary or can be avoided by using technology, and then if travel is needed, ensures that the least carbon possible is generated by the journey.

When organising networking events and end of year conference we will consider linking to other events so that international partners can reduce the number of costly carbon journeys.

c) Energy consumption

Staff will be employed within existing offices, ensuring there are minimal additions to our overall carbon footprint. Natural England has significantly improved the energy performance in our offices through installing a range of energy saving technologies such as motion sensing lighting and energy efficient monitors and adoption of an Office Heating Policy as well as raising awareness amongst staff of energy saving habits such as turning off computers when they are not in the room.

All offices are monitored regularly for their energy consumption and actions will be expected to be put in place to address any issues accordingly.

d) Use of contractors

We expect all our contractors to pursue sustainability in their operations and reduce their carbon footprints accordingly. When tendering all contractors will be required to provide information on how they will incorporate sustainability within their operations and will be asked to assess any environmental impacts that may arise as a result of undertaking the work. All contractors will be assessed on their responses and how effectively they will reduce their emissions, ensure efficient energy use and use of raw materials and minimisation their waste. We expect all contractors to also consider how they will minimise their transport, promote green travel plans and use cleaner transport fuels.

In this project the main emissions of carbon will be through the combustion of fuel by machinery. Where possible we will use contractors that are local to minimise our carbon footprint. Carbon emissions from chipped material and disposal off site will be partially offset by the use of the material to block drains and reduce the amount of waste taken off site.

The potential for Carbon emissions must be set against the significant potential for Carbon sequestration as a result of restoration. The main problem and threats (detailed in B2d) are likely to have reduced or halted peat formation, increased peat loss through oxidation etc and increased the potential carbon emissions. This project will eventually speed up the rate of peat formation.

e) Waste

The amount of waste we produce and what we then do with it has a huge impact on the environment. Natural England has signed up to the Defra Sustainable Waste Management Strategy with targets to reduce waste and recycle more - To reduce waste arisings by 25% by 2019/20, relative to 2004/2005 levels and Recycle and compost 75% of waste arisings by 2020.

All information for this project will be stored, communicated and shared using computers and networks and all printing will be minimised.

All publications and information coming out form this project will be freely available to be downloaded from our website and users will be encouraged to read on-screen rather than print out on paper.

f) Products

Natural England follows government guidance on sustainable procurement, and by March 2012 achieved Level 4 of the Government's Sustainable Procurement Flexible Framework. For all of our projects over £25k we complete a sustainability risk assessment and work with our suppliers to encourage them to reduce their carbon footprint. It is not expected that this project will require the use of raw materials and have to deal with packaging but in the unlikely case that this is necessary we will follow our internal policies on reducing their use and environmentally safe methods of disposal.

g) Paper

All products will use 100% recycled paper.

h) Food & Drinks

Any food and drink provided at workshops or conferences will be sustainable and have a low environmental impact, whilst ensuring value for money and promoting healthy eating. Our preference will be for food from farms and producers working to higher environmental and animal welfare standards, including integrated agriculture and organic farming.

EXPECTED CONSTRAINTS AND RISKS RELATED TO THE PROJECT IMPLEMENTATION AND HOW THEY WILL BE DEALT WITH (CONTINGENCY PLANNING)

See risk and constraints tables that has been added as 2 pictures.

Name of the picture: B4 page 1-3

Expected constraints and risks related to the project implementation and how they will be dealt with (contingency planning)

Constraint/Risk	Action impacted	Probability (1-3)	Impact (1-3)	Risk score	Mitigation	Contingency
Funding from Life+ less than requested	All	2	3	6	Endeavour to only include eligible costs in the bid that represent good value for money. Identity alternative funding sources	Reduce deliverables in line with new budget in consultation with LIFE+ unit.
Exchange rate changes from that set when the application was submitted- resulting in insufficient funds to complete the project	F1	2	2	6	Build in possible losses into internal risk strategies and budget planning. Ensure a preferential exchange rate is used at the time of submission to ensure some lee way for slight changes.	The project team would look at the possibility of scaling down the scope of actions with minimum impact on the deliverables. Investigate if any further savings, for example reducing the number of staff or staff hours can be made without affecting deliverables. Any actions would be discussed and agreed with the Commission.
Delays in appointing project staff will impact on project	All	2	2	4	Prepare recruitment paperwork prior to project start date to minimise delays in filling posts. Build in some flexibility in the timetable to allow for some delays.	Look at possibility of delivering some core tasks by back-filling or using secondments from internal staff until Fixed Term Appointments (FTA's) can be recruited. Adjust project plan utilising contingency time built in at planning stage to allow for this potential eventuality.
Changes in personnel (illness, staff leaving, organisational staff changes)	All	2	2	4	Prepare a succession plan for business critical posts. Ensure a wide range of staff are adequately briefed about the project to spread the knowledge base and enable others to step in as necessary. Have recruitment procedures in place to deal with any future replacements.	Ensure there is an effective Communication Plan in place to ensure any new staff member is brought up to speed quickly. Arrange for hand-over notes for new staff to help staff get up-to-speed quickly. Assess possible impact on project deadlines and keep Life+ unit informed of any foreseeable problems .Explore possibility of using more secondments from within Natural England.
Delay in obtaining all necessary consents, licenses and ownership rights to enable restoration work to take place- Bolton Fell Moss SCI	A5, C1, C3-5	1	3	4	OWNERSHIP An agreement is in place that ensures all milling activity will cease on the site and William Sinclair's ownership rights are transferred to NE by Dec 2013. CONCENTS An EIA is being submitted in 2013 in preparation for this project and we are currently working with the Local Planning Authority to ensure that Planning permission is granted before this project starts. The Local Authority has been consulted and is fully supportive of our plans.	Rescope project and amend delivery timetable to take into account any issues following discussion with LIFE+ unit. Bring forward work on RWM and SSM sites to minimise slippage. Resubmit any consents or permissions ensuring any outstanding issues have been addressed. Reprofile budget if necessary.
Adverse weather conditions effecting restoration work and engagement activities	C1-C5 and E5-E10	2	2	4	Programme work when the weather is most suitable for the relevant operation taking account of bird breeding restrictions on South Solway and Roudsea sites. Ensure that there are alternative venues or shelter for outdoor events. Build in sufficient contingency time to project to allow for potential weather related delays.	If poor weather is prolonged- we will revise delivery mechanism and outcomes against timetable in consultation with LIFE+ unit.
Increase in material and contractor costs	F1	2	2	4	Monitor tenders and contracts regularly to identify any potential issues. Ensure good value for money on all materials and contractors. Factor inflation into costs as appropriate. Use in-house procurement expertise to ensure robust contract negotiations.	Rescope budgets elsewhere in the project (i.e. staff hours/number of staff) in consultation with the LIFE+ unit whilst still trying to maximise objectives and outcomes. Investigate other ways of doing the same work using different material or contractors.
Problem with finding suitable contractors	A6, C1-C5	1	3	3	Follow good procurement procedures and ensure all tendering opportunities are well advertised. Contact existing contractor networks to make them aware of opportunities well in advance of formal tendering.	Consider re tendering work and utilising a wider contractor base such as UK or Europe.
Poor project Management	F1	1	3	3	Follow standard project management structures and ensure all staff are suitably trained and experienced in project management. Ensure that there is adequate and regular reporting to highlight any potential problems	Consider and agree any changes to standard processes to correct poor management. Find additional resources to bring project back on track.

Name of the picture: B4 Page 4-6

					as soon as possible. Steering group responsible for ensuring sound project management processes are applied.	
Delay to notification of success from Life unit	All	2	1	2	Build in some flexibility in time to allow for a short delay. Expect mitigation actions from Life+ unit- i.e. as per 2012 to allow for some preparatory work to start prior to contracts being signed. Investigate any low risk work that could be fully planned and started such as tendering to minimise any slippage to the project.	Amend timetable accordingly in consultation with LIFE+ unit.
Poor engagement/ lack of participation/ poor feedback and response to engagement programme, workshops and conference	D4, E5, E6 and E7	1	2	2	Ensure all scientific audience programmes and community/general public engagement activities are well planned and applicable for the target audiences. Regularly review the engagement programme to ensure it is meeting project objectives successfully. Monitor and obtain feed back after events and take into account findings to resolve any potential issues or problems. Use new and existing networking opportunities to make suitable audiences aware of events/ workshops or conferences. Identify key stakeholders such as conservation organisations, site managers, landowners, statutory and government officials etc in the Communication Plan. Contact all key players individually to make them aware of key events. Events will be well advertised on website, through newsletters, mail drops and other media channels both in the UK and Europe. Ensure that objectives and outcomes for each event are clear and delivered and manage audience expectations.	Explore other methods of communication i.e. recording events if any key stakeholders are unable to attend. Ensure wide dissemination of information to people and organisations which do not attend. Amend Communication Plan to take into account and resolve poor engagement issues.
Delay in obtaining all necessary consents, & licenses are in place to enable restoration work to take place on Roudsea Wood & Moss SAC	C1- xx	1	1	1	Ensure early contact with consenting authority to clarify the information they require. Proceed with obtaining felling licenses during 2013/early 2014. Forestry Commission supportive of the proposals. Ensure NNR consent is in place prior to project starting.	Amend delivery timetable take into account any issues following discussion with LIFE+ unit. Bring forward work on Solway site to minimise any slippage in overall project. Resubmit any consents or permissions ensuring any outstanding issues have been addressed. It is however, expected that all consents should be in place by early 2014.
Delay in obtaining all necessary consents and licenses are in place to enable restoration work to take place- S. Solway Mosses SAC	C1- C5	1	1	1	Ensure early contact with consenting authority to clarify the information they require. Proceed with obtaining consents and licenses during 2013/early 2014. Ensure NNR consent is in place prior to project starting.	Amend delivery timetable take into account any issues following discussion with LIFE+ unit. Bring forward work on Roudsea site to minimise any slippage in overall project. Resubmit any consents or permissions ensuring any outstanding issues have been addressed. It is however, expected that all consents should be in place by early 2014.
UK government restrictions on the creation of new project websites.	E2	1	1	1	We have allowed for adding an extra section to the existing Natural England website rather than hosting a stand-alone solution as required by current government policy. The website will be capable of meeting a core set of requirements and enable reports to be downloadable to a wide audience. We do not envisage any additional restrictions to be in-force by the time the project starts.	Investigate how we could have a standalone website or e.g. hosted by another partner

CONTINUATION / VALORISATION OF THE PROJECT RESULTS AFTER THE END OF THE PROJECT

Which actions will have to be carried out or continued after the end of the project?

Actions C1- C5

This project will provide an injection of activity for the next 5 years on the three sites. If all the concrete actions are successful they will lead to a self sustaining climax community with just minor on-going management to ensure maintenance of necessary conditions (e.g. water levels). The one exception is the control of invasives such as Rhododendron and especially the Rhododendron on the offsite adjoining land which will need to be managed for the next 30 years. All follow up reoccurring management actions after the project ends will be continued as part of Natural England's normal land management and National Nature Reserve programme work.

Actions D2 & D3 & E Actions

Monitoring will continue beyond the lifespan of this project and will be used to fine tune future management work to ensure Favourable Condition status is achieved within the expected time frame. All technical reports/demonstration aspects will enable information and techniques to be deployed and repeated elsewhere on other sites. We will continue to make the information available for other land managers whilst it is still relevant and current. Natural England will continue to use the sites to increase peoples knowledge and understanding of lowland raised bog habitat and its restoration. Ongoing monitoring will help aid the evaluation of the effectiveness of the management actions and to direct further management intervention.

Natural England is committed with working with communities near to these sites and to raise awareness of the sites importance for both biodiversity and ecosystem services.

Action F2

We will maintain networking links with NGOs and other organisations to help aid the restoration of similar sites in the future and we may expand this networking to other habitats. NNR and other Natural England staff will continue to feed into current peatland networks such as the IUCN UK Peatland Network and the ' Major Peatlands Manager Network within England'.

Action F4

The Production of the AfterLIFE Plan will detail the future work needed on all three sites and will include the consenting of a revised 5 year Management Plan for each site. The AfterLIFE Plan will also include an analysis of funding opportunities both local, national and wider to support any additional work in the future and enable us to take the next steps beyond this project. We will try secure additional funding to meet such aspirations.

The projects steering group role will be to oversee progress with the AfterLIFE Plan for at least two years after the project has finished.

How will this be achieved, what resources will be necessary to carry out these actions?

Actions C1- C5

We will incorporate the projects objectives into our normal NNR programmed activity. The level of likely on-going resources required to meet these requirements are expected to be relatively minor as re-establishing the correct hydrological conditions will reduce the degree of intervention needed to achieve favourable condition. Any follow on work can be delivered as part of a rolling programme (reference- the invasives in particular) through the current Natural England resources.

If necessary Natural England will use its dedicated external funding staff to secure additional external funding to meet any shortfalls.

Actions D2 & D3 & E Actions

These sites are expected to continue to be in Natural England management. Staff delivering this management, including those involved in this project, will have a role in developing and sharing their

expertise both to other Natural England staff and more widely to practitioners. Natural England has a good reputation of making information available for the benefit of biodiversity gain and we will use our current methods of dissemination once the project ends to continue to increase knowledge and understanding. The information present on the website will be refreshed at the end of the project and will be keep available in line with LIFE+ requirements.

Action F2

Relationship work will be expected to continue and we will aim for this behaviour to exist beyond the duration of this project with minimum cost implications.

Protection status under national/local law of sites/species/habitats targeted (if relevant)

We will be working with the UK Government to ensure that the whole of Bolton Fell Moss is designated as a SSSI (this process is planned to start by December 2013 and be confirmed in 2015). Natural England will also be working with Defra to progress the designation from SCI to SAC on the same site. However, according to the Habitats Regulations, SCI are considered to have the same protection as other designated Natura 2000 sites. All N2000 sites (SCI and SAC etc) are protected through the Habitats Regulations (Conservation of Habitats & Species Regulations 2010). The Habitat Regs establishes a clear accountability for competent authorities particularly around any operation that might affect the conservation status of a N2000 site. There are established procedures around the need for 'Appropriate assessments' and consents for operations on such site.

All three sites will also be protected under UK law through their underlying Site of Special Scientific Interest (SSSI) that are designated through the Wildlife & Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000 and the Natural Environment & Rural Communities (NERC) Act. Only half of Bolton Fell Moss is currently designated as a SSSI the remaining area will be designated during the life of the project. Natural England has to consent any operations likely to damage the special interest of a designated SSSI site. In areas where Natural England is not viewed to be the competent authority such as in Planning and Development the appropriate authorising body is required to consult Natural England before granting any Planning Permission.

The Project Areas in Roudea Woods SAC and Solway Mosses SAC are also National Nature Reserves and currently managed under secure tenure arrangements by Natural England for at least a further 15 years. Whilst NNR status does not confer additional legal protection beyond underlying SAC and SSSI legislation, this recognition of importance and the security afforded by Natural England's commitment to management provide a further degree of protection to safeguarding the benefits delivered by this Project in the longer term.

How, where and by whom will the equipment acquired be used after the end of the project?

The main significant purchases included within this project are the weather station for Roudsea, additional water loggers, cameras, video equipment and a project vehicle. These items will be retained by Natural England and in the case of the weather station and waterloggers will remain on the sites and be used for the benefit of monitoring the project outcomes and helping fine tune the management of the sites. The project vehicle, camera and video equipment will be used on the management of all three sites and other Natura 2000 sites and will be retained by Natural England until they are no longer useable. Blackberry and mobile devices will be purchased for the new project staff however, it is expected that technological advances and harsh weather conditions on site will mean that these items will not be considered as an asset or be useable after the project finishes.

Consumables such as moveable display/project notice banners that are still fit for purpose at the end of the project will be retained by Natural England.

To what extent will the results and lessons of the project be actively disseminated after the end of the project to those persons and/or organisations that could best make use of them (please identify these persons/organisations)?

The Communications Plan (Action E5) will be revised and incorporated as part of the AfterLIFE Plan and will ensure that all the key audiences for disseminating learning and the proposed methods and communications channels for achieving this are covered. New audiences and organisations will be targeted and the appropriate mechanism for each audience will be used and are likely to include website, site blogs, twitter and published information.

Provisionally the audience is likely to include:

UK audiences- NGOs such as RSPB, Wildlife Trusts, DEFRA, Forestry Commission, CCW, MoD, SNH, peat extraction companies and private operators, private contractors dealing with peat landscapes, Local Authorities and relevant Ministers.

EU audiences- we will build on the work undertaken through Action F2 and expect to target- IUCN (International Union of Conservation of Nature) UK Peatland Programme, International Mires Conservation Group and International Peat Society, other lowland raised bog managers (through Eurosite / Europarc and our networks with other European conservation agencies).

As illustrated by Actions E1-E10 the project has an active programme of information collation and dissemination and we will continue to disseminate information after the project ends via our normal channels, website and series of networks such as the IUCN UK Peatland Programme and Major Peatland Manager Networks within England and any other networks that we will utilise through this project. The projects results will be disseminated widely amongst Natural England and other statutory bodies and conservation bodies both nationally and elsewhere and will be captured in the end report. We will continue to host site visits from professionals and communities so they can see the restoration work and the sites movement to favourable condition.

The end of project conference will present results and set out next steps on these sites and on other raised bog sites. Conference proceedings will be produced and will be available through our standard publications and via the project website portal. Technical reports in particular will be made available for other site managers and practitioners.

The AfterLIFE Plan will include the revised Communication Plan and will capture our experiences from the project, lessons learnt and the findings from the end report.

Where possible we would like to see the project and its findings contributing to EU and UK environmental policy development work.

LIFE13 NAT/UK/000443

TECHNICAL APPLICATION FORMS

Part C – detailed technical description of the proposed actions

LIST OF ALL PROPOSED ACTIONS

A. Preparatory actions, elaboration of management plans and/or of action plans

A1 Project establishment

A2 Revision of SSM & RWM Management Plans

A3 Creation of a new Bolton Fell Moss Management Plan

A4 Carry out all work necessary for consents/permission/felling licenses, leases and ownership rights to be in place

A5 High resolution aerial photography of restoration areas

B. Purchase/lease of land and/or compensation payments for use rights

C. Concrete conservation actions

C1 Scrub and woodland clearance to reduce evapo-transpiration

C2 Control/Eradication of Rhododendron

C3 Groundworks and raising water levels on degraded/vegetated peat surfaces

C4 Groundworks and raising water levels on degraded milled peat surfaces with no vegetation

C5 Application of Sphagnum spp and protective mulches to milled peat areas

D. Monitoring of the impact of the project actions (obligatory only if there are concrete conservation actions)

D1 Monitoring Plan and baseline survey

D2 Ongoing and final post restoration monitoring

D3 Assess socio-economic impact of the project and contribution to ecosystem function restoration

D4 Monitoring engagement including feedback from training/workshops/events

E. Public awareness and dissemination of results (obligatory)

E1 Notice Boards

E2 Newsletters

E3 Create and maintain website presence

E4 Layman's Report

E5 Communication Plan and actions

E6 Leaflet produced for Bolton Fell Moss

E7 Community engagement programme

E8 Scientific audience programme

E9 Mid Project workshop

E10 End of Project Conference

F. Overall project operation and monitoring of the project progress

F1 Overall project operation and monitoring

F2 Networking with other projects

F3 Audit

F4 AfterLIFE Plan

DETAILS OF PROPOSED ACTIONS

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.1: Project establishment

Description (what, how, where and when):

The entire project establishment actions will be undertaken by existing staff within Natural England (seconded to the project for a set period) while we wait for the new posts to be recruited and filled. The first key output will be the signing of the Project's contract, driving forward the recruitment work and ensuring that Action A3 to A5 are progressed.

A Project Steering Group will be established and comprise of senior staff from a range of NE functions representing procurement, finance and landscape & biodiversity interests. We will seek representatives from partner bodies with active interests in peat bog management to help ensure the project fulfils its wider communications and good practice outcomes effectively. The Steering Group will have overall responsibility for the project's success, they will steer the direction of the project, confirm priorities and provide an escalation point to manage risks and issues so that the project is managed efficiently and achieves its objectives.

To deliver this project Natural England will recruit 4 new Fixed Term Appointments (FTAs) amounting to 2.83 FTE. The location of these staff will be confirmed during this phase but it is expected that the majority will be based in the NW of England and will be in post by Feb 2015 at the latest. These staff will work alongside our existing in-house staff.

The Project Team Staff will include the following posts-

LIFE+ Project Manager (Full time FTE)

NNR Senior Reserve Bog Restoration Manager (0.5 FTE- seconded staff)

NNR Reserve Manager (0.25 FTE- seconded staff)

Communications Officer (Full time FTE)

Project Monitoring Officer (0.33 FTA)

Support Officer (0.5 FTE)

Further information on the posts and their responsibilities are provided in Action F1.

All NE recruitment is outsourced and dealt with externally through a service level agreement with Defra Shared Services. We have allowed for 2 recruitment trawls in case the first trawl is unsuccessful or staff leave during the life of the project. It is our experience that there is a normally a need for re-recruitment for projects that use FTAs. Natural England pays Defra Shared Services for the recruitments they carry out on our behalf.

Reasons why this action is necessary:

Successful establishment of the project will ensure that the project starts at the earliest opportunity and has a robust procedure in place to ensure that all work is appropriately managed.

Adequate staffing is necessary to ensure that the Project is successfully implemented. We will ensure that all staff are adequately trained and competent to carry out their roles effectively and in keeping with Natural England's own internal standards and approaches for staff learning and development.

Beneficiary responsible for implementation:
NE

Responsibilities in case several beneficiaries are implicated:
n/a

Expected results (quantitative information when possible):
The Steering Group will be in place by 31 August 2014 and will drive forward the recruitment of the four new posts. We expect all new staff to be in post by February 2015 and the project will be successfully established within 7 months.

How was the cost of the action estimated?:
The costs of recruitment are based on costs from previous recruitments. Actual cost will depend on recruitment method employed and T&S claimed by candidates. Where possible we will look to advertise several posts together to reduce costs.

All our recruitment is outsourced and dealt with externally through a call off contract with Defra shared services. The staff and direct costs have been calculated based on experience within Natural England of existing recruitment exercises. Actual cost will depend on recruitment method employed, the amount of T & S claimed by candidates and the opportunities to group advertisements together. Costs cover advertisement in national recruiting/papers.

Summary of resources required:

Personal days: 82 days.

This action primarily involves the Steering Group, NNR Team Leader and SMR Bog Restoration Manager. There will also be other staff within NE that will need to provide time to set up the Steering Group and undertake the recruitment process. All of the project establishment actions will be undertaken by existing staff within Natural England until the LIFE+ Project team are in place.

