



# Socio-economic analysis of the Marches Mosses BogLIFE project

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Restoring Marches Mosses BogLIFE Project (LIFE15 NAT/UK/000786)



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# 1. Introduction

The Marches Mosses BogLIFE project (LIFE15 NAT/UK/000786) is a six-year project started in October 2016 and due for completion by 31<sup>st</sup> December 2022. The project aims to restore Britain's third largest lowland raised peatbog, comprised of the complex of Fenn's, Whixall & Bettisfield Mosses National Nature Reserves and Wem Moss Local Nature Reserve all located near Whitchurch, Shropshire and Wrexham in Wales, and in total approaching 1000 hectares in size (see Figure 1). The LIFE project is led by Natural England (NE) working in partnership with Natural Resources Wales (NRW) and Shropshire Wildlife Trust (SWT). The project is financially supported by LIFE, a financial instrument of the European Commission and the National Lottery Heritage Fund.

As part of the grant agreement, the project partners are required to assess the socio-economic impact of the project. This report fulfils that requirement.

**Figure 1: Map of Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses**



## 2. Methodology

The project proposal included the following socio-economic indicators for