Person cost: 22,643

Expenditure: Travel: 3120. Additional travel to attend initial meetings, interview panels and Steering group meetings by the Steering Group and Project Team. Also travel costs for recruits to attend interviews. All costs will be based on actual costs or standard mileage rates. All trips over 50 miles return.

External Assistance: 260 to cover room hire.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.2: Revision of SSM & RWM Management Plans

Description (what, how, where and when):

This action will last for 6 months.

To incorporate the work and timetable from this project into the existing Management Plans, both South Solway and Roudsea Woods and Mosses Management Plans will be reviewed, consented and signed off. All plans will follow Natural England's standard NNR Management Plan structure and all plan reviews will include consultation with stakeholder groups. Roudsea Woods and Mosses SAC Management Plan will be amendment by Dec 2014. South Solway Mosses (Wedholme Flow) Management Plan Review will start summer 2014 and be completed by December 2014.

Both Management Plans will also come up for review at the end of the project which will allow us to incorporate the works undertaken and the lessons learnt during this project into the AfterLIFE Plan (Action F4- the review for both sites and plans will start in Jan 2019 will be completed by June 2019).

Reasons why this action is necessary:

All NNRs in the UK have a Management Plan which is reviewed on a 5 year cycle. It is important the works proposed within this Project are integrated with and complement the wider objectives of the NNR.

As part of Action F4 all future management needs to be reviewed and the Management Plans again revised but this will be undertaken as part of the AfterLIFE Plan process.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Roudsea Wood and Mosses SAC and South Solway Mosses SAC NNR Management Plans will be revised and signed off by December 2014.

These plans will be reviewed again in 2019 but will be undertaken as part of Action F4.

How was the cost of the action estimated?:

Personnel: Estimation is based on the preparation and revision of other Management Plans done in the past.

Summary of resources required:

Personal days: 28 days- mainly using in-house seconded specialists, NNR Senior Bog Restoration Manager and NNR RM Advisor as they have a long standing knowledge of the sites.

Person cost: 7138

Expenditure: none

Travel: none

External Assistance: none

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.3: Creation of a new Bolton Fell Moss Management Plan

Description (what, how, where and when):

This action is expected to take 6 months.

Bolton Fell Moss has recently been designated an SCI. For that reason it currently does not have a coherent Management Plan covering the entire SCI.

A Restoration Scheme has been written which forms the basis of a Planning Application to obtain permission to start the restoration process and this will be sent to Cumbria County Council shortly. The Restoration Scheme is a form of management plan but only covers the restoration of the 7120 Habitat (i.e. it does not address the management of the remnants of active bog and other peripheral habitats). A full Management Plan is required that provides the wider vision and objectives for this site, incorporates the work detailed in this project and brings together the conservation needs with those of access, community engagement and research opportunities.

In the preparation of this plan we will undertake some stakeholder engagement as we need to manage people's perceptions of good conservation management and local communities often have a problem with tree removal and raising water levels.

Reasons why this action is necessary:

Bolton Fell Moss is currently not an NNR but Natural England is aiming to purchase or lease the majority of the land within the SCI boundary as this is the most efficient way of managing the site. However, Natural England is taking on the restoration and management of the site and will manage it like any other National Nature Reserve.

Regardless of whether the site is designated as an NNR or just managed as a Nature Reserve, Bolton Fell Moss will require a Management Plan in the standard format to ensure consistency of future management and to ensure the purposes of this Project are considered and implemented with the wider needs of the site. A Management Plan will ensure that all management actions required to bring the site into Favourable condition and the actions relating to maintenance, access, education, interpretation and research are properly identified.

Stakeholder event is needed so we can manage people's perceptions of good conservation management and minimise local communities issues relating to tree removal and raising water levels.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

In the first year of the project the Bolton Fell Moss Restoration Scheme will be reviewed and developed into a Management Plan based on the NNR Management Plan format. We expect this work to be completed January 2015 and consulted on in January 2015 and completed March 2015. The plan will then be reviewed in 2019 to ensure that all aftercare management is identified and incorporated into Action F4- AfterLIFE Plan.

Successful stakeholder meeting that addresses local communities' issues about restoration work.

How was the cost of the action estimated?:

Personal days: 22 days- mainly using seconded in-house specialists, NNR Senior Bog restoration Manager and

NNR RM advisor as they have a long standing knowledge of the site. Staff time is based on our previous experience of creating new Management Plans in accordance with our standard template.

Person cost: 5029

Expenditure: Travel: 65- covers meeting at Stakeholder event for up to two staff and an office meeting. All trips over 50 miles return and use actual fuel costs or standard T & S rates.

External Assistance: 260 to cover cost of room hire.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.4: Carry out all work necessary for consents/permission/felling licenses, leases and ownership rights to be in place

Description (what, how, where and when):

This phase is expected to last up to 12 months and involves all three sites.

Roudsea Woods and Mosses SAC

South Lakeland District Council has confirmed that a Planning Permission is not needed as the work is being undertaken for nature conservation purposes. A Felling Licence is required to enable Action C1 (trees and scrub removal) to be undertaken. All survey work and stakeholder engagement required for the Felling Licence has been undertaken and the Felling Licence should be in place by August 2013. As the lease is in place it is not expected that any additional consents are needed on this site.

South Solway Mosses SAC- Units 4

Allerdale Borough Council does not require a Planning Application for Units 4 or 27 but does require a project overview. As part of this process Protective Species surveys may be required for badger, bats, reptiles and amphibians and this will be carried out as part of this project by the Project staff.

Bolton Fell Moss SCI

It is expected that the Planning Permission for the planned restoration works will be in place by 31 August 2014.

A Felling Licence will be required for the tree felling works (Action C1). Protective Species surveys may be required for badger, bats, reptiles and amphibians. The relevant surveys undertaken to support the Planning Application and EIA may be sufficient but we have allowed for some additional surveys as part of this project to fulfil any Felling License conditions.

William Sinclair Holdings Ltd (WSH) owns or leases the whole of the worked area of Bolton Fell Moss (262 ha) and previously extracted peat from the site under a Planning Permission that ran to 2042, processing it at an adjacent factory site. Part of the area has not been worked commercially and is known as the Reserve. This area still retains bog vegetation. The surrounding lagg area of the bog is not milled for peat and has a number of separate owners. It is fully anticipated that 90% of Bolton Fell Moss (covering all of the area in this LIFE+ project) will be transferred to Natural England during the project period through either freehold or long-term lease (until 2042). The scale of the risk regarding delay in particular elements of this acquisition is judged to be low. Restoration works can be scheduled and delivered to minimise overall risk to the completion of project outputs. Detailed explanation follows below:

Natural England and WSH entered into an Agreement on 22nd March 2010 which grants Natural England the right to enter and restore the land for nature conservation, and sets out that:

• Peat harvesting will cease completely on 30 November 2013.
• WSH's leases and freeholds on the Moss will transfer to Natural England upon settlement of the compensation payment. The compensation claim has been transferred to the Lands Tribunal for judgement on cost, with decision in 2014. However under the agreement, restoration may commence now before all these interests are transferred.

Natural England is currently in the process of acquiring additional freeholds not owned by WSH or entering into management agreements with owners that will allow us to carry out the necessary restoration management on the other parts of the site. The majority of the worked area is subject to two published Compulsory Purchase Orders (CPOs) in respect of the remaining freehold and unknown interests. Subject to the anticipated withdrawal of two outstanding objections, these Orders are expected to be confirmed within the next 6 months, with a further 3 months for the freehold titles to vest in Natural England for those areas not transferred voluntarily.

As referred above, work may proceed in advance of actual confirmation and transfer of the freeholds but vesting will remove any risk of objection by landlords to the work proceeding.

The remaining parts of worked area (Slacks and the SW quadrant) and the peripheral area are subject of a further CPO, where voluntary agreement is not possible within the required timetables for this Project. This CPO is scheduled to be published 17 January 2014. Confirmation is anticipated before June 2015 but even if

delayed until after the general election, vesting for all areas necessary for restoration should occur by the Autumn of 2015.

In a few cases where landowners do now wish to sell the freehold, alternative agreements are possible. Over the worked area these would take the form of long term leases until 2042. Over the peripheral areas, these would be Management Agreements also for a term until 2042 and would grant Natural England sufficient management rights to carry out the planned restoration works directly. However, most areas are currently proceeding as voluntary freehold acquisitions with Management Agreement only likely in 1 to 3 cases which are outside the project area.

Notwithstanding CPO procedures, most parcels in the peripheral area are likely to be acquired freehold within the next few months by voluntary purchase.

Reasons why this action is necessary:

Restoration works on the three project sites can only start when the relevant permits, licenses and permissions are in place. We have phased the work so that any delays on individual sites does not hold up the whole project. Additional Protected Species survey work may be required prior to some tree felling works taking place as part of the Felling Licensing process.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

All Protected Species- badger, bats, reptile and amphibian surveys will be undertaken as required by the Felling License process. Felling licenses for Bolton Fell Moss and South Solway Mosses Unit 4 will be in place by December 2014.

We expect 85% of the negotiations on Bolton Fell Moss to have taken place by Sept 2015, and all of the LIFE+ project area to be transferred to Natural England during the project period through either freehold or long-term lease (until 2042)

How was the cost of the action estimated?:

Personal days: 29 days. A number of staff will be involved- both Project Team and in-house seconded specialists to undertake surveys and write up the necessary report.

Person cost: 6934

Expenditure: Travel: 520- to cover meetings by project team and seconded staff with Local Authorities, landowners and to enable all site surveys to be carried out. All trips over 50 miles return and use actual fuel costs or standard T & S rates.

External Assistance: none

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

A. Preparatory actions, elaboration of management plans and/or of action plans

ACTION A.5: High resolution aerial photography of restoration areas

Description (what, how, where and when):

This Action is expected to take 3 months and involves taking aerial photography of the areas being restored on Bolton Fell Moss. Roudsea Woods and Mosses and South Solway Mosses had colour aerial photography taken in 2013 so are excluded from this action.

High resolution (up to 2cm) aerial photography (Colour and Infrared) will be taken of the units that will be restored. All work will be undertaken by specialised contractors using a small remote operated drone.

Reasons why this action is necessary:

The Aerial survey will allow Natural England to gather baseline information before the start of the project which can then be compared with data collected at the end of the project. This will aid assessment of efficacy of works, location of invasive for future targeting and Condition Assessment (Action D).

Colour photography will allow Natural England to check and verify the extent/actual work undertaken and efficacy. It will enable us to identify areas that are holding too much water and to monitor the expansion or otherwise of invasive species including Silver Birch (*Betula pubescens*), Scots Pine Pinus sylvestris and Rhododendron.

Infra red photography will allow Natural England to assess vegetation re-colonisation on formerly bare peat surfaces.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Bolton Fell Moss

Colour photography geo-referenced and saved as ARC Map compatible files. 2cm resolution x 2cm. All work will be completed by the end of Oct 2014.

How was the cost of the action estimated?:

Estimation is based on similar work that has been done on other NNR sites.

Personal days: 4 days- NNR SRM Bog Restoration Manager and NNR RM will be responsible for undertaking this item as they have experience of undertaking this work on other sites. Covers time to write specification and analyse the results.

Person cost:882

Expenditure: Travel: 65 to cover set up meeting by project staff with contractor and possible site visit. All trips over 50 miles return and use actual fuel costs or standard T & S rates.

External Assistance:9360- contractor to take photos - Colour photography – Flight, T&S Geo referencing and publishing on Google Maps 2 and Infrared – Flight, T&S Geo referencing. Based on quotes and similar work carried out elsewhere.

External Assistance: Equipment: none

Durable goods: none

Consumables: none

Other costs: none

C. Concrete conservation actions

ACTION C.1: Scrub and woodland clearance to reduce evapo-transpiration

Description (what, how, where and when):

This phase will last for at least 30 months spread over the three sites plus additional time to undertake herbicide spraying of any initial regrowth. This action will take place on Bolton Fell Moss, Roudsea Woods and Mosses (Units 4, 5 and 6) and South Solway Mosses (Wedholme Flow Unit 4).

This conservation action involves the removal of 120 ha of trees and scrub that cover part of the three lowland raised bogs. The removal will be by felling (machine and hand), chipping of arisings (thin branches, leaves and twigs) and removal from site of material over 15cm diameter. All work will take place outside of the bird breeding season (April –July).

Chippings from arisings will be used to backfill drains or spread over surfaces where after re-wetting works have been carried out (Action C3) and where they will form a surface on which *Sphagnum* Moss will grow.

Timber over 15 cm diameter will on:

• Bolton Fell Moss will be stacked at the edge of the moss and given away to adjacent landowners (it will cost more to extract the material via the principal entrance than will be raised by any resale).
• Roudsea Moss be removed and stacked at road heads and sold for firewood. The cost of extracting to the road head will be partly covered (about 10%) by timber sale. The felled timber cannot be left on site as it would compromise re-wetting works and cannot be chipped as it would leave a very dense layer (chipping of arisings leaves only a small amount).
• South Solway Mosses (Wedholme Flow) be removed and stacked at road heads and sold for firewood. The cost of extracting to the road head will be partly covered (about 10%) by timber sale. The felled timber cannot be left on site for the same reasons noted above.

Background

Bolton Fell Moss has around 75ha of tree/scrub cover (SCI area 374ha) comprising Silver Birch *Betula pubescens* and Scots Pine Pinus sylvestris. The majority of the tree cover has colonised the damaged and cut over bog on the southern and western perimeter, as well as internally on intact but damaged M18 surface. Roudsea Wood and Mosses has around 75% tree and scrub cover on Units 4, 5 & 6. The trees have colonised cut over peat surfaces and intact but damaged M18 surfaces.

South Solway Mosses – On Wedholme Flow approximately half of Unit 4 has been colonised by trees and scrub.

Natural England does not believe that the tree and scrub removal should be counted as a recurring operation in terms of this particular project for the following reasons-

The tree removal encompasses dense thickets of birch/pine and stands of pine, which were planted 50 years ago by previous landowners. Any scrub being removed is normally part of a woodland understory rather than stand-alone scrub habitat;

In all cases these wooded areas have not been managed in the last 30 -50 years and are a direct response of inappropriate management by previous landowners, drainage of the land and some direct planting. Removal has to take place to allow successful rewetting of the site. The trees and scrub have grown on the site as a result of past drainage/peat cutting and are not a natural habitat in this location. They form a dense canopy which intercepts rain preventing moisture getting to the surface which is crucial for Sphagnum growth. Their root systems create tunnels and cracks exacerbating the draining effect on the surface further reducing the water table below ground level which again impacts on Sphagnum growth;

Areas where some small scale removal work has taken place previously have been excluded from the project. Within the project area, it is definitely not the case that removal has already taken place, but as a result of unsuccessful management, has become a problem again;

Although it appears that the woodland/scrub clearance takes slightly more than half the duration of the project, Action C1 includes all the specification/tendering and set up time. Also the work has been staggered to take place on the three different sites at slightly different times and the current timetable does illustrate this clearly. The actual removal time on individual sites in all three cases is all less than half the duration of

the project and will only take 3 months on SWM, 15 months on RWN and 16 months on BFM;

As one of the objectives of the project is to demonstrate best practices and different techniques, the above staggered time periods will enable the management of a common problem to be clearly demonstrated on each of the three sites;

With re wetting projects on other sites the past forestry/tree and scrub removal (in Cumbria) has shown that there is very little follow on regeneration as long as re wetting occurs straight after the tree removal. Any scrub regeneration will be assessed annually and if it is deemed a problem it will be tackled through spot treatment funded directly by Natural England and has been already been excluded from this project.

Previous Actions

Natural England has undertaken similar tree and scrub removal and has also advised local conservation groups on a number of similar projects covering. An additional 35ha of tree and scrub will have been removed from Roudsea woods and Mosses by early 2014 (This is not included in this Project).

Use of Contractors

Because of the amount, size and density of the material coupled with a very soft peat substrate, this activity requires the use of specialist contractors and specialist machinery. The latter is expensive. Different options for delivering this work in –house (and hiring or purchasing equipment) vs contracting out the work have been considered but the use of contractors provides significantly better value for money.

Although the project will use best practice we will look for more innovative techniques if these become apparent when networking with other projects (Action F2). If there is any uncertainty around an innovative approach we will undertake a small trial area will be worked on using this approach and the rest of the area will be tackled using current good practice. If such a trial is undertaken the approach and results will be captured and disseminated accordingly. Any lessons learnt from this work will be incorporated into the delivery of the later phases of work.

Monitoring and additional follow up actions

Following removal of the trees and scrub (and Rhododendron at Roudsea Wood and Mosses -Action C2) the former wooded areas will be re-wetted through the construction of bunded cells (Action C3). If the re-wetting works correctly this is expected to prevent further regeneration of Silver Birch *Betula pubescens* and Scots Pine *Pinus sylvestris* seedlings.

Tree/scrub regeneration will be monitored on an annual basis both on site and by using the Aerial photography work (Action A5 and D2). It is not expected that the initial tree removal will be able to completely control all regrowth and new saplings. If after three years we find that there is significant regrowth then appropriate herbicide will be applied to kill and prevent future growth. Any future tree and scrub regeneration control will be classed a general maintenance and will form part of the Project AfterLIFE Plan (Action F4) and be included in the Management Plan reviews.

Duration

Bolton Fell Moss. Aug 2014- Jan 2016

Roudsea Wood and Mosses. Aug 2015 – Oct 2016

South Solway Mosses (Wedholme Flow) – Sept 2017-Nov 2017

Reasons why this action is necessary:

M18 and other bog habitats derive all of their water and nutrients from rainfall. Degradation of M18 habitat through cutting, milling and drainage lower the water table leading to desiccation and decomposition of the peat surface. This provides the appropriate conditions for colonisation by trees and scrub which in turn leads to the following impacts:

1. Interception of rainfall that would normally land on the bog surface by the tree canopy deprives the bog plants of water.
2. Evapo-transpiration sucks water out of the bog surface leading to a drying out of peat and its eventual decomposition. Dry peat surfaces cannot support M18 and associated NVC vegetation types.
3. Roots tunnel through the upper peat surfaces and increasing the drainage and drying out of the peat which again leads to decomposition and loss of bog vegetation.
4. Trees rock in strong winds and this movement causes the peat mass to crack and these cracks act as drains. Again this leads to the drying and decomposition of the peat and loss of bog vegetation
5. Trees and scrub create an intense shading effect that deprive the bog plants of light and restricts their growth.

By removing the trees and scrub, water, nutrients and light can get to the bog surface. If drainage is then impeded by the building of bunded cells (Actions C3) then the peat forming M18 plants will re-colonise.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

A total of 120 ha of tree and scrub will be removed from the three sites- 40.15ha from Bolton Fell Moss, 69.31ha from Roudsea Wood & Mosses and 10 ha from South Solway Mosses – Wedholme.

The whole of Bolton Fell Moss and Roudsea Wood and Mosses (Units 4, 5 & 6), South Solway Mosses - Wedholme Flow Unit 4 will at the end of this Project have a tree cover of around 10% or less. This is compatible with tree cover expected on an intact and active lowland raised bog. There will be a band of trees surrounding each bog located on the thinner peats/mineral soils, which over time will change from Silver Birch *Betula pubescens* and Scots Pine *Pinus sylvestris* to a wetter willow/alder dominated wet woodland/lagg.

A limited number of older Scots Pine *Pinus sylvestris* will be retained on the peat surface to provide landscape features and habitat for bats. Stands of Scots Pine *Pinus sylvestris* will be retained around the peripheries for landscape purposes and as habitat for bats and Red Squirrels (if the latter returns to this area).

How was the cost of the action estimated?:

Personal days:48 days. NNR SRM Bog Restoration Manager and NNR RM will be mainly responsible for undertaking this item in consultation with LIFE Project Manager as they have experience of undertaking similar restoration work on other sites. Covers specification writing, tendering and site supervision.

Person cost: 11,673

Expenditure: Travel: 650. Covers site visits to oversee work by the Project Team. All trips over 50 miles return and use actual fuel costs or standard T & S rates.

External Assistance: 561,923 to cover specialist contractor and equipment at three separate sites

Methodology of estimation.

1. Area calculated through analysis of 2003 and 2009 UK Aerial Photos using MapInfo GIS
2. Tree coupe area verified using GPS and timber volumes calculated by qualified Timber Estimator
3. Cost of cutting and extraction calculated using successful tender data from previous contracts let by Natural England and by Cumbria Wildlife Trust on similar habitat

Bolton Fell Moss 40.15ha

Roudsea Woods and Mosses. Unit 4,5,6 69.31ha

South Solway Mosses – Wedholme Flow. Unit 4 10 ha

All prices include inflation where necessary and VAT as Natural England is not able to claim back VAT due to the way the organisation is set up. Please see correspondence relating to IPENS LIFE project.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

C. Concrete conservation actions

ACTION C.2: Control/Eradication of Rhododendron

Description (what, how, where and when):

This conservation action will take place on Roudsea Woods and Mosses (Units 4, 5 & 6).

This conservation action involves the in situ destruction of 83.45ha of dense Rhododendron shrub by cutting, chipping, flailing or burning of above ground matter and the eradication of rootstock and seedlings by flailing and long term herbicide spraying of re-growth.

Background

At Roudsea Woods and Mosses Rhododendron has now colonised over 50% of Units 4, 5, 6. It is a pernicious plant able to survive and thrive on all areas of Roudsea from intact active bog to cut over and drained areas. In many places the plant is 13 metres high and so dense that it is impenetrable to the movement of large mammals and prevents rain or light getting to ground level.

Natural England does not believe that Rhododendron removal should be counted as a recurring operation in terms of this particular project for the following reasons-

On RWM Rhododendron has never been removed previously and was probably planted over 50 years ago as game cover by the site's original landowners. Within the LIFE+ project area it is definitely not the case that removal has already taken place, but as a result of unsuccessful management has become a problem again;

Natural England has mapped the cover and density of the Rhododendron on the site and the bulk of it comprises 13 metre high impenetrable stands interspersed with seedlings. This LIFE+ project provides vital funding to kick start this large scale one off operation to cut and remove all Rhododendron from the entire project area;

This work is needed so that all the groundwork and raising of water level operations can occur. Any areas that have previously involved some small scale cutting and removal of Rhododendron have already been excluded from this project.;

The large scale removal operation will take less than half the total duration of the project;

Experience of rhododendron control from other nearby bog sites (Foulshaw Moss managed by Cumbria Wildlife Trust) has shown that Rhododendron will continue to regenerate after initial mulching/cutting/stump treatment, and so some spraying of the initial re-growth/seedlings in line with best practise has been included in the project. Any follow on treatment will take place over RWM‟s Action C2 area but spraying intensity will reduce;

There is Rhododendron growth outside the site which Natural England is currently working with land owners to remove from woodlands and mire, through agri-environment and Woodland Grant Schemes. This work is being financed separately from this LIFE+ project.;

One of the objectives of the project is to demonstrate best practises and RWM is the only site that will demonstrate to other land managers the removal techniques and subsequent management work needed to get this invasive species under control.

Previous Actions

Natural England has undertaken Rhododendron removal on a range of sites and similar habitats elsewhere in the country. Recent trials have shown Rhododendron can be flail mown into fragments which will not regenerate. Flailing has also been used to attack the top of the rootstock and removing its mass to at least 10 cm below ground level. This action removes many of the new growth points which are found at or near ground surface. By removing the growth points you reduce the chance of regeneration. By flailing/burning the above ground biomass you prevent the chance of large Rhododendron branches rotting in situ.

During 2013 and early 2014 10ha of Rhododendron will have been removed from the site and has therefore not been included in this Project.

Use of Contractors

Because of the amount, size and density of the material coupled with a very soft peat substrate this activity requires the specialist skills and specialist machinery. Different options have been considered for delivering this including in-house and contracted out approaches. Given the costs of hiring or purchasing the necessary machinery and the time-limited nature of the works, the use of contractors offers significantly greater value for money than other alternatives. Although the project will use best practice we will look for more innovative techniques if these become apparent when networking with other projects (Action F2).

Monitoring and additional follow up actions

The project will undertake efficient monitoring by using the following three approaches:

1. Weekly visits to ensure that the agreed specification is being adhered to.
2. Aerial photography to check that all areas that should have been treated have been (Action A5 and D2).
3. Annual check of re-growth to target any follow up spot spraying.

All Rhododendron re-growth will be sprayed annually with an appropriate herbicide for the term of the project. Rhododendron regeneration control will also form part of the AfterLIFE Plan (Action F4) and will be included in the Management Plan reviews.

Duration

Roudsea Wood and Mosses. Aug 2015 – Oct 2016

Follow up spraying with Glyphosate will take place from May 2016 to the end of the project.

Reasons why this action is necessary:

Rhododendron severely impacts the normal growth of lowland raised bog vegetation in the same way as trees and scrub effect the habitat (see Action C1). In addition Rhododendron is extremely hard to eradicate. Cutting and flailing removes the biomass but the plant readily regenerates from root stock, large branches immersed in water and its windblown seeds easily disperse. Inundation under water rarely kills it off.

If Lowland Raised Bog restoration is going to be effective then the Rhododendron needs to be removed, root stocks killed and all seed source in the landscape area needs to be eradicated. If not the plant will re-colonise all areas including re-wetted and intact areas.

Natural England is working with adjacent landowners to eradicate Rhododendron in the surrounding woodland and remove potential seed source.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

83.45ha of Rhododendron in RWM Units 4, 5, 6 will be cut, chipped or burnt and rootstocks will, where accessible, be flailed to at least 10 cms below ground level to remove as many growth points as possible.

All re-growth will be sprayed annually with an appropriate herbicide for the term of the project. All follow up work will be included in the AfterLIFE Plan.

The long term aim is that all Rhododendron on the rest of the SAC and in the surrounding estate will be eradicated within 10 years of the Project starting.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:42 days. NNR SRM Bog Restoration Manager and NNR RM will be mainly responsible for undertaking this item in consultation with LIFE Project Manager as they have experience of undertaking similar restoration work on other sites.

Person cost:10,260

Expenditure: Travel: 650- to cover site visits by project staff to oversee work. All trips over 50 miles return and use actual fuel costs or standard T & S rates.

External Assistance: 335,205

Prices are based on work undertaken by contractors that has been undertaken recently in the area. Covers removal of 84 ha on Roudsea Woods and Mosses (325,455 €)
and 4 sprays to treat regrowth (9,750). Includes for 1 year of inflation and VAT- as Natural England are not able to claim back VAT.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

C. Concrete conservation actions

ACTION C.3: Groundworks and raising water levels on degraded/vegetated peat surfaces

Description (what, how, where and when):

On all three sites there are areas where peat has been extracted for domestic or small commercial use either by hand or with light machinery. This approach to cutting has left the surface vegetated with occasional pockets of S*phagnum* moss. Once an area has been drained and milled the water table is lowered to below ground level.

This conservation action involves all the groundwork necessary to the raise the water table to +-10cm of ground level on 193 ha of cut over/degraded but vegetated peat surfaces and damaged original M18 surfaces. The work will include the construction of bunded peat cells (using in situ peat), the re-profiling of cut peat faces and the blocking of drains and ditches using peat dams (using in-situ peat) and will take place on Bolton Fell Moss, Roudsea Woods and Mosses (Units 4, 5 & 6) and South Solway Mosses (Wedholme Flow Unit 4).

The action includes:

• Reducing the angle of the cut faces in an attempt to bring the water table to as near ground level as possible and prevent cracking and slumping of the peat mass.
• Construction of bunds and bunded cells to raise the water table on the cut over area to between +-10cms of the current ground level (throughout the year) and provide suitable conditions for *Sphagnum* regeneration. This will also minimise the effects of wind/wave action.
• Blocking of existing drains.

Reducing the angle of the cut peat faces

The peat mass behind the cut peat faces slump forward over time though gravity and parallel cracks of a similar depth to the height of the cut face form behind the peat face. Each of these cracks then acts as a drain lowering the water table and preventing the growth of *Sphagnum* moss.

The cut faces need to be re- profiled to around 30^0 to prevent further cracking and then water holding structures built at the top and bottom of the face to slow the movement of water off the upper surfaces and hold water against the foot of the cut face. The bunds will be 150mm above ground level before turf is added at the top of the re-profiled face and 300mm before turf is added at the base.

Existing turf will be removed in large sections and the existing cut faces will be re-profiled to around 30^o. Linear peat dams/bunds will be built at the top and bottom and capped with vegetation. Chopped heather gathered from the local area will be spread on the re-profiled surface to prevent it drying out and to encourage growth of target vegetation.

Construction of bunds and bunded cells

The purpose of the bunds is to slow the movement of water above and below from the bog and retain as much water as possible on the bog. Each bund acts as a water control mechanism holding the water in the cell by the creation of an almost impermeable bund of ‘clay like’ ombrotrophic peat. The water level is dictated by the height of the ‘clay like’ peat mound. The turf acts as a permeable membrane but protects the bund from drying out and eroding.

To ensure the bunds will be water tight:

• Turf and degraded peat will be removed from the line of the bund until good clay like peat is encountered.
• Good clay like peat will be extracted from an adjacent ‘borrow pit’ and used to fill the trench and to create a small mound above ground level (150mm).
• Turf will then replaced on the clay like peat mound to prevent it drying out.
• Additional bunds will be built on the other three sides leaving a water tight four sided cell. Rainfall will then fill the cell and provide suitable conditions for *Sphagnum* moss to re-colonise.
• The remaining degraded peat will be put into the borrow pits so that we do not get deep open water which *Sphagnum* moss will not readily colonise.

Blocking existing drains

Around the perimeters of all three bogs there are areas of trees that have grown on degraded peat surfaces. The overall aim is to retain a thin band of trees around each bog for landscape and species reasons, but we want to slowly change these woodlands from Scots Pine *Pinus sylvestris* /Silver Birch *Betula pubescens* to Willow, Alder and reed bed. To achieve this, all the drains will be blocked using peat dams. The pine Pinus sylvestris and birch *Betula pubescens* will slowly die and be replaced by species that prefer wetter conditions. This transformation will take around 10 years.

Chipped material from Actions C1 and C2 can be used to fill former drains, but as water will still be able to flow through the chipped material, dams will be built at regular intervals to impede the water flow and hold back the water in the chip.

Previous work/best Practice

Good practice has been developed over the last 15 years through the close co-operation of contractors and organisations responsible for the management of lowland raised peat bogs. Bunding of degraded/cut over but vegetated peat surfaces has been carried out successfully in a number of locations in both Cumbria and other parts of the UK, Europe and in Canada/USA.

Natural England has successfully started the restoration process elsewhere on around 400 hectares of the South Solway Mosses SAC including areas within Wedholme Flow (outside of this project), Glasson Moss and Bowness Common in the north to Roudsea Mosses and Duddon Mosses in South Cumbria. Natural England has also helped other organisations such as Cumbria Wildlife Trust and the RSPB to undertake similar work on Drumburgh Moss, Bowness Common, Falshaw Moss and Meathop Moss.

Although we and partners have been developing the above best practise a lack of resources has prevented the dissemination of this Good Practice. This project will meet this gap through its Objectives 2, 3 and 4.

Contractors

This task involves the construction of substantial clay bunds. This is a specialist civil engineering activity requiring skills and equipment that Natural England does have. Having reviewed the options for delivering this work, the use of contractors offers significantly better value for money than options for undertaking the works in-house or via partners. Neither Natural England nor any partners that we have worked with have the type of equipment or staff capable of undertaking this work in house. See also explanation in Action F1.

Monitoring and additional follow up actions

All work will be successfully monitored through the following two approaches:

1. Weekly visits to ensure that the agreed specification is being adhered to.
2. End of project Aerial photography to check that all areas that should have been treated have been (Action D2).

Duration

Bolton Fell Moss – whole site	Jan 2016 -March 2016
Roudsea Woods and Mosses – Units 4, 5, 6	Dec 2015-Jan 2017
Wedholme Flow Unit 4	Dec 2017-Feb 2018

Reasons why this action is necessary:

For peat forming *Sphagnum* moss to re-colonise any peat surface it requires a water table at or near ground level for most of the year.

In similar locations the simple approach of just blocking drains in the cut over areas has not been adequate to restore ground water to -+10cm. The reason for this is that the surrounding peat mass has become degraded to a depth of up to 1metre because of drainage, peat decomposition and the growth of trees. Blocking of drains forces water to flow through the surrounding sub surface degraded peat meaning the water table cannot be raised to ground level. To prevent the sub surface flow of water in the degraded peat mass and to force it to the surface and to provide structures which will hold rainwater, it is necessary to block the entire subsurface flow path through the degraded peat by building linear bunds which are then joined to create cells. These bunds are built out of Ombrotrophic 'clay like' non degraded peat and act as a water control mechanism. The water level is dictated by the height of the 'clay like' peat mound. The turf acts as permeable membrane but protects the bund from drying out and eroding.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Water levels will be raised over 192 ha of degraded but vegetated Lowland Raised Bog (BFM 62.15ha, Roudsea 118.75ha and Wedholme on SSM 12 ha). We expect water levels to be within +- 10 cm of the ground level within 3 months of the work being finished. Within three years of works being completed *Sphagnum* species will have started to fill the cells. Within 10 years a 30-50% cover of M18 or lagg species will be present.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:72 days. NNR SRM Bog Restoration Manager and NNR RM will be mainly responsible for undertaking this item in consultation with LIFE Project Manager as they have experience of undertaking similar restoration work on other sites. Includes specification writing, tendering and site supervision.

Person cost 17,685

Expenditure: Travel: 650 based on standard mileage rates of travel to site to oversee work. All journeys are over 50 miles return and will use actual fuel costs or standard T & S rates.

External Assistance: 646,596 to cover contractor costs at separate sites and are based on BFM- 62.15 ha, RWM 118.75 ha and 12 ha at SSM). All costs based on-

1. Area calculated through analysis of 2003 and 2009 UK Aerial Photos using MapInfo GIS

2. Ground based survey using GPS from both 2003 and 2012 surveys looking at extent and intensity.

3. Cost calculated using successful tender data from previous contracts let by Natural England on similar habitat including some inflation and VAT as Natural England are unable to reclaim VAT.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

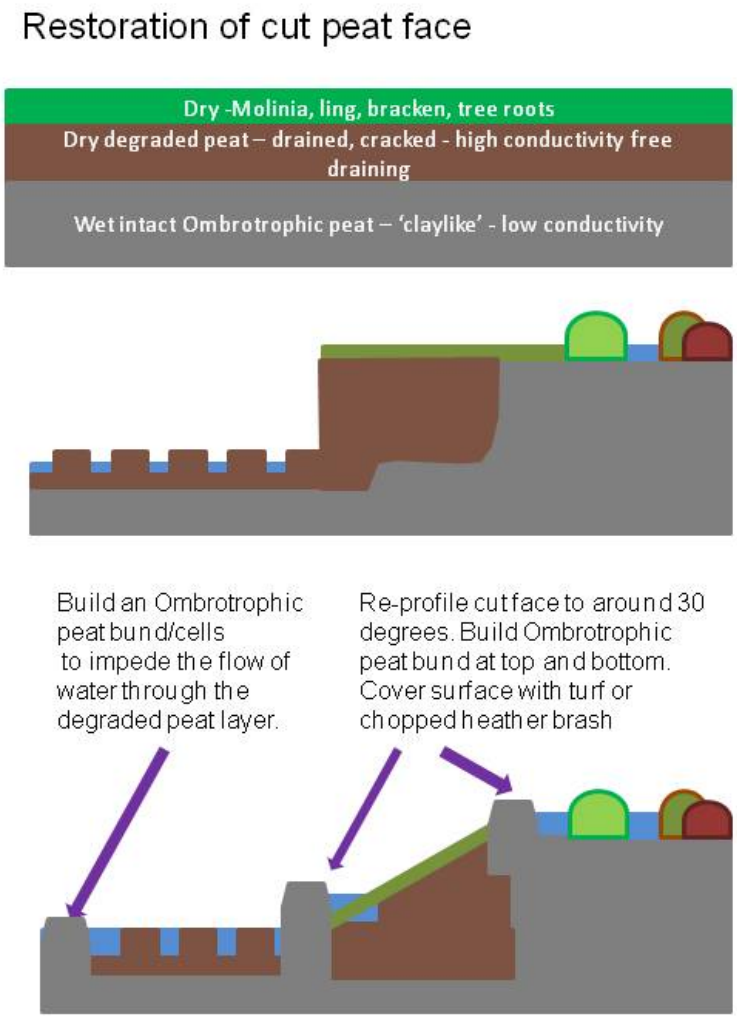
1.

Name of the picture: Example of bunding work- after 2 yrs

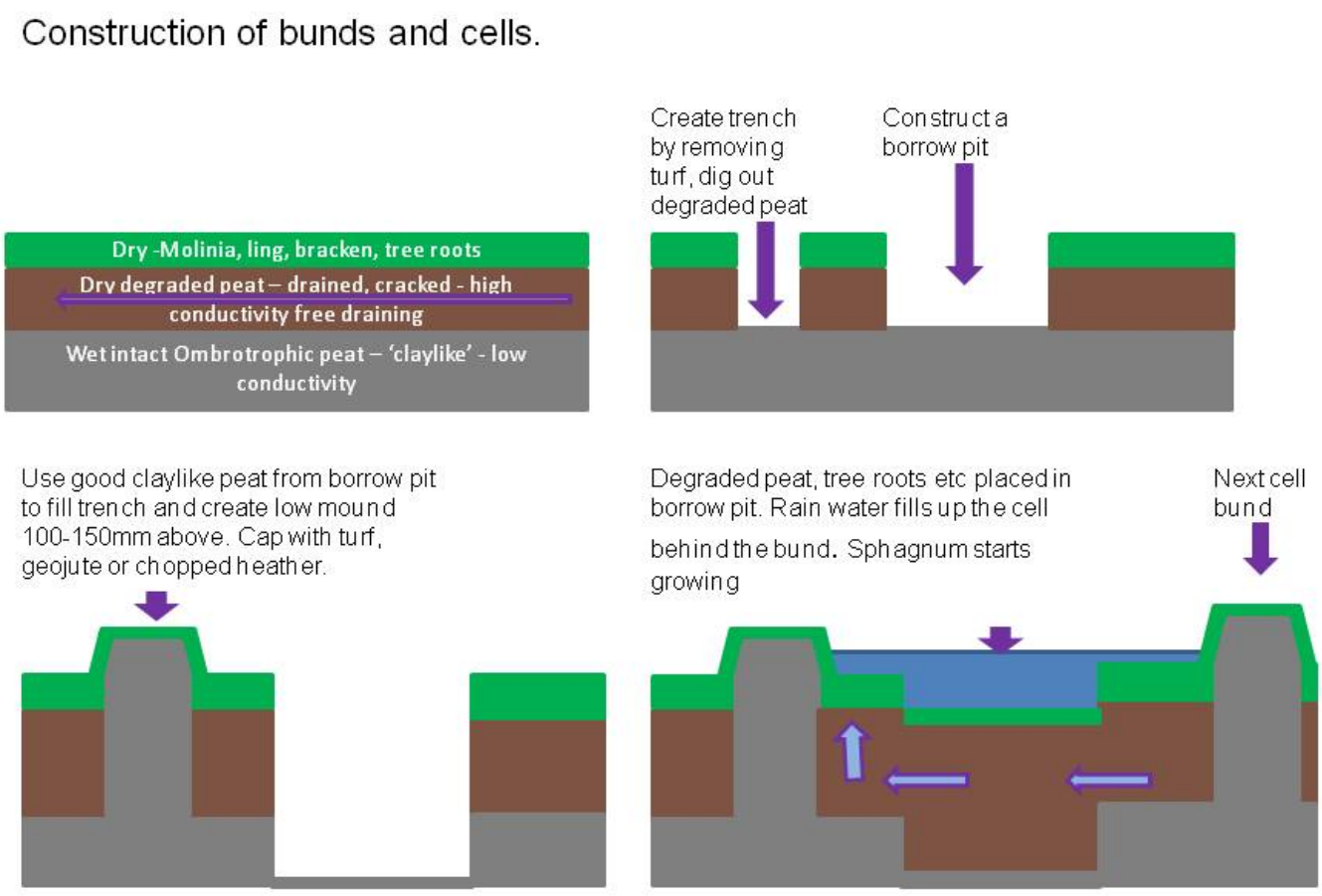
Name of the picture: Example of bunding work

Name of the picture: Example of bunding- after 3 yrs

Name of the picture: Construction Diagram 2



Name of the picture: Construction Diagram 1



C. Concrete conservation actions

ACTION C.4: Groundworks and raising water levels on degraded milled peat surfaces with no vegetation

Description (what, how, where and when):

This conservation action involves the raising of the water table to +-10cm of ground level on around 313.71ha of milled peat surfaces through the construction of low bunded peat cells (using in situ peat), blocking and back filling of drains and ditches using peat in-situ peat. All work will take place on Bolton Fell Moss and South Solway Mosses (Wedholme Flow Unit 27).

Back ground

Peat milling has left Bolton Fell Moss (former milled site) with between 0.5m and 5.5m of peat and Unit 27 on Wedholme Flow (South Solway Moss) with 3 and 8 m of peat. Both sites have little or no vegetation.

Work required

Vegetation does not easily colonise large areas of open peat surface especially when the water table fluctuates too much and summer temperature increases on the black peat creates conditions that are too harsh for plants to colonise. In the winter frost heave disturbs any plants that might have previously set root. Recent changes in weather patterns and a more episodic intense rainfall pattern also causes problems with large amounts of water flowing quickly over surfaces and into drains and exasperating erosion of the peat surface. To get vegetation to re-colonise in such conditions two actions are required:

- Raising of the water table to ground level (C4)
- Re-vegetation – (Action C5)

The construction of bunded cells is more problematical on surfaces that have no vegetation (i.e. Action C3). This is due to the cells filling rapidly in intense rain storms and overflowing quickly into adjacent cells. The knock on effect is that the bunds which are only made of peat with no vegetation to hold them together rapidly break down and release the water impounded behind them. Therefore, a modified approach to raising the water table in such circumstances is required.

Linear bunds will be constructed but this time using only a very small bund (created above ground) of about 50mm high. The idea will not be to impound water but to just impede the flow of water through and across the ground. Once this bunding has been created then additional vegetation will be added (Action C5).

In addition to this work main drains and culverts taking water off the site will be maintained until a stable vegetated surface is in place. These drains allow the rapid removal of excess rainfall. If this did not happen water levels would rapidly rise and drown or washing away any newly emerging vegetation.

Previous Work/Best practice

As detailed under Action C3 bunding of degraded/cut over but vegetated peat surfaces has been carried out successfully in a number of locations in both Cumbria and other parts of the UK, Europe and in Canada/USA. Bunding of milled peat surfaces which has no vegetation (Action C4) has been carried out on 40 ha of Wedholme Flow and has been carried out in conjunction with some re-vegetation trials. Lessons learnt from these trials will help us to refine the specifications for this type of work and ensure that problems of working with intense rainfall patterns are addressed effectively.

Again more needs to be done to disseminate this Good Practice and this project will address this gap through demonstration days, event, training programme and publications and reports as detailed in Actions E.

Contractors

The scale of the work coupled with the specialised civil engineering work and nature of working on peat surfaces requires specialist contractors. Neither Natural England nor any partners that we have worked with have the type of equipment or staff capable of undertaking this work in house. See also explanation in Action F1.

Monitoring and additional follow up actions

The Project will undertake monitoring of the works by using the following approaches:

1. Weekly visits to ensure that the agreed specification is being adhered to.
2. End of project Aerial photography will be used to check that all areas have been successful (Action D2).

Duration

Bolton Fell Moss – former milled site	Nov 2014-Nov 2015
Wedholme Flow – Unit 27	Sept 2016-April 2017

Reasons why this action is necessary:

In order for *Sphagnum* moss to re-colonise a peat surface it requires a water table at or near ground level. The construction of bunds and blocking and backfilling of drains stops the sub surface movement of water forcing the water to the surface and provides a holding capacity for rainfall. On bare peat surfaces the bunds will be kept very low and will help to slow the movement of water. *Sphagnum* moss will then re-colonise the bare milled surfaces but only through active addition of *Sphagnum* propagules (Action C5). It has been shown in other locations that a bare peat surface without this additional help can remain bare for 50 years or so, or becomes colonised by trees and non target vegetation rather than by the target vegetation.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Water levels will be raised to +-10cms over 313.71ha of un-vegetated milled peat surfaces. This fluctuation will be further stabilised by the adding and growing of *Sphagnum* dominated vegetation. Within three years *Sphagnum* species will have started to fill the cells. Within 10 years a 30-50% cover of M18 or lagg species will be present.

How was the cost of the action estimated?:

Personnel: 15,205 (61 days) is based on staff time to write specification, process tenders, award contracts and site visits.

Travel: 650 based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 648,595 to cover contract work on all BFM and SSM and is based on-

Methodology of estimation.

1. Area calculated through analysis of 2003 and 2009 UK Aerial Photos using MapInfo GIS
2. Cost bunding/re-profiling of degraded but vegetated peat surfaces taken from 2013 successful tender for

work on Roudsea wood and Mosses.
3. Cost of bunding on milled peat surfaces have been taken from recent successful tenders for trials on Wedholme Flow and includes the relevant inflation.

Bolton Fell Moss - 218 ha

South Solway Mosses - 95.51 ha

C. Concrete conservation actions

ACTION C.5: Application of Sphagnum spp and protective mulches to milled peat areas

Description (what, how, where and when):

This conservation action will take place on Bolton Fell Moss and South Solway Mosses (Wedholme Flow Unit 27). This conservation action involves the re-vegetation of 313.71ha of milled bare peat surfaces without vegetation. This action builds upon the work carried out in Action C4

Background

Peat milling has left Bolton Fell Moss (former milled site) with between 0.5m and 5.5m of peat and Unit 27 on Wedholme Flow (South Solway Moss) with 3 and 8 m of peat. Both sites have little or no vegetation.

Best practice has shown that if appropriate vegetation can be applied early after milling has ceased there is a high chance of successfully restoring the peat to a M18 vegetation type (subject to there being at least 0.5m of peat remaining). The reason for this is that when milling stops you are left with a near natural peat surface i.e. ombrotrophic/clay like peat which has not yet degraded enough to lower the ground water level to below the surface. This means that the water table is higher providing an appropriate surface on which M18 vegetation could colonise.

The scale of the work, specialised nature of working on peat surfaces and the need to propagate the vegetative material requires specialist contractors. The contract specification will set out all the parameters for undertaking the work and will expect contractors to amend/adapt is based on the work by Quinty/Rocheforte in Canada, which we have used on the Wedholme Flow trial and has been used by the 'Moors for the Future' working on Blanket Bog restoration.

The operation can involve several stages-

a) Ground preparation by scarifying the top 2 cm of the surface to loosen the thin decomposed peat.

b) Introduction of a nurse crop. Recent trails have shown that a nurse crop such as Cotton Grass can quickly establish and provide a suitable habitat into which Sphagnum propagules are introduced.

c) Introduction of viable Sphagnum propagules that have been harvested and grown on from a sustainable source.

d) Mulching with straw

e) Addition of a small amount of fertiliser

The work of Quinty and Rocheforte trialled on Wedholme Flow used *Sphagnum h*arvested from intact M18 donor sites however, this has been found to impact the pristine bog surface. Within this project Natural England will look at different approaches to the supply of *Sphagnum* which will not damage an intact bog. The material will be sourced from the UK. We will look to use propagules such as 'Beada Moss' developed by Micropropagation (ES) Ltd. They have developed a system where handfuls of sphagnum (from donor sites) are chopped up, grown on and then encapsulated in a water gel coat. These are then 'sown' onto the prepared bare surface. Trials on Wedholme Flow SSSI and the Pennine Moors have shown up to 50% successful germination rate of these beads after three years. Each successive year show that more actually survived but they have just been slow to grow.

Straw will be spread to form a blanket which insulates the living *Sphagnum* particles in winter from frost and snow and prevents the *Sphagnum* from desiccating in summer temperatures, as well as keeping it moist in winter. We will also trail using chopped heather as a blanket. Work in Canada has advocated the use of small amounts of fertiliser to aid the growth of Sphagnum in the first three years. The result has demonstrated a positive correlation.

Monitoring and additional follow up actions

The project will use monitor the work by:

1. Weekly visits to ensure that the agreed specification is being adhered to.
2. Use aerial photography to check that all areas that should have been successfully treated.

Duration

Bolton Fell Moss Nov 2014-Nov 2015

South Solway Mosses -Wedholme Flow Unit 27 Sept 2016-Jun 2017

Reasons why this action is necessary:

Evidence from other organisations undertaking this type of restoration has shown that without active intervention you either get no re-colonisation of bare peat surfaces or rapid colonisation by non target species.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Addition of sphagnum and mulches to 313.71ha of formerly bare milled peat surfaces will result in a cover of between 5 and 10% bog or lagg species and in particular M18 species by the end of this Project.

The long term expectation based on work in Canada and the UK is that an active peat forming *Sphagnum* dominated vegetation should cover these surfaces by 2035.

How was the cost of the action estimated?:

Personal days:98 days. NNR SRM Bog Restoration Manager and NNR RM will be mainly responsible for undertaking this item in consultation with LIFE Project Manager as they have experience of undertaking similar restoration work on other sites.

Person cost: 26,360

Expenditure: Travel: 650 to cover travel to site to oversee work. Based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 2,855,776 to cover propogation and contractor costs. Procurement will cover both C4 and C5 as the work has to be done in tandem but may be separate for each site. Area calculated through analysis of 2003 and 2009 UK Aerial Photos using MapInfo GIS.

Bolton Fell Moss 218.20ha

Wedholme Flow 95.51ha

All prices are based on similar work done in the area and includes some inflation and VAT that Natural England cannot claim back.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

Name of the picture: Sphagnum trial results- control with no additions

Name of the picture: Sphagnum trail results- straw, fertiliser and sphagnum additions

D. Monitoring of the impact of the project actions

ACTION D.1: Monitoring Plan and baseline survey

Description (what, how, where and when):

Detailed monitoring on all three sites is necessary to assess the response of the Annex I feature (7120 Habitat) to the restoration work and assess the critical environmental factors which affect this habitat. In order to undertake such assessments baseline data needs to be collated.

As part of this project we will develop and produce a Monitoring Plan which covers all three sites. This document will set out the monitoring programme, timetable, the rationale and scope of the work and the methods that will be employed. This plan will look at the following six key monitoring areas that will be crucial in helping the project assess the restoration response:

D1.1 Hydrological monitoring

This Action applies to all sites.

This will assess the success of actions taken to raise water levels. Work will be undertaken by Project staff and a contractor.

D1.2 Condition Assessment monitoring

This Action will apply to all sites.

This will monitor whether the condition of the habitat is moving in the right direction and ensure that restoration meets the project's Objective 1, restoration targets for individual project sites and compartments and also meet SSSI and N2K condition assessments. The baseline assessment will be undertaken in Year 1 by Project Staff.

D1.3 Vegetation response to applied management

This Action will apply to all sites.

More detailed assessment than D1.2 is required to determine the ecological result of the project actions. Attributes reflecting vegetation composition and structure will be assessed in permanently marked and relocatable plots before and after management has been applied. Where relevant we will set up some control plots. The design of the project will be statistically rigorous. The experimental design of plots will ensure that the effectiveness of re-wetting (Action C3 & C4) and re vegetation (Action C5) can be monitored and assessed. The baseline assessment will be undertaken in Year 1 by Project Staff.

D1.4 Efficacy of works monitoring

This Action will apply to all sites.

Hydrological, Condition Monitoring and Vegetation response monitoring only provides snapshots of how the sites are responding to restoration. This is because the data comes from spot locations, at a certain point in time and the data collected is therefore limited.

High Resolution Aerial photography (using drones and as detailed in Action A5) will be analysed to highlight the locations where restoration works has been effective or not. The colour photos will be used to analyse whether the rewetting works (Action C3 & Action C4) are holding water at or around ground level. The infrared will be used to assess vegetation growth response (Actions C3- C5).

D1.5 Invasive species monitoring

This Action will apply only to Roudsea Wood and Mosses.

Natural England will monitor the areas where invasives (currently Rhododendron) have been removed. This monitoring will highlight where any re-growth has occurred and enable further targeted treatment to control or eradication the species.

D1.6 Carbon Storage monitoring

This Action will apply to all three sites.

The result of successful restoration of water levels to +- 10 cm and re colonisation of appropriate vegetation is that the three project sites will over time actively start to sequester carbon. Carbon storage monitoring will assess and quantify the existing carbon store and at the end of Year 5 quantify what the Project has achieved.

Baseline Monitoring

In order to undertake the above monitoring and be able to measure the restoration progress and its success a range of baseline data and information will need to be collated. This baseline data includes-

• Hydrology- water levels/water flow recorded using automated water level loggers which are downloaded at regular intervals. The following two parameters are monitored-

- Ground Water levels within the peat mass.
- Drainage Water Flow in and around the Lowland Raised Bogs.

• National Vegetation Classification (NVC) – broad distribution of habitats and species.
• Location of Habitat-7120 – cut peat areas, drainage, cut peat faces.
• Trees/scrub cover– species, location, density
• Invasive species cover- species, location, density
• Weather
• Peat depth/density

Where possible we will use monitoring that has already been undertaken. Bolton Fell Moss has a baseline hydrological report that has been produced by an external contractor, a National Vegetation Classification (NVC) survey, and information on Habitat-7120**,** Tree and scrub data, peat depth data covering the Milled peat area and weather data. Roudsea Woods and Mosses and South Solway Mosses have information on Habitat-7120 and Tree and scrub cover and the latter site also has a NVC survey.

The following additional surveys/equipment will be required to complete the baseline data-

Bolton Fell Moss

• Aerial Photography (Colour) will be undertaken by an external contractor as detailed in Action A5.

• A peat depth survey of the perimeter areas where there is no current data.

Roudsea Woods and Mosses

• Using external contractors and Project staff we will set up a hydrological monitoring network of automated water level loggers which are required to assess the response of the bog and surrounding water courses to restoration.
• A peat depth survey of Units 4, 5 and 6.
• Purchase and erect a Met office standard Weather Station

• There is currently Met Office standard Weather Stations on Bolton Fell Moss and near to South Solway Mosses (Wedholme Flow), these are both part of Natural England's and the Met office's Long term Monitoring Programme which is designed to assess Climate Change in the UK. There is no Met Office MLS weather station

near Roudsea Woods and Mosses SAC. This new weather station will form part of Natural England's and the Met Offices Long Term Monitoring Network (Climate change) and therefore needs to be of a required standard. All data will be available data will be available to the public via Met Office website

South Solway Mosses (Wedholme Flow)

• A peat depth survey of the Units 4 and 27.

We will ensure that the monitoring programme for this project informs the second LIFE+ project submitted in 2013 by Natural England with a focus on lowland raised bog restoration (NAT/UK/0451), and vice versa, to maximise opportunities for efficiencies.

Reasons why this action is necessary:

A key measure of the success of this project will be the response of Habitat 7120 to the restoration work. Monitoring is needed to measure the degree of this success.

A Monitoring Plan will provide a framework for all the monitoring work and ensure it is effectively undertaken, collects the correct data and meets the projects deadlines.

Baseline data is needed in order to monitor and assess the changes in feature condition, vegetation composition and structure and hydrological variables following restoration management.

Roudsea Wood & Moss currently does not have a weather station and this equipment is needed to ensure consistency with the weather reporting on the other two sites.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Monitoring Plan will be developed and produced in Year 1.

Bolton Fell Moss's High resolution colour aerial photography is covered by Action A5.

Hydrological monitoring network will be set up at Roudsea Woods and Mosses SAC.

A new weather station will be erected at Roudsea Wood & Mosses site.

Peat depth and density data will be available for all three sites.

All the above actions will have been completed by July 2015.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: 111 days. This action will largely be the responsibility of the annual 4 month LIFE Monitoring Officer with help from NNR SRM Bog Restoration Manager and NNR RM outside of the main surveying period.

Person cost: 24,558

Expenditure: Travel: 650- covers site visits to oversee work and carry out surveying work. Based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 7,800. All external assistance is based on other similar recently quoted for work. Covers 3,900 for the installation of the weather station and 3900 for the survey of the water loggers following installation by Project staff.

Equipment: 29,250 includes a video, 2 cameras for surveying and media work, up to 24 water loggers to supplement the sites existing loggers and a weather station at RWM.

Durable goods: none

Consumables: 4,810 covers 2 weather writers and GPS devices for surveying and Protective clothing for the new staff (4) and water logger tubes.

Other costs: 650 covers the cost of computer software for hydrological monitoring.

D. Monitoring of the impact of the project actions

ACTION D.2: Ongoing and final post restoration monitoring

Description (what, how, where and when):

Following the protocol and timetable set out in the Monitoring Plan (Action D1) annual data will be collected and analysed to inform the annual restoration work programme at a project and site specific level. Further information on the ongoing monitoring is provided below-

D2.1 Hydrological monitoring

This will assess the success of actions taken to raise water levels to within +-10cm of ground level. Self-logging water level recorders will be used to monitor ground water levels in the peat mass and water flows in and around the project sites. Hydrological monitoring will take place at monthly intervals throughout Years 1-5. Data collection will be undertaken by Project staff while the data analysis and report (which will be incorporated into the final monitoring report) will be produced by an external contractor.

D2.2 Condition Assessment monitoring

The project will follow the methodology established under Action D1.2. Monitoring of a selection of plots will be undertaken early in the field season of Year 3 and will provide information on the effectiveness of restoration and management actions. A full round of post restoration monitoring will be undertaken in Year 5. All work will be undertaken by the Project Staff.

D2.3 Vegetation response to applied management

More detailed assessment than that undertaken in the monitoring mentioned above will be required to determine the ecological result of the project actions, particularly the demonstration elements. Using the permanently marked and relocatable plots set up in Action D1.3 follow up monitoring will take place in Year 4 & 5 by the Project Staff.

D2.4 Efficacy of works monitoring

The hydrological, Condition Monitoring and vegetation response monitoring developed for Action D1.4 will be undertaken annually. Colour and infrared photography of all the areas being restored will be undertaken in Year 5. This work will repeat Action A5 and also expand the work to include Roudsea Wood & Mosses and South Solway Mosses SAC. (Both Roudsea and Solway had colour aerial photography undertaken in 2013 so were not included in Action A5). High resolution (up to 2cm) aerial photography (Colour and Infrared) will be undertaken by specialised contractors using small remote operated drone. Data collection will be by an external contractor whilst the data analysis will be undertaken by Project Staff.

D2.5 Invasive Species monitoring

This only applies to Roudsea Wood and Mosses SAC. Monitoring will be required in areas where Rhododendron has been removed in order to assess any re-growth and to target any further follow up treatment. Condition monitoring and analysis of aerial photos (Colour and infrared) will be used to provide additional information. All work will be undertaken by Project staff.

D2.6 Carbon Storage monitoring

This Action will apply to all three sites.

All necessary data will be collected by the Project staff and will be analysed and a summary written and included in the end monitoring report.

Annually the project will review the data, draw conclusions and provide recommendations that will feed into the ongoing management work. In Year 5 a final report detailing the annual data and results will help to summarise the information and highlight trends and issues across the project sites. All this information will feed into Action F4 (AfterLIFE Plan).

We will ensure the above monitoring and review of data inform the second LIFE+ project submitted in 2013 by Natural England with a focus on lowland bog restoration (NAT/UK/0451), and vice versa, to maximise opportunities for efficiencies.

Reasons why this action is necessary:

Monitoring is needed to assess any changes in feature condition, vegetation composition and structure and hydrological variables following the application of restorative management. This information will be used to gauge attainment of the overall project objective, and the success of specific conservation actions. Annual collation will help guide any changes in techniques and land management practises. The aerial surveys will enable Natural England to assess the efficacy of works, location of invasives for future targeting and help with SAC and SSSI Condition Assessments. Colour photography will allow Natural England to check and verify the extent/actual work undertaken and efficacy, identify areas that are holding too much water and to monitor the expansion or otherwise of invasive species including Silver Birch *Betula pubescens*, Scots Pine Pinus sylvestris and Rhododendron.

Infra red photography will allow the project to assess vegetation re-colonisation on formerly bare peat surfaces.

The final report will provide a context for all the data and results and this information will add significant value to future restoration work both in Cumbria and elsewhere.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

The annual programme of hydrological monitoring will establish the success of all hydrological restoration actions.

The annual programme of condition assessment monitoring will provide information on the overall success of project access. Detailed vegetation monitoring results will provide information on the effectiveness of specific restoration and management actions.

The annual ground based programme of efficacy of works monitoring will provide coarse spot information on how well the re wetting methodologies have worked. This will be followed up by aerial colour photography and infrared photography at all three sites (Geo referenced and saved as ARC Map compatible files at 4.5cm resolution) to ascertain in finer detail the efficacy of the works. The flight will be in May to allow time for data analysis, ground verification and report writing.

Annual invasive species monitoring will provide detailed information on how well the Rhododendron control works have worked and the amount of spot spraying required to control re-growth.

All Carbon storage and capture monitoring will be captured and summarised.

A final report on all the monitoring aspects will be produced in Year 5 (June – July 2019) and it is expected that its information will be of significant transfer value to other projects.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: 377 days. This action will largely be the responsibility of the annual 4 month LIFE Monitoring

Officer with help from NNR SRM Bog Restoration Manager and NNR RM outside of the main surveying period.

Person cost:82,776

Expenditure: Travel: 5590- covers the travel costs of undertaking all the in-house monitoring work. Based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 64,968- as follows

Downloading of weather data from RWM- (16250 Euros)

D2.1 Hydrological monitoring -Final project Data analysis and report – External contractor. (23,400 Euros)

D2.4 Efficacy of works monitoring -(25,318 Euros) Colour and infrared photos will be flown in May 2019 to allow time for processing and analysis a report will be written. Data collection – External contractor aerial photo costs

Bolton Fell Moss- Colour photography – Flight, T&S Geo referencing and publishing on Google Maps and Infrared – Flight, T&S Geo referencing

Roudsea Wood and Mosses -Colour photography – Flight, T&S Geo referencing and publishing on Google Maps. Infrared – Flight, T&S Geo referencing

South Solway Mosses- Colour photography – Flight, T&S Geo referencing and publishing on Google Maps. Infrared – Flight, T&S Geo referencing

D2.6 Carbon Storage monitoring- Data analysis and report to be undertaken as a student project or using inhouse staff

Equipment: none

Durable goods: none

Consumables: 650- Replacement protective clothing for 4 Project staff.

Other costs: none

D. Monitoring of the impact of the project actions

ACTION D.3: Assess socio-economic impact of the project and contribution to ecosystem function restoration

Description (what, how, where and when):

Lowland raised bogs and their restoration can make a significant socio economic impact and a valuable contribution to ecosystem services. In addition to the monitoring covered under Action D1-2 and D4 a mini project will be designed that assesses the socio-economic impact of the Project at the three sites and its contribution to the restoration of ecosystem functions. Where relevant, lessons leant from the socio-economic impact assessment in the second LIFE+ project submitted in 2013 by Natural England (NAT/UK/0451), will be applied in the design of the assessment for this Cumbrian project.

Using in-house and external economists, the evaluation approach will be designed in detail and the baseline data collated in Year 1; data will also be collected over the duration of the project and a summary report produced in the last year of the project.

In order to assess the socio-economic impact of the project and its contribution to ecosystem function restoration, the project will focus on six specific areas which have been identified as those which can be estimated with a reasonable degree of accuracy:

Local employment – The number of local people employed during the project will be estimated. A survey of local tourism businesses and site managers will be conducted to provide both quantitative and qualitative evidence of any economic impacts likely to be sustained after project completion;

Recreation – A visitor survey will be conducted at the beginning of the project to accurately estimate visitor numbers at all of the sites, their origins (local/tourist) and expenditure. This will be repeated at the end of the project to understand the change in visitor numbers and expenditure during the time period;

Other social impacts – The impact of the project on the local community, sense of place and social cohesion will be qualitatively assessed as part of Action D4 using community surveys;

Carbon storage – The amount of additional carbon stored in the peatlands will be estimated and projected over a suitable time period (50-100 years). This will be valued using the UK Government's recommended non-traded carbon price;

Methane production – The amount of additional methane produced due to rewetting will be estimated based on inputs from hydrological modelling. Estimates will be projected over a suitable time period (50-100 years), converted to carbon equivalents, and valued using the UK Government's recommended non-traded carbon price;

Non-use values of wetlands – people value the existence of bog wetlands, even if they never visit them. This value can be estimated using value transfer from existing studies. This requires estimates of land cover change provided by vegetation surveying. The value transfer will follow Defra's value transfer guidelines (Eftec 2010).

Other ecosystem service impacts may also be assessed if sufficient reliable data becomes available during the project lifetime.

Indicators to be applied: For Action D3 to be successful, a concise, readable report detailing the study's findings will be provided. The report will identify the impacts highlighted above, and the uncertainties/assumptions associated with any findings.

Reasons why this action is necessary:

This action enables a fuller evaluation of the impacts of the Project on socio-economic and ecosystem benefits. This is important context to and supplements the direct biodiversity benefits that are measured under other actions. The outputs from this action will help provide the evidence the wider benefits to society from restoring lowland raised bogs.

Beneficiary responsible for implementation:
NE

Responsibilities in case several beneficiaries are implicated:
n/a

Expected results (quantitative information when possible):
Design and consultation in Year 1, collation of data and results (Yr 1-5) with a short summary report produced in Year 5 ie. Jan 2019. The summary report will detail the findings and identify the relevant impacts, uncertainities and assumptions. It is expected that this project will be able to learn from the Humberhead Levels LIFE+ project as this will be completed two years earlier.

How was the cost of the action estimated?:
Summary of resources required:

Personal days: 15 days. This action will be lead by Natural England's Senior Specialist relevant to the socio economic nature of this project and with assistance from the LIFE+ Project Manager.

Person cost: 4,395

Expenditure: Travel: 845 to cover start up meeting, site vist and progress meeting for up to 3 staff. Based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates. Majority of travel will be by rail.

External Assistance: 52,000. Costs cover the use of a specialist consultant and are based on previous projects that Natural England has commissioned whilst allowing more in depth study and enables this project to be used as a case study for other future work.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

D. Monitoring of the impact of the project actions

ACTION D.4: Monitoring engagement including feedback from training/workshops/events

Description (what, how, where and when):

Taking the message about the importance of blanket bog and its restoration to the local community is a major part of this project. Heather moorland is a familiar part of the local landscape, but the lowland raised bog and particularly sites that have been extensively milled in the past are not easily recognised by the public as being of nature conservation value. Without the backing and support of local communities landscape restoration projects will not be completely successful. When undertaking restoration work there is often an initial unease about removing trees and raising water levels. Involving and obtaining feedback from local communities in the restoration process increases the loyalty and sense of community ownership. The Actions (E7-E10) relating to community engagement and scientific programme and dissemination need to be monitored to see if they have achieved the projects overarching Objectives 2, 3 & 4.

The aim will be to measure:

- Any changes in public attitudes towards the project over the duration of this LIFE+ project.
- Feedback from community and scientific engagement programmes and refine the event and programmes.

In order to measure any significant shift in the perception of the general public and organisations that do not have a nature conservation remit we will undertake a range of surveys at the start and towards the end of the project. Surveys will be undertaken using Survey Monkey or similar web based system and a range of targeted postal/paper visitor surveys. Natural England will provide an input into the design of the questionnaire and the project staff will help process the results. This information will be used to refine the relevant Actions.

We will ensure that a robust sample is taken to measure attitudes across the project as a whole and at each site. A similar and comparable questionnaire will be undertaken in Year 5 and a report on the analysis of the results will be produced in the final year, feed into Action F4 (AfterLIFE Plan) and will provide evidence for the evaluation of socio-economic impacts (Action D3).

There will be ongoing monitoring of events, scientific audience programmes and community engagement programmes, as feedback will be an integral part of all community and stakeholder events. Results from this will help to revise and refine the work associated with the relevant Actions detailed in E.

Reasons why this action is necessary:

Public support is essential for the success of this project and part of the project's Objective 4 is to improve public understanding and awareness of issues and importance of lowland raised bogs. This survey will measure any change in attitudes, and gauge the level of support for the restoration work at individual sites. This information will provide a useful tool to monitor the impact of our public engagement and communications work detailed in the Action E.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Attitude surveys will be carried out at each site in Year 1, and repeated in Year 5.

Feedback will be requested after each key event during Years 1-5.

A summary report highlighting the findings will be produced in Year 5- approximately June 2019 and incorporated into the End Report.

Overall aim is to encourage people to better understand the importance of lowland raised bogs and why they need to be managed and restored.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:53 days. Mainly the responsibility of the LIFE Communications Officer with some guidance from LIFE Project Manager and help from in-house NE seconded staff.

Person cost:12,503

Expenditure: Travel: 650 to cover site visits to carry out surveys and undertake interviews. Based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: none

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.1: Notice Boards

Description (what, how, where and when):

This action is obligatory for all LIFE+ projects and will involve the installation of permanent notice boards at key locations and creation of moveable signs/banners.

Permanent Notice Boards

A notice board that advertises the project and the EU LIFE+ funding will be erected on all the demonstration sites, adjacent locations and at Natural England's offices as follows-

- Bolton Fell Moss – Entrance, Hethersgill Village
- Roudsea woods and Mosses – Entrance and NNR base
- South Solway Mosses – Entrance and Kirkbride Village
- Natural England buildings- NE Headquarters in Sheffield and at the Cumbrian NNR base.

The principal assumption is that Natural England will be able to erect notice boards at Hethersgill Village (nearest community to Bolton Fell Moss) and at Kirkbride (nearest community to South Solway Mosses-Wedholme Flow site). Permission will be sought at the start of the project.

The aim will be to provide consistent messages and branding across a range of sites and highlight the projects aims and objectives and funding.

The Headquarter Notice Board will be a simple sign that can be attached to a wall or be free standing. The site based Notice Boards will use a standard template and will be designed to have two display areas. The principal area will have the Standard LIFE+ information and Project overview. The subsidiary area will have information that will change at intervals reflecting the progress of the work. The progress information will reflect what is happening locally as well as an update for the Project as a whole.

All the design will be undertaken by the Project team following LIFE+ Guidance. Printing and production of the notices as well as the construction of stand will be undertaken by External Assistance.

Event Banners

The project will also develop and produce two collapsible banners to advertise the project at external meetings and events and NE offices.

Reasons why this action is necessary:

This action will provide consistent messaging across sites, promote the project and its aims and objectives and help to keep people informed of progress and updates. Messages will be consistent with the Communications Plan developed as part of Action E5. This action is also obligatory for LIFE+ projects.

The different types of notices are designed to meet the different location needs and opportunities.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

There will be a total of 7 Notice Boards as set out below:

Office based Notice Board

Sheffield – 1 Notice Board at Natural England's Headquarters will be in place within 3 months of the project starting.

'On site' Notice Boards

1 Notice Board will be in place within 3 months of the project starting and will be located at the Cumbrian NNR base at Roudsea Woods and Mosses.

Other permanent signs are expected to be in place within 9 months of the project starting at-

Bolton Fell Moss – 2 Notice boards- located at the site entrance and Hethersgill Village

Roudsea Woods and Mosses – 1 Notice Board- located at the site entrance.

South Solway Mosses – 2 Notice Boards- located at the site entrance and Kirkbride Village.

There will be 4 seasonal updates per annum to the 6 'On site' Notice Boards i.e. total of 24 update posters//annum.

2 event banners will be designed and purchased within 6 months of the project starting.

How was the cost of the action estimated?:

Based on similar work and purchases.

Summary of resources required:

Personal days: 30 days: Mix of Project Team and in-house seconded and specialist staff to help undertake this work in the most cost effective manner.

Person cost: 6,851

Expenditure: Travel: 130 to cover costs of travelling to meetings and overseeing siting of notice boards. Based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 21,450. Covers the design of the notice board and construction of 7 signs and heavy duty stands.

Equipment: none

Durable goods: 2665 includes 2 moveable signs (2,340) /banner and production of 1 Office Notice Board at a cost of 325 E

Consumables:none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.2: Newsletters

Description (what, how, where and when):

Natural England has found that producing a local newsletter can be a successful communication tool especially when undertaking restoration works where there is a need to manage people's expectations of the restoration process, remove trees and raise water levels. Once Natural England has the LIFE+ funding in place we will produce a series of newsletters that will chart this projects progress. A newsletter will be produced for the Bolton Fell Moss, Roudsea Woods and Mosses and South Solway Mosses (Wedholme Flow) sites.

The principal assumption for a newsletter is that local residents are interested in what is happening on these sites both in terms of works but also in terms of natural history and events.

The project will create and distribute up to three newsletters a year for each site.

The newsletter will have a generic section relating to the overall objectives and work of this LIFE+ Project, information on the Natura 2000 series and EU funding and LIFE logo will be clearly advertised. The newsletter will also have a local section relevant to the individual site and its local population. The newsletters will be emailed to land owners, all residents via the Parish Councils, interested parties, local communities, Local Authority members and councillors as well as posted to those who do not have internet access. The newsletters will also be available to others through the project's website page.

In the first 6 months of the project a stakeholder engagement event will be undertaken at each site. This will help ascertain interest in the sites, proposed works and the appetite for a newsletter and also enable us to collate a database of addresses/emails to improve the newsletter's distribution. The final newsletter will request feedback on the project and newsletters and this information will feed into Action D4 (monitoring) and Action F4 (AfterLIFE Plan).

Although the majority will be disseminated via email approximately 300 newsletters will be printed annually and distributed and available at local outlets such as Post Office, shop, Library or site Notice Board and also other public events such as agricultural shows as well as being posted to individuals with no internet connection.

Duration

0-6 months- stakeholder events/database of addresses/emails

Year 1 second half- 2 newsletters per site.

Years 2-5. 3 Newsletters/annum per site. Final newsletter in June 2019 will include ask for feedback.

Natural England will ensure that there is consistency in approach taken for the production of newsletters between this project and that taken in the second LIFE+ project submitted by NE in 2013 (NAT/UK/0451)

Reasons why this action is necessary:

Taking the message about the importance of the habitat and its restoration to the local community is important as it helps garner local support, loyalty and sense of community ownership. Raising water levels and removing trees are often controversial subjects and need careful management and education. These newsletters will be a vital means of informing local people and interested bodies of what the project is doing

and achieving and also help promote the project. It will ensure a wide number of people are informed both of the existence of a project website and will help with monitoring feedback . The small number of printed newsletters will be used to promote the project and help those people who do not have access to the internet.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Stakeholder events/database of addresses/emails will be undertaken in the first 6 months.

2 newsletters per site will be produced in Year 1 (6 newsletters).

3 newsletters/annum/site will be produced in Years 2-5. The final newsletter will include feedback forms. (36 newsletters)

The above gives a total of 42 newsletters produced over the period of the project's life.

It is expected that the newsletters will result in local people and interested parties being kept well informed of any forthcoming events and the projects progress.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: 140 days. The majority of the work will be undertaken by LIFE Communication Officer with assistance from the Project Team and in-house seconded and specialist staff to help undertake this work in the most cost effective manner.

Person cost: 32,395

Expenditure: Travel: 6500 will help cover any distribution of newsletters in person and visits to site. All trips are more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 6500 covers 6370 for the design of a Newsletter Template by a contractor and then using staff time to create individual newsletters. Includes 130 Euros for room hire for stakeholder event.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.3: Create and maintain website presence

Description (what, how, where and when):

This action is a requirement for all LIFE+ Nature projects. The project will create and maintain a web presence via Natural England's website and this will be set up with 6 months of the project starting. The web pages will be regularly maintained and updated throughout the duration of the project. The site will provide a portal to detail the projects aims and objectives, provide access to project documents, including the interim technical reports to the European Commission, progress reports, announce events, provide updates and include any other relevant material. The overall programme and AfterLIFE Plan will also be accessible through this website. We will clearly include information on the Natura 2000 network and LIFE+ funding.

The target audience will include the wider public, interest groups, other land managers, local stakeholders and local communities.

It is expected that the web presence will provide a valuable, cost effective and efficient tool to communicate to a wider audience and help to reduce the projects carbon footprint by minimising printing and distribution costs.

The second LIFE+ project submitted in 2103 by Natural England (NAT/UK/0451) will share this website during the three years in which it overlaps with this cumbrian project, allowing efficent sharing of information for actions and outcomes.

Reasons why this action is necessary:

This action is a requirement for all LIFE+ Nature projects. The website will be a valuable and cost-effective medium for promoting awareness of the objectives of the project and help to reduce the projects carbon footprint by minimising printing and distribution costs. This action will help inform interested groups, individuals and general public about the project and the projects progress.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

A web presence will be created within 6 months of the project starting and its content will be regularly updated during the life of the project and beyond. The website will play a key role in disseminating information to both technical and non technical audiences.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:125 days. The majority of the work will be undertaken by LIFE Communication Officer with assistance from the Project Team and in-house seconded and specialist staff to help undertake this work in the most cost effective manner.

Person cost:30,260

Expenditure: Travel: none

External Assistance: none

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.4: Layman's Report

Description (what, how, where and when):

At the end of the project a Layman's report will be created in paper and electronic format describing the project and its achievements. The document will be produced in English and in a succinct, non-technical language. The paper version will be printed and bound professionally and the electronic version made available on the project website. Target audiences will include the general public, interest and specialist groups, local stakeholders, other conservation organisations and bodies, local community, land managers and the farming and landowner organisations.

Photographs are a highly effective tool for communicating messages to technical and non-technical audiences and help to explain the need for the project and its impact. Use of photographs will greatly increase the attractiveness of the publication and help increase its effectiveness. We will use project staff time supplemented with a professional photographer to obtain suitable photos during the life of the project and these images will be used in the final document.

A contractor will be used to design the layout of the report and we will print 200 copies. However, we do expect that the majority of people will access the online version of the document in line with reducing the projects carbon footprint.

Reasons why this action is necessary:

The report will be aimed at a relatively broad audience, and will inform decision-makers and other non-specialist target groups of the objectives and results of the project. An attractive short document is an essential tool to interest a wide audience base. The document will help to encourage the application of the lessons learned during the project. We also see it as an important document to help promote the role and value of the EU Natura network as well as the important work that the LIFE+ fund co-finances in support safeguarding the future of environmental features of European importance.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

An attractive 5-10 page glossy Layman's report will be produced both in hard copy (200 Nos) and an electronic version which can be downloaded from the project website. The document will incorporate high-quality colour photographs to help illustrate the progress of the project and the techniques used, showing before, during and after images. It is expected that the document will be completed by June 2019 at the latest.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:33 days. The majority of the work will be undertaken by LIFE Project Manager with assistance from the Project Team and in-house seconded and specialist staff to help undertake this work in the most cost effective manner.

Person cost: 8131

Expenditure: Travel: 130 for Project Team to attend meetings and based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 10,400. Based on similar work that Natural England has commissioned and covers the design and printing costs of a 5-10 page glossy document and photographer.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.5: Communication Plan and actions

Description (what, how, where and when):

Communication is a key element of the project and will cover all three sites. It will largely focus on the communication aspects of face to face meetings, improving opportunities to network, identifying the relevant stakeholders and how best to promote a good relationship with others. The messages around Degraded Lowland Raised Bog needs to be handled well to ensure that people understand the conservation value of these sites. The project will share best practice and disseminate results principally through four main mechanisms – a website (Action E3), media engagement, Newsletters (Action E2), publications (Actions E4-6) and series of events (Action E7-10 i.e. events programmes, midterm workshop and end of project conference).

All documents will be produced in English and will be made available through Natural England website and paper copies will be stored through our library facility and on individual site files. Relevant copies will be sent to European Commission as required. There will be consistency in branding, messages, technical reports, press releases and articles. All events, publications and website will be correctly labelled with LIFE+ and Natura 2000 logos and all funding from the European Commission will be acknowledged throughout.

Natural England will ensure there is consistency in the production of information and publications between this project and the second LIFE+ project submitted in 2103 by NE (NAT/UK/0451) as both projects focus on bog restoration.

Communication Plan

The project will produce a clear and robust Communication Plan that will cover the aims and objectives of the LIFE+ project and the role of communications at both an EU, national and local level. The Communication Plan will be produced within 6 months and will be reviewed and revised bi-annually by the Steering Group. The document will provide an overarching structure for the dissemination of information. It will clearly set out all the learning resources and materials, training events, reports and technical documents required to reach a range of different audiences such as land advisors, other site owners and policy makers.

The Communication Plan will include a timetable and protocol for dealing with the media.

Media

Media work will be an essential means of raising awareness of the project and of the problems faced by Lowland Raised Bogs. All press releases and media coverage associated with the event will be covered by our own in house staff. A pre-programmed calendar of media opportunities will be developed as part of the Communication Plan. Articles and press releases will focus on different aspects of the project according to their timings and geographical locations.

Preparation, drafting of articles and distributing these to the media and through social media channels will be done on a rolling basis through the project period. The project will investigate setting up a Blog and also utilise Natural England's twitter account. Press releases and feature articles will be aimed at popular radio and television programmes, national and local newspapers and will use Natural England's current national and local media distribution list.

Publications

A range of project publications and reports will be produced throughout the life of the project and will include-

• Project information note – produced within 6 months of the project starting and used at help launch the project and disseminate information. The note will describe the project, its objectives and method of working and be in an easily accessible format to appeal to a wide audience.

• Technical Reports – technical reports will be produced to disseminate the information to a more specialist audience including a best practise note/guide.

• Layman's report (Action E4) will be produced at end of the project. The Layman's report will be written in a

non technical style and will detail all outputs produced during the life of the project, describe the project objectives, actions and results and discuss the achievements and any issues that arose during the project.

• AfterLIFE Plan (Action F4) - This will be produced in the last three months of the project. This plan will set out how the work will continue after the LIFE+ project ends.

(Notice Boards, Website, Site Leaflets and Layman's Report are all covered in more detail in the relevant separate Actions).

Events

The project will run a programme of training events, workshops, community engagement events and conference as detailed in Actions E7-E10. The project will target a range of different audiences and will enable people to see and experience the restoration process first hand. We will look for feedback and comments from the events and will build these into the project delivery in order to encourage better buy-in.

Reasons why this action is necessary:

Communication and dissemination is a key element of this project and the Communication Plan will set out and drive all the communication actions. Media and better communications will help raise awareness of the project and the problems faced by Lowland Raised Bogs at a local, national and international level. It will also help to increase understanding of the Nature 2000 network and the role of the LIFE-Nature programme in conservation. The communications work will also help document project actions, outputs and lessons learnt and best practise for both the technical audience and the general public.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

A Communication Plan that communicates the messages of the project clearly and consistently for a range of audiences will be produced with the first 6 months and revised on a rolling 6 months basis. This plan will include a timetable for press releases and events.

At least 2 press releases each year (10+ over the period of the project).

All technical publications, reports and final End Report produced to time.

A well developed events programme that delivers Actions E7-10

This action will result in information about the project and its progress being made available to a wide audience through all media channels. It will make a major contribution to increasing awareness of and provide support for the project.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: 403 days. The majority of the work will be undertaken by LIFE Communication Officer with assistance from the Project Team and in-house seconded and specialist staff to help undertake this work in the most cost effective manner.

Person cost: 89,994

Expenditure: Travel: 3,600 (Travel 2,600 and subsistence 1000) based on up to 7 staff/per event. 2-3 events. Costs based on fuel*/mileage or train. Some overnight accommodation (Max rate of 98€). Allows for

overnight accomodation for managers and directors to undertake publicity work.

External Assistance: 4875 (includes 2,925 for refreshments/catering relating to media events) and 1950 to cover the hire of rooms in poor weather.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.6: Leaflet produced for Bolton Fell Moss

Description (what, how, where and when):

Background

Natural England produces printed and downloadable leaflets for its most popular and accessible National Nature Reserves. These leaflets describe the location, access including paths, habitats and species on the NNR and helps improve the visitor experience.

Roudsea Woods and Mosses and South Solway Mosses (Wedholme Flow) by summer 2014 will have updated versions of their NNR leaflet and are not therefore included in this action. However, Bolton Fell Moss is a new site for Natural England and although not currently designated as a NNR it will be managed and treated as a Nature Reserve by Natural England. The site is not currently accessible by the general public because it is still being actively milled for peat. Peat milling will cease in November 2013 and the first phase of active restoration will start soon afterwards. Within the restoration plan (and proposed Management Plan - Action A3) Natural England is planning to provide and maintain a series of managed pathways, a small car park and on site interpretation (the paths and car park are excluded from this projects costs).

Bolton Fell Moss is expected to be open to the general public from around July 2015 when the car park construction and installation of interpretation will have been completed. A visitor leaflet for Bolton Fell Moss is a proposed outcome for this Action. The leaflet will contain information on location, access including paths as well as habitats and species that may be found. Funding from LIFE+ will be acknowledged and the relevant logos will be clearly visible. The leaflet will be produced through consultation with stakeholders and all current and former landowners in the area surrounding Bolton Fell Moss – principally Hethersgill village. Having produced an initial design for the leaflet in house the final design and printing will be completed by external contractors.

The leaflet will be available from a dispenser at the car park and through local services such as the local Public House. A downloadable version will be available on the website.

Duration

Jan 2015	Stakeholder meeting of local residents to discuss content and access points.
Feb- March 2015	Draft design developed and consulted with local stakeholders
April – June 2015	Consultation on draft Final leaflet design, revision and final design
July 2015	Bolton Fell Moss Open to the Public. Leaflet made available both in hard copy and on line.

Reasons why this action is necessary:

Informal research with local users has demonstrated that the majority of visitors come because they have picked up a leaflet and that the leaflet and its maps and guidance make them feel comfortable when accessing a site. Although we have leaflets for the other two project sites, Bolton Fell Moss needs to have a leaflet produced to need the demand.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Draft leaflets for Bolton Fell Moss will be consulted on through a stakeholder event/consultation.

The visitor leaflet for Bolton Fell Moss will be produced and be onsite by July 2016. Funding from LIFE will be acknowledged and the relevant logos will be clearly visible. A downloadable version will be available from the website.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:24 days. This action will be shared over a number of staff including the Communication Officer.

Person cost: 5081

Expenditure: Travel: none

External Assistance: 3770 (includes 130 Euros for the hire of a room for a stakeholder event) and 3,640 for the design and printing of the leaflet. All costs are based on similar quotations.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.7: Community engagement programme

Description (what, how, where and when):

Natural England will deliver an active community engagement programmes at all three sites to support the delivery of the project and help gain support for the restoration work. Some local people feel a strong 'ownership' of these sites, particularly places like Bolton Fell Moss that are experiencing significant change with the ending of peat extraction. We plan to build a compelling future for these sites, and to involve local people in this, as they are the potential custodians of these sites and its habitats. The project needs to ensure that local landowners, farmers to future land owners, users and managers currently at primary school are aware of the practical work, advice, and education and advocacy aspects of this project.

More broadly, we must build local recognition and support, especially amongst local decision and policy makers, for the conservation of lowland raised bogs and the importance of this ecosystem and its functions. This project aims to raise the profile of these issues by combining the practical work on a landscape/regional scale with rigorous monitoring and cutting edge science.

Restoration work on these sorts of sites can provoke local concern and a key goal is to ensure people are fully aware of the plans and have had opportunity to input into how we achieve the restoration aims. Without the backing and support of local communities, landscape restoration projects are less likely to be successful. The project aims to address this by running its own programme of events and also presenting its proposals and updates to organisations and groups in the local areas, including at relevant local and national shows.

The three project sites provide a variety of habitats from pristine active lowland raised bog to degraded bog and therefore offer an excellent facility for teaching and explaining the requirements and value of this habitat to both children and adults. We expect in particular to work with research institutions from University of Cumbria, Exeter, Newcastle and Southampton to use and visit the sites as part of increasing student knowledge and understanding.

At South Solway Mosses (Wedholme Flow), the engagement programme will deliver a number of activities including an Education Week, Natural History events and events aimed at children in collaboration with the Solway Wetlands HLF Landscape Partnership Project. At Roudsea Woods and Mosses a Community Engagement programme will focus at the northern end of the site with the best access and parking facilities.

A completely new programme will be developed and delivered at Bolton Fell Moss. Initial stakeholder events held between Natural England and the local community have indicated that there is a strong desire for access, information and interpretation as well as events for the local community to help them better understand the site, its habitats, species and the need for restoration.

The current access, which will be the future main arrival point for the general public, is presently the main factory site. This will not be available for public use until July 2015. To enable the community engagement programme and other events detailed in Actions E7-10 to occur prior to July 2015 interim alternative access points will be identified and agreed with local landowners. The community engagement programme at Bolton Fell Moss will be designed in conjunction with local stakeholders and schools and cover the following strands:

Educational visits:

• Primary School Education Week – based around successful school education weeks that NE NNR staff currently run at the South Solway Mosses and near Penrith. The week will be open to all primary schools in the local area and from further afield (Brampton, Carlisle) and the children will take part in a number of bog and species themed activities for a day. Temporary toilets and shelter will be made available.
• Secondary School field visits- this will be aimed at local secondary schools and will be linked to geography, biology and other relevant topics.

Guided walks:

Regular walks will be arranged to demonstrate the extent of the works being undertaken and the results we expect. These walks will have themes such as:

• Introduction to Bolton Fell Moss for those new to the site.
• More detailed interpretation of the site's Natural History, Peat extraction or restoration history

Community events:

These will be based on and off the site for all age groups and will focus especially on the habitats and species found on Bolton Fell Moss. They involve fun and interactive activities that build local community awareness of and support for these bogs and the important services they provide.

In addition to the engagement programme at Bolton Fell Moss all three sites will also have a number of public meetings. These will be arranged locally throughout the project to provide opportunities for local communities to understand the objectives of the Project and to participate in and influence how best these are delivered. These will mainly take place in the first year. Minutes of meetings will be produced if there are any formal discussions or consultations and made available on the project's website.

Materials and expertise gained from community engagement in this project will be shared where relevant with the second LIFE+ project submitted in 2013 by Natural England (NAT/UK/0451) to maximise effectiveness.

Reasons why this action is necessary:

Informing and consulting people is essential to help galvanise support for the project, to maximise local engagement and to address local concerns about the changes proposed to these places. Evidence from work on other sites has shown that this action will secure increased understanding and support for the project among local communities. Having a more informed and supportive community will help to continue the work after the LIFE+ project has finished. This Action will therefore make a major contribution to the overall success of the project especially at Bolton Fell Moss.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

At all three project sites- there will be a total of 6 public meetings over the life of the project.

Roudsea Woods and Mosses SAC and South Solway Mosses SAC will deliver their community engagement programmes and will supplement and complement the work around Bolton Fell Moss.

Prior to Spring 2015 Bolton Fell Moss will have at least 1 event.

An annual programme at Bolton Fell Moss will start shortly after will deliver the following-

Minimum of 5 primary schools attending in Education week with at least 20-30 pupils per visit.

1 Secondary Schools visit of 20-30 pupils

4 Guided walks of at least 10 people

4 Community Events

Through Action D4 the project will see a positive overall increase and improvement in peoples understanding and appreciation of these important Natura sites.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: 310 days. The majority of the work will be undertaken by LIFE Communication Officer with assistance from the Project Team and in-house seconded and specialist staff to help undertake this work in the most cost effective manner.

Person cost: 67,930

Expenditure: Travel: 4,160

External Assistance: 13,033 (includes 1,820 for venue, 3640 for catering and 7,573 for mini bus and portaloo hire.

Natural England has extensive experience of undertaking community engagement events and have a good idea on costs and staff time associated with this work.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.8: Scientific audience programme

Description (what, how, where and when):

Natural England and other local organisations in Cumbria (Cumbria Wildlife Trust and RSPB) have for the last 10 years been undertaking restoration on Lowland Raised Bogs. During this time a variety of techniques have been successfully trialled and then used on a large scale. These include techniques associated with raising water tables and *Sphagnum* re-colonisation. This project provides an opportunity to collate and put good practice into action and add to this body of knowledge through further learning around the effectiveness of different techniques.

Some of the work undertaken over the last 10 years has been written up, demonstrated and aired at conferences and workshops but in an adhoc manner. This has largely been due to time constraints and having little resource available to actively disseminate in a consistent manner.

This action will involve all three sites and will-

• Review and analyse restoration work and associated monitoring, analysis and evaluation undertaken over the last 10 years in Cumbria and use this data as a baseline.
• Use the results and current good practice and knowledge to inform the project's restoration and disseminate the results through papers, articles, attendance at external workshops and conferences, on site workshops and demonstration events.

We will target the following types of audiences- Scientific, interest groups and other conservation organisations and land managers with similar sites.

We will also ensure that the scientific engagement programme includes consideration of the different demonstration opportunities afforded by the second LIFE+ project submiited in 2013 by NE (NAT/UK/0451) which also focusses on bog restoration.

Reasons why this action is necessary:

Disseminating information and lessons learnt to a technical/scientific audience is crucial to ensuring that similar habitats elsewhere are restored efficiently and effectively.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Two members of the Project staff will attend 1 External Conference and I External Workshop per annum.

2 Posters for Conferences/Workshop/annum will be produced to either support our attendance or to be sent to Conferences that we cannot attend.

3 presentations to given at External Conferences/Workshops over the life of the Project.

3 demonstration events/annum will be provided and aimed at the scientific community.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:166 days. The majority of the work will be undertaken by the LIFE Project Manager and Communication Officer with assistance from the rest of the Project Team and in-house seconded and

specialist staff.

Person cost:39765

Expenditure: Travel: 4550 based on Natural England's standard rates and fuel costs.

External Assistance: 16,322 covers 5,200 for hire of minibuses and Portaloos for events and 4,622 for refreshment and venue hire and 6,500 to cover speakers and guest expenses.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.9: Mid Project workshop

Description (what, how, where and when):

The Mid Project workshop will be designed to give participants the opportunity to view ongoing as well as previously completed restoration works. It will provide an opportunity for networking (Action F2) and enable feedback from the participants. We will consider this feedback and will amend our practises if there is a valid reason.

The Workshop will last 2.5 days and will be based around Penrith, Cumbria.

Day 1 - Attendees will arrive in the afternoon/evening at a central location to the project that is easily accessible by public transport. This will help minimise the projects carbon footprint. A welcome/introductions and briefing for Day 2 will be held.

Day 2 – Coach trip to Wedholme Flow and Bolton Fell Moss to view ongoing and completed works. Return to Penrith/Carlisle for an evening catch up, discussions and briefing for next day.

Day 3 – Coach trip to Roudsea Woods and Mosses SAC to view ongoing and completed works. An option to view works recently completed on Falshaw Moss and Meathop Moss managed by Cumbria Wildlife Trust will be available in the afternoon. Discussions will be held on site or at a final stop before attendees will be taken to Oxenholme station for onward travel, or those who arrived by car will be transported back to Penrith.

All food and refreshments for the event will be locally sourced in accordance with our catering protocols.

The workshop will examine the methods developed in implementing the project, consider the actions and open up the discussion on how any unresolved issues can be tackled. All information about the sites and techniques seen during the workshop will be published and be made available through the project website. The agenda for the workshop will be developed in Year 1 and is likely to include management of invasives (Rhododendron), re wetting and re-vegetation techniques. Proceedings from the event will capture the discussions and feedback.

The list of invitees will also be developed during the project but it is likely to include representatives from all statutory agencies, policy makers and other interested groups both here and in Europe. Liaison with IUCN, International Mires Conservation group (IMCG) and International Peat Society (IPS) will enable invitations to be widely advertised though the EEC and further abroad.

Reasons why this action is necessary:

The Mid Project workshop will be aimed at individuals who are managing similar sites and will provide an opportunity to stimulate a two way discussion on the techniques being used and seek any suggested improvements that could be made. The event will provide a networking opportunity (Action F2) and promote the methods being used to other land managers.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

The workshop will take place between winter 2016 and will be organised with approximately 100 attendees from UK and Europe.

Conference proceedings will be circulated by 31 March 2017 or within 3 months of the event.

It is expected that the key project findings will be useful for other raised bog projects elsewhere in Europe.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: 86 days. This work will be guided by the LIFE Project Manager and Communication Officer but will involve a number of other staff to design, organise and run the events.

Person cost: 19,342

Expenditure: Travel: 2340 based on standard rates, actual costs and fuel costs

External Assistance: 14,040 (includes 11,400 for venue hire (7800 over 3 days) & for catering (3640), 350 Euros for design and printing of invites and 2,250 for hire of minibuses and Portaloos) and are based on similar recent events that Natural England has organised.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

E. Public awareness and dissemination of results

ACTION E.10: End of Project Conference

Description (what, how, where and when):

An 'End of project' 1 day conference will be held in Penrith or Carlisle (Cumbria). This event will review the implementation of the project, assess its wider implications for use elsewhere, present the project findings and help promote the importance of Lowland Raised Bogs and their restoration. The event is likely to look at the following themes:

- Restoration techniques including tree removal, invasive control, rewetting and re-vegetation
- Degraded Lowland Raised bog hydrological and ecological response to restoration
- Carbon sequestration
- Incorporation of good practice into future environmental incentives.

We will invite 100 delegates from a range of organisations and we anticipate that there will be interest from all 4 UK countries and elsewhere in Europe. The event will use a mix of project staff and relevant experts and will provide a forum to enable discussion with a wider audience and promote better networking opportunities. It will be held in a location near to the project that is easily accessible by public transport in order to minimise the projects carbon footprint. This conference will build on the Mid Project workshop event (Action E9) but will not include any site visits. We will use different media techniques such as video, photographs and posters that will illustrate the work and the sites. Overnight accommodation will be available before and after the event.

All food and refreshments for the event will be locally sourced in accordance with our catering protocols.

The workshop will examine the methods developed in implementing the project, consider the actions and open up the discussion on how any unresolved issues can be tackled. The meeting will also look at findings from the Humberhead Levels LIFE+ project. The agenda for the conference will be started to be developed in Year 3 & 4. The list of invitees will also be developed during the project but it is likely to include representatives from all beneficiaries, statutory agencies, policy makers and other interested groups both here and in Europe.

All proceedings from the event will be published and be made available through the project website

Reasons why this action is necessary:

Effective communication of information, evidence and lessons learnt from projects is an essential element of the LIFE+ process. It is a vital tool in disseminating information about the project amongst conservation professional and others and in encouraging action to restore other similar sites in England, the UK and Europe. The conference will also provide a way of celebrating the success of the project and provide a media focus.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

The conference will be organised with approximately 100 attendees from UK and Europe.

Conference proceedings will include a best practise guide and will be circulated within 4 months of the event or by June 2019 at the latest.

It is expected that the key project findings and especially the best practise guide will be useful for other raised bog projects elsewhere in Europe and provide an opportunity for a large number of professional working in a similar field to discuss issues and solutions. The event and associated media will help catalyse work to conserve lowland raised bog throughout Europe, thereby making a valuable contribution to LIFE+ efforts to maintain the integrity of the Natura 2000 network.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:104 days. This work will be guided by the LIFE Project Manager and Communication Officer but will involve a number of other staff to design, organise and run the events.

Person cost:23,272

Expenditure: Travel: 1950 based on standard rates or actual fuel or mileage costs. Based on trips of more than 50 miles return and using actual fuel costs or standard T & S rates.

External Assistance: 18720 (includes 3,900 venue hire and 1820 for catering, 6,500 for payment to speakers for expenses, 6,500 printing cost of invites, delegate pack including DVD). Costs are based on recent similar events that Natural England has organised.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

F. Overall project operation and monitoring of the project progress

ACTION F.1: Overall project operation and monitoring

Description (what, how, where and when):

We will use established project management practices and capture best practise/lessons learned from previous LIFE and other large projects managed by NE. Recruitment for the new posts will follow NE standard policies. Establishing an accountable, experienced Project Steering Group (Action A1) will ensure the project is managed efficiently and project objectives achieved. Contracts over £2.5K will obtain one quote, over £5K three quotes and over £10K be through a competitive tender process. European tendering rules will be followed for all contracts exceeding the UK thresholds. These procedures will manage financial risk and demonstrate value for money.

Regular monitoring reports will inform the Project Team and Steering Group of delivery progress and risks, assist final audit processes and comply with the European Commission's monitoring requirements. We will produce an Inception report, Midterm reports and Final report. The Inception Report will provide an assessment of the projects objectives and work plan. The progress reports will not exceed 18 months and will update the Commission on project progress. The Midterm reports will include a statement of expenditure & income. The Final report will enable the project to be evaluated & produced no later than 3 months after the project ends.

This project exceeds the normal LIFE+ 35% External Assistance limit because of the nature and extent of the onsite work. Natural England has considered different options for delivering these actions, and concluded that external contractors provide a significantly greater cost-effectiveness than delivery through in-house or partner approaches because:

• The onsite groundwork and rewetting works on the peat bogs requires specialist civil engineering expertise and machinery (i.e. low ground pressure machinery) that NE does not have in-house. Purchasing machinery, training staff and recruiting specialist expertise for the one off operations would be very expensive and delay the project start.

• The groundwork, rewetting, removal of Rhododendron and large scale tree removal must be undertaken within a confined period each year due to issues with ground conditions and restrictions with breeding birds and other biodiversity interests on the site. In some periods work will be taking place simultaneously across several sites. Recruiting and retraining in-house staff for only a limited period each year would be inefficient.
• The propagation of Sphagnum must be undertaken by specialist contractors because of the need for established infrastructure associated with the propagation of the material and the specialist skills needed.

A Project team (Action A1) will consist of-

• Project Manager (PM) (1 FTE) will develop and monitor overall delivery of the project and manage the overall budget allocation. Responsible for the production of evaluation & monitoring reports and communicating project results and success in accordance with LIFE+ guidelines. Reporting to the Project Steering Group, network with the LIFE+ unit, and be responsible for specifications for additional external assistance (excluding onsite work).
• Project Communications Officer (1FTE) will establish/ run the scientific engagement programme, develop the Communications Plan and produce communication products such as notice boards, newsletters, media, leaflets and reports etc. The post will develop and implement evaluation methods with support from the project team.
• Project Support Officer (0.5 FTE) will provide general project administrative support and maintain, collate, monitor the project delivery, budgets and submit information as required by EC.
• Project Monitoring Officer will be employed for 4 months each year (0.33 FTE) and will establish monitoring protocols and undertake surveying and reporting.

In addition to the above staff, specific NE internal staff will be seconded to the project as identified below. Roles with the same grade/type have been amalgamated under general family types- Senior Specialists/Advisors, Specialists/Advisors, Team Leader and NNR staff.

Beneficiary's (Natural England) providing detailed site expertise/knowledge/local engagement

NNR Senior Reserve Manager (SRM)

Provides specialist knowledge on the Natura 2000 sites and has extensive expertise in lowland bog

restoration. For the duration of the project the existing SRM will be seconded part time (0.5FTE) as a LIFE+ Bog Restoration Manager, will undertake all site supervision, provide technical advice to the PM, be responsible for all technical specification work, and ensuring good Health & Safety practice by project staff and contractors. The post will also help deliver public engagement work, oversee monitoring, help with EU networking, demonstration events and workshops.

NNR Reserve Manager (RM)

For the duration of the project the existing RM will be seconded as a 0.25FTE to the project. The RM will act as a monitoring officer for the period not covered by the 0.33 FTE Monitoring Officer, support the LIFE+ Bog Restoration Manager in supervising contractors, deliver engagement work/collation of data, and deal with procurement less than £10K.

Prior to the project team being in place the majority of the Project Management responsibility will be shared by the SRM and RM.

Beneficiary's (Natural England) providing technical specialist support/expertise

Natural England Senior Specialists/ Senior Advisors (SA/SS) (Note 1)

SS and SA working in biodiversity (88 days), monitoring/surveillance fields (64 days) and evidence (12 days) will be seconded to the project. They will advise on management and monitoring methodology, ensure work meets established UK standards and adds value to the biodiversity and conservation understanding of lowland raised bogs, hydrology, monitoring and analysis work. SS will provide technical support on the Steering Group and contribute to stakeholder dialogue, community and scientific engagement work. Actions A1, A2, D1, D2, D4, E4, E8, E10, F1.

Social scientists and evidence staff will contribute to the Socio-economic study (11 days as separately shown on F1 table).

Natural England Specialists/Advisors (Note 2)

Specialists and Advisors in the biodiversity (31 days), monitoring (20 days) and evidence (4 days) fields will undertake similar activities but at a lower grade and cost, focussing mostly on community/scientific audience engagement, site monitoring and supporting dissemination events. Actions A1, D1, D2, D4, E4, E8, E10, F1, F2.

Land management advice (28 days) will comment on Management Plans, provide technical advice on work on SSSIs/SACs and other permissions, assist in monitoring/data analysis and dissemination events. Actions A2, A4, E8, E10, F1.

Beneficiary's (Natural England) providing core support/expertise to this LIFE+ project

Senior Advisors- Others (Note 1) – oversee and provide guidance on finance/funding and communication elements (29 days). Actions A1, E1, E2, E3, E4, E5, E10, F1.

Lead Advisors- Others (Note 2) - Similar but at a lower grade with finance and communication assistance (19 days). Actions E1, E2, E3, E5, E10.

Note 1- this provides information on how the amalgamated Senior Specialists/Advisors 193 internal days are likely to be allocated.

Note 2- this provides information on how the amalgamated Specialists/Advisors 102 internal days are likely to be allocated.

Senior Advisors- Procurement- will advise on large scale tendering and procurement over £10,000. Actions C1-C5.

Lead Advisors- Procurement – will assist in tendering and provide procurement/ contractual support to the project.

NNR Team Leader - Line manage the new project team staff (an additional resource demand). All other line management costs for internal NE staff working on this project will be covered by the projects overheads.

Staff time per action has been calculated using NE experience of similar activities. Efficiencies achieved by running 1 LIFE+ project rather than separate LIFE projects for 3 sites will be passed on to the LIFE+ unit. This is a large, complex project involving restoration on several sites and therefore needs and depends on additional input from a number of seconded Natural England to ensure activities are successfully delivered, and its demonstration potential fully realised. Natural England has agreed to reduce its overheads further to a minimum level and all staff mentioned are additional to general overhead costs. The time dedicated to this project by the project team and NE posts will be recorded in line with LIFE+ requirements. All seconded staff will have a letter of assignment added to their HR files/contracts and will record time using existing in-house systems.

Staff costs are based on annual gross salary plus National Insurance and pension contributions and divided by 220 days to give an estimated standard daily rate. All new staff costs are based on a new starter at the lower range of the pay scale while existing staff have been estimated based on mid to higher range because of the level of expertise needed. It is understood that all claims will be based on actual individual staff costs and will only cover the actual hours worked on the project.

A second LIFE+ project focussing on lowland bog restoration in the Humberhead Peatlands was submitted in 2013 by Natural England (NAT/UK/0451). Should both projects proceed we will ensure coorrdination during the overlapping three year period and strive for efficiencies within the constraints of geographical location and timing (the Cumbrian project continues for an additional two years). Opportunities for efficiencies and joint working will be sought in the following areas: Sharing some personnel between the 2 project steering groups; sharing expertise from procurement and tendering exercises, amalgamating smaller common work items into packages to reduce procurement costs; sharing expertise in delivery; sharing the use of specialist contractors for hydrological works.

Reasons why this action is necessary:

We are aware that this project is reasonable complex and therefore need a strong project management framework, additional staff and the support of our skilled internal staff to successfully deliver this project. The model proposed builds on our previous experience of managing such contracts and LIFE projects.

The number and size of the Project Team are based on Natural England's experience of similar sized projects. The use of our internal staff is necessary to provide the quality and detail and experience in a cost efficient manner.

Having clear and efficient project management processes in place is essential to the success of the project. Following set procurement processes will minimise risk and ensure fair and open competition relative to the amount of money being spent.

Regular reporting will ensure that progress is monitored continually and that the Project Team and Steering Group are informed of any problems or risks to delivery. Regular reporting will also assist the final audit processes and comply with the European Commission’s monitoring requirements.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Having clear and efficient project management processes and good governance in place is essential to the success of the project.

The Project Steering Group will be established within 1 month of confirmation of Project funding and all the Project Team recruited by Feb 2015. The Project Steering Group will be well informed about progress and any

risks that arise during the project.

The Project Manager will utilise in-house expertise and staff to ensure that all information is ground truthed in a cost effective manner.

All finance and procurement matters will be dealt with in an efficient manner and in accordance with our internal guidelines and protocols.

Technical reports and progress reports will be produced on schedule, fulfil their requirements and will be fit for purpose. The Inception report will be produced within 9 months of the project inception, Progress reports will be produced at no more than 18 month intervals, the Midterm report will be produced to schedule and the Final report will be produced at the end of the project or no later than 3 months of the project ending.

How was the cost of the action estimated?:

The majority of the Project Management will fall to the Project Manager and Communication Officer who are the full time members of the Project Team. Other staff will be seconded as necessary to ensure the project is run successfully.

In house roles with the same grade have been amalgamated as several different people may contribute over the project period and names of functions are often altered and functions and teams restructured to meet modern day needs.

Summary of resources required:

Person cost: 411,790

Expenditure: Travel: 14,300 covers the cost of fuel for the Project vehicle as well as additional travel by Project Staff and seconded staff undertaking work relating to this project. All trips will be more than 50 miles return and will be calculated based on using standard T & S rates or train journeys.

External Assistance: none

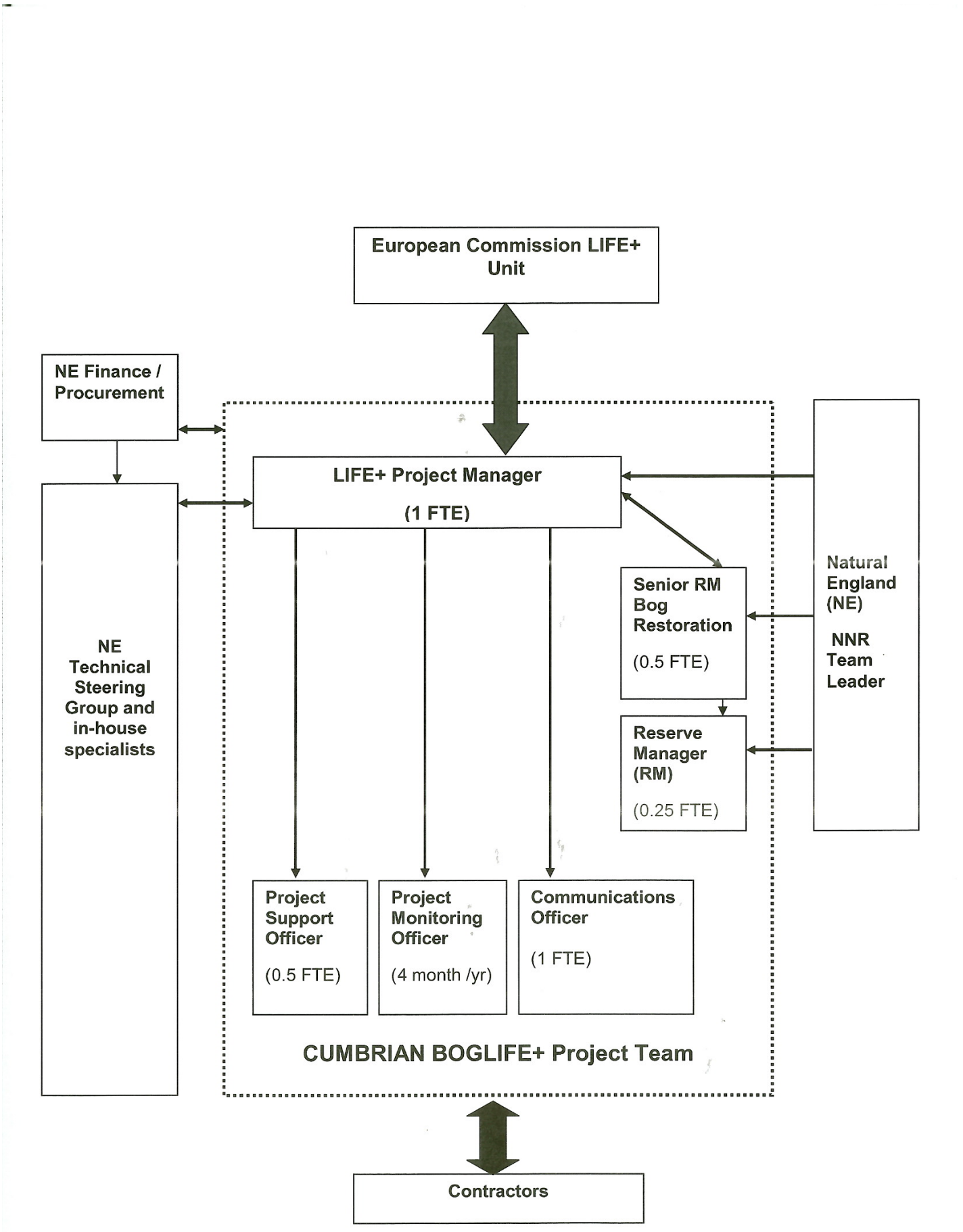
Equipment: Project Van (18,200) for use by the Project Team to undertake the work relating to these remote sites. After the project ends the vehicle will continue to be used for the management of N2K sites.

Durable goods: none

Consumables: none

Other costs: none

Name of the picture: Project staff structure



Name of the picture: Revised FI summary form

Beneficiary short name	Action Number	Type of contract	Category/Role in the project	Daily rate (rounded to nearest €)	Number of person-days	Direct personnel costs	% Full Time Equivalent
NE	A1, A2, A3, A4, C3, C5, D1, D2, D3, D4, E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, F1, F2	Temporary staff specifically hired for this project	LIFE Project Manager	260	1,047	272,220	95
NE	A2, A3, D4, E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, F1, F2, F3	Temporary staff specifically hired for this project	LIFE Communications Officer	213	1,085	231,105	99
NE	A2, A3, A4, D1, D2, E1, E3, E4, E5, E6, E7, E8, E9, E10, F1, F3	Temporary staff specifically hired for this project	LIFE+ Support Officer	173	500	86,500	46
NE	A1, A4, D1, D2, E7, E9, E10, F1, F2	Temporary staff specifically hired for this project	LIFE+ Monitoring Officer	213	361	76,893	33
NE	A1, A2, A3, A4, A5, C1, C2, C3, C4, C5, D1, D2, E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, F1, F2, F3	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	516	125,388	47
NE	A2, A3, A4, A5, C1, C2, C3, C4, C5, D1, D2, E5, E6, E7, E8, E9, E10, F1, F2	Permanent staff or civil servant	NNR RM Advisor	198	264	52,272	24
NE	A1, A4, E5, E9, E10, F1	Permanent staff or civil servant	NNR Team Leader	305	109	33,245	10
NE	C1, C2, C3, C4, C5	Permanent staff or civil servant	NE Senior Procurement Advisors- large contracts	305	77	23,485	7
NE	C1, C2, C3, C4, C5	Permanent staff or civil servant	NE Procurement Lead Advisors- large contracts	245	66	16,170	6
NE	D3	Permanent staff or civil servant	NE- Senior Specialist- Evidence	305	11	3,355	1
NE	A1, A2, D1, D2, D4, E1, E2, E3, E4, E8, E9, E10, F1	Permanent staff or civil servant	Other NE Senior Specialists/Advisors providing technical and core support	305	193	58,865	18
NE	A1, A2, A4, D1, D2, D4, E8, E9, E10, F1, F2	Permanent staff or civil servant	Other NE Specialists/advisors providing technical and core support	245	102	24,990	9
				TOTAL=	4,331	1,004,488	395

F. Overall project operation and monitoring of the project progress

ACTION F.2: Networking with other projects

Description (what, how, where and when):

The Project Manager will ensure that the project efficiently networks with other relevant projects in the UK and Europe, including the LIFE+ project (NAT/UK/0451) which was also submitted by Natural England in 2013 and which focusses on lowland bog restoration in the Humberhead Peatlands. There have been a large number of other LIFE+ projects that have dealt with peatland and bogs and it is important to build on the knowledge gained elsewhere. Although we have already had contact with a number of UK projects such as 'Moors for the future' Restoring active blanket bog in Berwyn and Migneint SACs in Wales and a number of Scottish bog restoration projects we will interrogate the LIFE+ project database further for other peat projects. Within the first phase of this project we will make contact with the relevant lead organisations of such projects and take the opportunity to carry out a desktop exercise of current best practise and any lessons learnt. We will use this information to fine tune our proposals.

Early investigation has highlighted a number of projects outside those in the UK that may be of interest. These include-

• RERABOG-DK - Restoration of raised bogs in Denmark with new methods (LIFE05 NAT/DK/000150)
• Lille Vildmose – Restoration of active raised bog (LIFE10 NAT/DK/000102)
• Fochteloerveen – restoration programme of the Fochteloerveen raised bog (LIFE99 NAT/NL/006280)
• Hannovershe Moogeest – rewetting valuable raised bogs in the northern Hannover Region (LIFE11 NAT/DE/000344)
• Conservation of Baltic raised bogs in Pomerania, Poland (LIFE04 NAT/PL/000208)

Natural England is also a member of a number of peat organisations and groups and we will use these groups to help increase and widen our networking both nationally and in Europe.

Best practice and information from any visits and associated networking will be incorporated accordingly and will be used to help shape the project. Natural England has a restriction on foreign travel because of trying to minimise our carbon footprint however, LIFE+ projects have been excluded from any European travel restrictions as it is felt that some travel is essential. To reduce the projects carbon footprint we will also aim to develop networking opportunities that utilise modern communication methods.

Key contacts will be developed in Year 1 and relationships will be developed accordingly to ensure that key information is incorporated into the project.

Reasons why this action is necessary:

It is important to build on knowledge from elsewhere and share knowledge and best practise emerging from this project. Visiting other sites and meeting new organisations will enable us to learn from other people's approaches, mistakes and successes and help increase this project's efficiencies. The EU visits in particular will foster relationships and communication between member states.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Key project staff will visit LIFE+ unit at the inception of this project.

Relationships will be established between project partners and other LIFE+ projects and interested organisations which will encourage greater networking during and after the LIFE+ project ends.

Project staff will attend relevant conferences in the UK and EU and also have a presence through the submission of posters at meetings and conferences that they cannot attend in person. The project will invite other organisations to visit the project throughout the project.

Information and good practice will be shared between partners and other EU countries.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: 89 days. Networking will be shared amongst the LIFE Project Manager, Communication Officer, NNR SMR Bog Restoration Manager, NNR RM and in-house seconded staff to both visit other sites and organise and host visitors to the area.

Person cost:21,586

Expenditure: Travel: 19,500 using standard rates or actual fuel costs. Includes all European travel and subsistence costs based on standard rates. Up to two staff to travel at any one time.

External Assistance: 8,125 covers 4,875 for hire of venues and 3,250 for catering when hosting visits.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

F. Overall project operation and monitoring of the project progress

ACTION F.3: Audit

Description (what, how, where and when):

In accordance with Article 32 of the Common Provisions an independent auditor will be contracted to verify the final statement of expenditure and income after the project has finished. The external contractor will be selected by standard tendering procedures. The auditor will also check our compliance with national legislation and accounting rules and certify that all costs incurred respect the LIFE+ Common Provisions.

An allowance for staff time has been included in this action to allow for the final consolidation of documents for the auditor and to answer any auditor queries. Natural England's staff will ensure that the audit can continue without hindrance after the official end of the project if required.

Reasons why this action is necessary:

The independent audit will ensure that all the financial statements provided to the Commission are correct, that national/legislative and accounting rules have been accurately followed and will certify that all costs incurred and claimed for are in line with LIFE+ Common Provisions.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

Independent financial audit will be successfully undertaken at the end of the project.

The independent audit will ensure that all the financial statements provided to the Commission are correct, that national/legislative and accounting rules have been accurately followed and will certify that all costs incurred and claimed for are in line with LIFE+ Common Provisions.

How was the cost of the action estimated?:

Summary of resources required:

Personal days: none

Person cost: none

Expenditure: Travel: none

External Assistance: 13,000 includes contractor to undertake the work and is based on similar audit costs.

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

F. Overall project operation and monitoring of the project progress

ACTION F.4: AfterLIFE Plan

Description (what, how, where and when):

The project will have an over arching AfterLIFE Plan. This plan will;

- detail how this project will be taken forward after the end of the project

-deal with the necessary transition to the more general management activities and

-ensure that the project objectives are assured in the long-term.

The AfterLIFE Plan will be prepared by the Project Manager, in consultation with members of the Steering Group and other experts within Natural England. It will be produced in English and produced in both paper and electronic formats. The document will include details of the actions that will be carried out, when, by whom and what sources of finance will be used. It will also include the revised standalone Management Plans for all three sites that will detail all work from 2019 until 2025. An AfterLIFE Communication Plan will also be included as a separate chapter of the document, as required for all LIFE+ projects. The Communication Plan will detail how we will continue to promote the programme and disseminate the results after the project ends. The Plan will be started in Year 4, with a consultation draft produced within the final 6 months of the project. Natural England would like to ensure that the final document is produced at the end of the project.

An AfterLIFE Steering group will be established towards the end of the project and will be in existence for at least 2 years after the project ends. The group's role will be to monitor and influence the delivery of the AfterLIFE Plan. Progress against the AfterLIFE Plan will be monitored twice a year to ensure that the projects success continues to be implemented after the end of the project.

The production of the final report and AfterLIFE Plan will enable better dissemination of the information to a wide audience. Closure of the project is needed to ensure all the plans are finalised, information is captured and all outstanding EU funding can be claimed. The Communication Plan element within the AfterLIFE Plan will ensure that the momentum generated by the project will continue to be developed to ensure that the project meets its wider objectives.

Setting up the AfterLIFE steering group will ensure that the objectives of this project are continued after the period of this project.

Reasons why this action is necessary:

It is essential to build on knowledge and momentum developed during the LIFE+ project. We will aim to learn from approaches taken during the project and look to extend this best practise to further sites around the UK and elsewhere. The production of the AfterLIFE Plan will collate all this knowledge and experience into one place and ensure that the future management of the sites is more secure. The Communication Plan element will ensure that the dissemination of information and maintenance of relationships established during the project is successfully continued.

Setting up of the AfterLIFE Steering Group will ensure that the objectives of this project are continued after the period of this project.

Beneficiary responsible for implementation:

NE

Responsibilities in case several beneficiaries are implicated:

n/a

Expected results (quantitative information when possible):

The AfterLIFE Plan will provide a summary across the whole programme and will capture all the work necessary to ensure that the project is sustainable. The three revised Management Plans appended to the AfterLIFE Plan will detail all management work needed between 2019 and 2025.

The AfterLIFE Plan's Communication Plan will detail how the project will continue to be promoted after the project ends.

An AfterLIFE steering group will be established in the last month of the project and will continue to monitor the projects outcomes biannually for an additional two years.

How was the cost of the action estimated?:

Summary of resources required:

Personal days:none

Person cost: none

Expenditure: Travel - none

External Assistance: none

Equipment: none

Durable goods: none

Consumables: none

Other costs: none

DELIVERABLE PRODUCTS OF THE PROJECT

Name of the Deliverable	Number of the associated action	Deadline
High resolution aerial photography	A 5	31/10/2014
Revision of Roudsea Woods & Mosses and South Solway Management Plans	A 2	31/12/2014
Initial Communication Plan completed	E 5	31/01/2015
Ist Newsletter produced	E 2	28/02/2015
New Management Plan for Bolton Fell Moss	A 3	31/03/2015
Bolton Fell Moss Leaflet	E 6	31/07/2015
Monitoring Plan produced	D 1	31/07/2015
Publish Mid Project Workshop proceedings	E 9	31/03/2017
DVD of restoration work completed	E 10	15/12/2018
Socio-economic & Ecosystem service benefits report	D 3	31/01/2019
High resolution aerial photography for all three sites completed	D 2	31/05/2019
Conference proceedings	E 10	30/06/2019
Final Technical Activity reports	E 5	30/06/2019
Layman's report	E 4	30/06/2019
Monitoring engagement report	D 4	30/06/2019
Possible revised BFM Leaflet	E 6	30/06/2019
Production of the AfterLIFE Plan	F 4	30/06/2019
Final Monitoring report completed	D 2	31/07/2019
Last Newsletter produced	E 2	01/08/2019
Final Audit report	F 3	31/10/2019

MILESTONES OF THE PROJECT

Name of the Milestone	Number of the associated action	Deadline
Project contract signed	A 1	01/08/2014
Planning Permission for BFM completed	A 4	31/08/2014
Project Steering Group established and first meeting	A 1	31/08/2014
Office Notice Board in place	E 1	31/10/2014
Felling licenses for BFM & SSM in place	A 4	31/12/2014
First Press Release- announcement of project and funding	E 5	31/12/2014
Hydrological equipment in place and weather station set up	D 1	31/12/2014
Website presence in place	E 3	30/01/2015
Stakeholder event and mailing database set up	E 2	31/01/2015
Project staff in place	A 1	01/02/2015
Attitude survey launched	D 4	28/02/2015
Engagement events started	E 7	28/02/2015
Scientific programme of events started	E 8	28/02/2015
Design of Socio Economic project in place	D 3	31/05/2015
On site Notice Boards in place	E 1	30/06/2015
All monitoring equipment in place and baseline surveys all completed	D 1	31/07/2015
Start of second year annual press release programme	E 5	31/08/2015
Negotiations completed on BFM	A 4	30/09/2015
Mid Project Workshop	E 9	31/01/2016
Start of third year annual press release programme	E 5	31/08/2016
84 ha Rhododendron removal completed on RWN	C 2	31/10/2016
314 ha of Sphagnum and protective mulches completed on BFM and SSM	C 5	30/06/2017
314 ha of groundwork and raising of water levels on degraded bare peat on BFM & SSM sites	C 4	30/06/2017

completed		
Start of four year annual press release programme	E 5	31/08/2017
120 ha of tree and scrub removal completed on all sites	C 1	30/11/2017
193 ha groundwork and raising water levels on degraded/vegetated peat	C 3	28/02/2018
Start of five year annual press release programme	E 5	31/08/2018
End of Project Conference	E 10	15/02/2019
Final attitude survey completed	D 4	30/06/2019
Follow up herbicide treatment of Rhododendron on RWM	C 2	30/06/2019
Herbicide treatment of regrowth	C 1	30/06/2019
Ongoing monitoring completed	D 2	30/06/2019

ACTIVITY REPORTS FORESEEN

Please indicate the deadlines for the following reports:

- Inception Report (to be delivered within 9 months after the project start);
- Progress Reports n°1, n°2 etc. (if any; to ensure that the delay between consecutive reports does not exceed 18 months);
- Mid-term Report with payment request (only for project longer than 24 months)
- Final Report with payment request (to be delivered within 3 months after the end of the project)

Type of report	Deadline
Inception report	31/03/2015
Progress report	28/02/2016
Midterm report	28/02/2017
Progress report	31/05/2018
Final report	31/10/2019

TIMETABLE

Action		2014				2015				2016				2017				2018				2019			
Action numbe	Name of the action	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
A. Preparatory actions, elaboration of management plans and/or of action plans:																									
A.1	Project establishment			■	■	■																			
A.2	Revision of SSM & RWM Management Plans			■	■																				
A.3	Creation of a new Bolton Fell Moss Management Plan				■	■																			
A.4	Carry out all work necessary for consents/permission/felling licenses, leases and ownership rights to be in place			■	■	■	■	■																	
A.5	High resolution aerial photography of restoration areas			■																					
B. Purchase/lease of land and/or compensation payments for use rights:																									
C. Concrete conservation actions:																									
C.1	Scrub and woodland clearance to reduce evapo-transpiration			■	■	■	■	■	■	■	■	■	■	■	■	■	■								
C.2	Control/Eradication of Rhododendron			■	■	■	■	■	■	■	■	■	■						■				■		
C.3	Groundworks and raising water levels on degraded/vegetated peat surfaces				■	■	■	■	■	■	■	■	■	■	■	■	■	■							
C.4	Groundworks and raising water levels on degraded milled peat surfaces with no vegetation				■	■	■	■	■	■	■	■	■	■	■	■									
C.5	Application of Sphagnum spp and protective mulches to milled peat areas				■	■	■	■	■	■	■	■	■	■	■										
D. Monitoring of the impact of the project actions:																									
D.1	Monitoring Plan and baseline survey			■	■	■	■																		
D.2	Ongoing and final post restoration monitoring						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
D.3	Assess socio-economic impact of the project and contribution to ecosystem function restoration						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
D.4	Monitoring engagement including feedback from training/workshops/events					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
E. Public awareness and dissemination of results:																									
E.1	Notice Boards			■	■	■																			
E.2	Newsletters					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
E.3	Create and maintain website presence				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	
E.4	Layman's Report																			■	■	■	■		
E.5						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		

	Communication Plan and actions																							
E.6	Leaflet produced for Bolton Fell Moss				■	■	■	■																
E.7	Community engagement programme					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
E.8	Scientific audience programme					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
E.9	Mid Project workshop							■	■	■	■	■	■	■										
E.10	End of Project Conference													■	■	■	■	■	■	■	■	■	■	
F. Overall project operation and monitoring of the project progress:																								
F.1	Overall project operation and monitoring			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
F.2	Networking with other projects					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
F.3	Audit																			■	■	■	■	■
F.4	AfterLIFE Plan																		■	■	■	■		

LIFE13 NAT/UK/000443

FINANCIAL APPLICATION FORMS

Part F – financial information

Budget breakdown cost categories		Total cost in €	Eligible Cost in €	% of total eligible costs
1. Personnel			1,004,488	15.25 %
2. Travel and subsistence			65,415	0.99 %
3. External assistance			5,198,108	78.94 %
4. Durable goods				
4.a	**Infrastructure**	0	0	0.00 %
4.b	**Equipment**	47,450	47,450	0.72 %
4.c	**Prototype**	**Not applicable**		
5. Land purchase / long-term lease /one-off compensation payments			0	0.00 %
6. Consumables			8,125	0.12 %
7. Other Costs			650	0.01 %
8. Overheads			261,000	3.96 %
TOTAL		6,585,236	6,585,236	100 %

Contribution breakdown	In €	% of TOTAL	% of total eligible costs
Requested EU contribution	3,292,618	50.00 %	50.00 %
Coordinating Beneficiary's contribution	3,292,618	50.00 %	
Associated Beneficiaries' contribution	0	0.00 %	
Co-financiers contribution	0	0.00 %	
TOTAL	6,585,236	100.00 %	

Cost category in Euro									
Project action	1. Personnel	2. Travel	3. External assistance	4.a Infra-structure	4.b Equipment	5. Land	6. Consumables	7. Other	TOTAL
A1 Project establishment	22,643	3,120	260	0	0	0	0	0	26,023
A2 Revision of SSM & RWM Management Plans	7,138	0	0	0	0	0	0	0	7,138
A3 Creation of a new Bolton Fell Moss Management Plan	5,029	65	260	0	0	0	0	0	5,354
A4 Carry out all work necessary for consents/permission/felling licenses, leases and ownership rights to be in place	6,934	520	0	0	0	0	0	0	7,454
A5 High resolution aerial photography of restoration areas	882	65	9,360	0	0	0	0	0	10,307
C1 Scrub and woodland clearance to reduce evapo-transpiration	11,673	650	561,923	0	0	0	0	0	574,246

C2 Control/Eradication of Rhododendron	10,260	650	335,205	0	0	0	0	0	346,115
C3 Groundworks and raising water levels on degraded/vegetated peat surfaces	17,685	650	531,596	0	0	0	0	0	549,931
C4 Groundworks and raising water levels on degraded milled peat surfaces with no vegetation	15,205	650	648,595	0	0	0	0	0	664,450
C5 Application of Sphagnum spp and protective mulches to milled peat areas	26,380	650	2,855,776	0	0	0	0	0	2,882,806
D1 Monitoring Plan and baseline survey	24,558	650	7,800	0	29,250	0	4,810	650	67,718
D2 Ongoing and final post restoration monitoring	82,776	5,590	64,968	0	0	0	650	0	153,984
D3 Assess socio-economic impact of the project and contribution to ecosystem function restoration	4,395	845	52,000	0	0	0	0	0	57,240
D4 Monitoring engagement including feedback from training/workshops/events	12,503	650	0	0	0	0	0	0	13,153

E1 Notice Boards	6,851	130	21,450	0	0	0	2,665	0	31,096
E2 Newsletters	32,395	0	6,630	0	0	0	0	0	39,025
E3 Create and maintain website presence	30,260	0	0	0	0	0	0	0	30,260
E4 Layman's Report	8,131	130	10,400	0	0	0	0	0	18,661
E5 Communication Plan and actions	89,994	3,600	4,875	0	0	0	0	0	98,469
E6 Leaflet produced for Bolton Fell Moss	5,081	0	3,770	0	0	0	0	0	8,851
E7 Community engagement programme	67,930	4,160	13,033	0	0	0	0	0	85,123
E8 Scientific audience programme	39,795	4,550	16,322	0	0	0	0	0	60,667

E9 Mid Project workshop	19,342	2,340	14,040	0	0	0	0	0	35,722
E10 End of Project Conference	23,272	1,950	18,720	0	0	0	0	0	43,942
F1 Overall project operation and monitoring	411,790	14,300	0	0	18,200	0	0	0	444,290
F2 Networking with other projects	21,586	19,500	8,125	0	0	0	0	0	49,211
F3 Audit	0	0	13,000	0	0	0	0	0	13,000
F4 AfterLIFE Plan	0	0	0	0	0	0	0	0	0
Overheads									261,000
TOTAL	1,004,488	65,415	5,198,108	0	47,450	0	8,125	650	6,585,236

Coordinating Beneficiary's contribution				
Country code	**Beneficiary short name**	**Total costs of the actions in € (including overheads)**	**Beneficiary's own contribution in €**	**Amount of EU contribution requested in €**
UK	NE	6,585,236	3,292,618	3,292,618

Associated Beneficiaries' contribution				
Country code	**Beneficiary short name**	**Total costs of the actions in € (including overheads)**	**Associated beneficiary's own contribution in €**	**Amount of EU contribution requested in €**
TOTAL Associated Beneficiaries		**0**	**0**	**0**

TOTAL All Beneficiaries	**6,585,236**	**3,292,618**	**3,292,618**

Co-financiers contribution	
Co-financier's name	**Amount of co-financing in €**
TOTAL	**0**

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	A 1	Permanent staff or civil servant	NE Specialists	245	15	3,675
NE	A 1	Permanent staff or civil servant	NE Senior Specialists	305	30	9,150
NE	A 1	Permanent staff or civil servant	NNR Team Leader	305	13	3,965
NE	A 1	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	20	4,860
NE	A 1	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	1	213
NE	A 1	Temporary staff specifically hired for this project	LIFE Project Manager	260	3	780
NE	A 2	Temporary staff specifically hired for this project	LIFE Communications Officer	213	1	213
NE	A 2	Temporary staff specifically hired for this project	LIFE Project Manager	260	2	520
NE	A 2	Temporary staff specifically hired for this project	LIFE Support Officer	173	3	519
NE	A 2	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	5	1,215
NE	A 2	Permanent staff or civil servant	NE Senior Specialists	305	10	3,050
NE	A 2	Permanent staff or civil servant	NNR RM Advisor	198	2	396
NE	A 2	Permanent staff or civil servant	NE Specialists	245	5	1,225
NE	A 3	Permanent staff or civil servant	NNR RM Advisor	198	2	396
NE	A 3	Temporary staff specifically hired for this project	LIFE Project Manager	260	3	780

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	A 3	Permanent staff or civil servant	NNR Team Leader	305	1	305
NE	A 3	Temporary staff specifically hired for this project	LIFE Communications Officer	213	2	426
NE	A 3	Temporary staff specifically hired for this project	LIFE Support Officer	173	4	692
NE	A 3	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	10	2,430
NE	A 4	Permanent staff or civil servant	NE Specialists	245	5	1,225
NE	A 4	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	5	1,215
NE	A 4	Temporary staff specifically hired for this project	LIFE Support Officer	173	1	173
NE	A 4	Permanent staff or civil servant	NNR RM Advisor	198	5	990
NE	A 4	Permanent staff or civil servant	NNR Team Leader	305	1	305
NE	A 4	Temporary staff specifically hired for this project	LIFE Project Manager	260	10	2,600
NE	A 4	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	2	426
NE	A 5	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	2	486
NE	A 5	Permanent staff or civil servant	NNR RM Advisor	198	2	396
NE	C 1	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	25	6,075
NE	C 1	Permanent staff or civil servant	NE Senior Procurement Advisors- large contracts	305	8	2,440
NE	C 1	Permanent staff or civil servant	NNR RM Advisor	198	11	2,178

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	C 1	Permanent staff or civil servant	NE Procurement Lead Advisors- large contracts	245	4	980
NE	C 2	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	20	4,860
NE	C 2	Permanent staff or civil servant	NE Senior Procurement Advisors- large contracts	305	8	2,440
NE	C 2	Permanent staff or civil servant	NNR RM Advisor	198	10	1,980
NE	C 2	Permanent staff or civil servant	NE Procurement Lead Advisors- large contracts	245	4	980
NE	C 3	Permanent staff or civil servant	NE Senior Procurement Advisors- large contracts	305	13	3,965
NE	C 3	Temporary staff specifically hired for this project	LIFE Project Manager	260	2	520
NE	C 3	Permanent staff or civil servant	NNR RM Advisor	198	15	2,970
NE	C 3	Permanent staff or civil servant	NE Procurement Lead Advisors- large contracts	245	12	2,940
NE	C 3	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	30	7,290
NE	C 4	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	25	6,075
NE	C 4	Permanent staff or civil servant	NNR RM Advisor	198	10	1,980
NE	C 4	Permanent staff or civil servant	NE Procurement Lead Advisors- large contracts	245	13	3,185
NE	C 4	Permanent staff or civil servant	NE Senior Procurement Advisors- large contracts	305	13	3,965
NE	C 5	Permanent staff or civil servant	NE Senior Procurement Advisors- large contracts	305	35	10,675
NE	C 5	Permanent staff or civil servant	NNR RM Advisor	198	10	1,980
NE	C 5	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	20	4,860

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	C 5	Temporary staff specifically hired for this project	LIFE Project Manager	260	3	780
NE	C 5	Permanent staff or civil servant	NE Procurement Lead Advisors- large contracts	245	33	8,085
NE	D 1	Temporary staff specifically hired for this project	LIFE Support Officer	173	6	1,038
NE	D 1	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	51	10,863
NE	D 1	Permanent staff or civil servant	NE Senior Specialists	305	6	1,830
NE	D 1	Temporary staff specifically hired for this project	LIFE Project Manager	260	6	1,560
NE	D 1	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	18	4,374
NE	D 1	Permanent staff or civil servant	NE Specialists	245	3	735
NE	D 1	Permanent staff or civil servant	NNR RM Advisor	198	21	4,158
NE	D 2	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	13	3,159
NE	D 2	Temporary staff specifically hired for this project	LIFE Support Officer	173	5	865
NE	D 2	Permanent staff or civil servant	NE Specialists	245	10	2,450
NE	D 2	Permanent staff or civil servant	NE Senior Specialists	305	20	6,100
NE	D 2	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	234	49,842
NE	D 2	Permanent staff or civil servant	NNR RM Advisor	198	70	13,860

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	D 2	Temporary staff specifically hired for this project	LIFE Project Manager	260	25	6,500
NE	D 3	Permanent staff or civil servant	Evidence Senior Specialist	305	11	3,355
NE	D 3	Temporary staff specifically hired for this project	LIFE Project Manager	260	4	1,040
NE	D 4	Permanent staff or civil servant	NE Specialists	245	2	490
NE	D 4	Permanent staff or civil servant	NE Senior Specialists	305	3	915
NE	D 4	Temporary staff specifically hired for this project	LIFE Communications Officer	213	46	9,798
NE	D 4	Temporary staff specifically hired for this project	LIFE Project Manager	260	5	1,300
NE	E 1	Temporary staff specifically hired for this project	LIFE Support Officer	173	2	346
NE	E 1	Temporary staff specifically hired for this project	LIFE Project Manager	260	5	1,300
NE	E 1	Temporary staff specifically hired for this project	LIFE Communications Officer	213	15	3,195
NE	E 1	Permanent staff or civil servant	NE Senior Specialists	305	1	305
NE	E 1	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	5	1,215
NE	E 1	Permanent staff or civil servant	NE Specialists	245	2	490
NE	E 2	Permanent staff or civil servant	NE Senior Specialists	305	20	6,100

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	E 2	Temporary staff specifically hired for this project	LIFE Communications Officer	213	100	21,300
NE	E 2	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	5	1,215
NE	E 2	Permanent staff or civil servant	NE Specialists	245	8	1,960
NE	E 2	Temporary staff specifically hired for this project	LIFE Project Manager	260	7	1,820
NE	E 3	Permanent staff or civil servant	NE Senior Specialists	305	1	305
NE	E 3	Temporary staff specifically hired for this project	LIFE Communications Officer	213	110	23,430
NE	E 3	Permanent staff or civil servant	NE Specialists	245	4	980
NE	E 3	Temporary staff specifically hired for this project	LIFE Support Officer	173	10	1,730
NE	E 3	Temporary staff specifically hired for this project	LIFE Project Manager	260	10	2,600
NE	E 3	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	5	1,215
NE	E 4	Temporary staff specifically hired for this project	LIFE Project Manager	260	20	5,200
NE	E 4	Temporary staff specifically hired for this project	LIFE Communications Officer	213	5	1,065
NE	E 4	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	5	1,215
NE	E 4	Permanent staff or civil servant	NE Senior Specialists	305	1	305

Direct Personnel costs

			Calculation =>	A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	E 4	Temporary staff specifically hired for this project	LIFE Support Officer	173	2	346
NE	E 5	Temporary staff specifically hired for this project	LIFE Project Manager	260	50	13,000
NE	E 5	Temporary staff specifically hired for this project	LIFE Communications Officer	213	270	57,510
NE	E 5	Permanent staff or civil servant	NE Senior Specialists	305	6	1,830
NE	E 5	Temporary staff specifically hired for this project	LIFE Support Officer	173	10	1,730
NE	E 5	Permanent staff or civil servant	NE Specialists	245	4	980
NE	E 5	Permanent staff or civil servant	NNR RM Advisor	198	15	2,970
NE	E 5	Permanent staff or civil servant	NNR Team Leader	305	5	1,525
NE	E 5	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	43	10,449
NE	E 6	Permanent staff or civil servant	NNR RM Advisor	198	5	990
NE	E 6	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	5	1,215
NE	E 6	Permanent staff or civil servant	LIFE Support Officer	173	5	865
NE	E 6	Temporary staff specifically hired for this project	LIFE Project Manager	260	2	520
NE	E 6	Temporary staff specifically hired for this project	LIFE Communications Officer	213	7	1,491
NE	E 7	Temporary staff specifically hired for this project	LIFE Support Officer	173	15	2,595

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	E 7	Temporary staff specifically hired for this project	LIFE Project Manager	260	50	13,000
NE	E 7	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	15	3,195
NE	E 7	Permanent staff or civil servant	NNR RM Advisor	198	30	5,940
NE	E 7	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	20	4,860
NE	E 7	Temporary staff specifically hired for this project	LIFE Communications Officer	213	180	38,340
NE	E 8	Permanent staff or civil servant	NNR RM Advisor	198	15	2,970
NE	E 8	Permanent staff or civil servant	NE Senior Specialists	305	18	5,490
NE	E 8	Temporary staff not specifically hired for this project	LIFE Communications Officer	213	50	10,650
NE	E 8	Permanent staff or civil servant	LIFE Support Officer	173	5	865
NE	E 8	Permanent staff or civil servant	NE Specialists	245	8	1,960
NE	E 8	Temporary staff specifically hired for this project	LIFE Project Manager	260	50	13,000
NE	E 8	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	20	4,860
NE	E 9	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	15	3,645
NE	E 9	Temporary staff not specifically hired for this project	LIFE Communications Officer	213	19	4,047

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	E 9	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	10	2,130
NE	E 9	Permanent staff or civil servant	NNR Team Leader	305	2	610
NE	E 9	Permanent staff or civil servant	NNR RM Advisor	198	10	1,980
NE	E 9	Temporary staff specifically hired for this project	LIFE Project Manager	260	20	5,200
NE	E 9	Temporary staff specifically hired for this project	LIFE Support Officer	173	10	1,730
NE	E 10	Permanent staff or civil servant	NE Senior Specialists	305	4	1,220
NE	E 10	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	15	3,645
NE	E 10	Temporary staff specifically hired for this project	LIFE Support Officer	173	20	3,460
NE	E 10	Permanent staff or civil servant	NNR Team Leader	305	2	610
NE	E 10	Temporary staff specifically hired for this project	LIFE Communications Officer	213	15	3,195
NE	E 10	Temporary staff specifically hired for this project	LIFE Project Manager	260	20	5,200
NE	E 10	Permanent staff or civil servant	NNR RM Advisor	198	10	1,980
NE	E 10	Permanent staff or civil servant	NE Specialists	245	4	980
NE	E 10	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	14	2,982

Direct Personnel costs

Calculation =>				A	B	A x B
Beneficiary short name	Action number	Type of contract	Category/Role in the project	Daily rate (rounded to the nearest €)	Number of person-days	Direct personnel costs (€)
NE	F 1	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	27	5,751
NE	F 1	Permanent staff or civil servant	NNR RM Advisor	198	11	2,178
NE	F 1	Permanent staff or civil servant	NE Senior Specialists	305	73	22,265
NE	F 1	Permanent staff or civil servant	NNR Team Leader	305	85	25,925
NE	F 1	Permanent staff or civil servant	NE Specialists	245	30	7,350
NE	F 1	Temporary staff specifically hired for this project	LIFE Project Manager	260	705	183,300
NE	F 1	Temporary staff specifically hired for this project	LIFE Communications Officer	213	260	55,380
NE	F 1	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	165	40,095
NE	F 1	Temporary staff specifically hired for this project	LIFE Support Officer	173	402	69,546
NE	F 2	Permanent staff or civil servant	NNR RM Advisor	198	10	1,980
NE	F 2	Temporary staff specifically hired for this project	LIFE Communications Officer	213	5	1,065
NE	F 2	Temporary staff specifically hired for this project	LIFE Monitoring Officer	213	7	1,491
NE	F 2	Permanent staff or civil servant	NE Specialists	245	2	490
NE	F 2	Permanent staff or civil servant	NNR SRM Bog Restoration Manager	243	20	4,860
NE	F 2	Temporary staff specifically hired for this project	LIFE Project Manager	260	45	11,700

TOTAL =>	4,331	1,004,488

Travel and subsistence costs

					A	B	A + B
				Calculation =>			
Beneficiary short name	Action number	Destination (From / To)	Outside EU (YES / NO)	Purpose of travel/number of trips and persons travelling, duration of trip (in days)	Travel costs (€)	Subsistence costs (€)	Total travel and subsistence costs (€)
NE	A 1	From NE offices to Crewe or Birmingham	No	Interview panel- 3 panels with 3 people. Travel is expected to be by train at a cost of 75-200€ per ticket. Overnight accomodation (Ma rate 98€/night).	1,300	220	1,520
NE	A 1	From NE offices to Crewe or Birmingham	No	2 Meetings in central location with 6 people. Train travel 40-200€ per ticket. Occasional overnight accommodation below 98€/night.	1,300	300	1,600
NE	A 3	NE Offices to BFM	No	2 staff/ 1 vehicle trip of 111 miles approx based on a mileage rate of 0.585€/mile.	65	0	65
NE	A 4	NE Offices to project sitees and licensing offices	No	2 staff to attend 8 day meetings. Trips based on train costs or mileage rate of 0.585 €/mile	520	0	520
NE	A 5	NE Offices to project sites	No	1 staff to attend meetings at BFM with contractors (Max of 111 miles). Based mileage rate of 0.585 €/mile.	65	0	65
NE	C 1	NE Offices to project sites	No	1 staff/weekly+ during operation period. Trips 10 miles-200 miles round trips and based on fuel* or mileage rate of 0.585€/mile.	650	0	650
NE	C 2	NE Offices to project sites	No	As Text in C1. (* Fuel costs based on rate of 2600€/yr or 14,400 miles/yr and portioned over relevant actions)	650	0	650
NE	C 3	NE Offices to project sites	No	Text as per Action C1 & C2	650	0	650
NE	C 4	NE Offices to project sites	No	1 staff to supervise site works- single day trips. See text in Action C1 & C2	650	0	650
NE	C 5	NE Offices to project sites	No	1 staff to supervise site works- single day trips. See text in Action C1 & C2	650	0	650
NE	D 1	NE Offices to project sites	No	1 staff. Vehicle trips 10 miles – 200 miles round trips. Costs based on either fuel* or mileage rate of 0.585€/mile.	650	0	650
NE	D 2	NE Offices to project sites	No	4 staff. 10 miles-200 miles round trips and based on either fuel* or mileage of 0.585€/mile. 3-4 overnight stays 98€/night.	5,200	390	5,590
NE	D 3	NE Offices to London or Birmingham	No	1- 2 staff. Total of 4 meetings mostly as day trips. Train travel 70-200€. 1-2 overnights/ accommodation (Max rate 98€/night)	650	195	845

Travel and subsistence costs

					Calculation =>	A	B	A + B
Beneficiary short name	Action number	Destination (From / To)	Outside EU (YES / NO)	Purpose of travel/number of trips and persons travelling, duration of trip (in days)		Travel costs (€)	Subsistence costs (€)	Total travel and subsistence costs (€)
NE	D 4	NE Offices to project sites and local communities	No	Day trips from 10 miles - 200 miles round trips. Costs based on either fuel* or mileage rate of 0.585€/mile.		650	0	650
NE	E 1	NE Offices to project sites and local communities	No	1 staff undertaking 2 day visits for notice board location, design & consultation. 222 miles at 0.585 €/mile.		130	0	130
NE	E 4	NE Offices to central locations- Birmingham or Crewe	No	Specification work-1 trip and 2 people using the train at a cost of 40-90 € per ticket.		130	0	130
NE	E 5	NE Offices to project sites	No	Up to 7 staff/per event. 2-3 events. Costs based on fuel*/mileage or train. Some overnight accommodation (Max rate of 98€).		2,600	1,000	3,600
NE	E 7	NE Offices to project sites	No	1-4 people per 14 events/6 consultations. Costs based on fuel/mileage or train. Some overnight accommodation (Max rate of 98€).		3,900	260	4,160
NE	E 8	NE Offices to project sites	No	2-6 people per 9 events- train & standard 0.585€ mileage rate. Accommodation for the visiting staff (Max rate of 98€/night).		3,250	1,300	4,550
NE	E 9	NE Offices to Carlisle area	No	10-12 staff at 2 day workshop. Costs based on train 40-250€ /or 0.585€ mileage rate. All to stay overnight (max 98€/night).		1,300	1,040	2,340
NE	E 10	NE Offices to Carlisle area	No	10-12 staff at 1 day event + practice run. Train costs of 40-250€ for each staff or 0.585€/mile mileage rate. 6 staff to stay overnight (Max rate of 98€/night).		1,300	650	1,950
NE	F 1	NE Offices to Project sites and main NW office	No	Up to 7 staff at meetings. Travel budget of 2535€/yr and accommodation 572 €/yr (Max rate of 98€/night). Train (40-250/trip) or mileage 0.585€		11,700	2,600	14,300
NE	F 2	NE Offices to networking meetings at various locations in the UK	No	1-2 people at 25 workshops/visits. Train/fuel* (0.18€/mile)/mileage 0.585. 6-15 overnights(Max		5,200	1,300	6,500
NE	F 2	NE Offices to major EU Cities	No	Conferences & 3 LIFE+ meetings with budget of 1300€/yr. Mainly rail with accommodation (Max rate of 120€/night).		6,500	6,500	13,000
					TOTAL =>	49,660	15,755	65,415

External assistance costs

Beneficiary short name	Action number	Procedure	Description	Costs (€)
NE	A 1	Direct purchase	Room hire for Steering Group meetings in central location outside of NE estate	260
NE	A 3	Direct purchase	Room hire for consultation meetings on Bolton Fell Moss Management Plan	260
NE	A 5	Request for quotes	Infared photography of BFM	3,120
NE	A 5	Request for quotes	Colour photography of BFM	6,240
NE	C 1	Tender process	40.15 ha of tree removal on BFM	187,902
NE	C 1	Tender process	10 ha of tree removal on SSM	49,650
NE	C 1	Tender process	69.31 ha of tree removal on RWM	324,371
NE	C 2	Tender process	Control and eradication of 84ha of Rhododendron	325,455
NE	C 2	Tender process	Control and Rhododendron missed or initial regrowth	9,750
NE	C 3	Tender process	118.75 ha of civil engineering work to raise water levels at RWM	326,613
NE	C 3	Tender process	62.15 ha of civil engineering work to raise water levels at BFM	171,469
NE	C 3	Tender process	12 ha of civil engineering work to raise water levels at SSM	33,514
NE	C 4	Tender process	218 ha of civil engineering work to raise water levels on milled peat with no vegetation-BFM	442,915
NE	C 4	Tender process	95.51 ha of civil engineering work to raise water levels on milled peat with no vegetation-SSM	205,680
NE	C 5	Tender process	95.5 ha of Sphagnum and protective mulch at SSM	905,611
NE	C 5	Tender process	218 ha of Sphagnum and protective mulch at BFM	1,950,165
NE	D 1	Approved supplier	Weather station installation	3,900
NE	D 1	Request for quotes	Survey of water loggers following initial installation by staff	3,900
NE	D 2	Tender process	Downloading of weather station data over the project period	16,250
NE	D 2	Tender process	Post operation hydrological monitoring and report	23,400
NE	D 2	Tender process	Aerial photography- colour and infrared for all three sites	25,318
NE	D 3	Tender process	Socio-economic impact and ecosystem function investigation and report	52,000
NE	E 1	Tender process	Design and production of 6 large on site notice boards	21,450
NE	E 2	Tender process	Design of template and incidental printing of newsletters	6,500
NE	E 2	Direct purchase	Room hire for stakeholder event around newsletters and distribution lists	130

External assistance costs

Beneficiary short name	Action number	Procedure	Description	Costs (€)
NE	E 4	Tender process	Laymans report produced- design, printing and photographer	10,400
NE	E 5	Direct purchase	Communication working with the media/press calls- refreshments and venue hire	4,875
NE	E 6	Direct purchase	Room hire for stakeholder event to discuss BFM leaflet	130
NE	E 6	Request for quotes	Design and printing of BFM leaflet with rewrite after restoration has been complete	3,640
NE	E 7	Direct purchase	Community engagement events- refreshments and venue hire	5,460
NE	E 7	Direct purchase	Hire of portoloos and mini buses for events	7,573
NE	E 8	Direct purchase	Hire of portoloos and mini buses for events	5,200
NE	E 8	Direct purchase	Payment to speakers to attend workshops and events to cover expenses	6,500
NE	E 8	Direct purchase	Scientific engagement events- refreshments and venue hire	4,622
NE	E 9	Request for quotes	Mid Project workshop catering and venue hire for 100 people	11,440
NE	E 9	Direct purchase	Design and printing of invites	350
NE	E 9	Direct purchase	Hire of portoloos and mini buses for attendees over 3 days	2,250
NE	E 10	Request for quotes	End of Project conference catering and venue hire for 100 people	5,720
NE	E 10	Direct purchase	Printing costs, delegate packs, DVD	6,500
NE	E 10	Direct purchase	Payment to speakers to attend conference and cover expenses	6,500
NE	F 2	Direct purchase	Networking- catering and venue hire when hosting visitors	8,125
NE	F 3	Approved supplier	Supply of auditor	13,000
			TOTAL =>	5,198,108

Durable goods: equipment costs

Beneficiary short name	Action number	Procedure	Description	Actual cost (€)	Depreciation (eligible cost) (€)
NE	D 1	Approved supplier	Weather station for RWM	19,500	19,500
NE	D 1	Direct purchase	Up to 24 water loggers for hydrological work	7,800	7,800
NE	D 1	Direct purchase	Video and 2 cameras for surveying and media work	1,950	1,950
NE	F 1	Approved supplier	Project vehicle (van)	18,200	18,200
			TOTAL =>	47,450	47,450

Consumables

Beneficiary short name	Action numbe	Procedure	Description	Costs (€)
NE	D 1	Direct Purchase	Surveying - Protective clothing for 4 staff	650
NE	D 1	Direct Purchase	Water logger tubes	1,300
NE	D 1	Direct Purchase	Surveying - GPS and weather writers x 2	2,860
NE	D 2	Direct Purchase	Surveying - Protective clothing replacements for 4 staff	650
NE	E 1	Request for quotes	Moveable banner/signs for offices and events	2,340
NE	E 1	Direct Purchase	Office sign	325
			TOTAL =>	8,125

Other costs

Beneficiary short name	Action numbe	Procedure	Description	Costs (€)
NE	D 1	Direct purchase	Diver software for Hydrological monitoring	650
			TOTAL =>	650

Overheads

Beneficiary short name	Total direct costs of the project in €	Overhead amount (€)
NE	6,324,236	261,000
	6,324,236	261,000

Proposal attachments			
		Included?	
Attachment title	**Attachment type**	**Yes**	**No**
public body declaration	public body declaration		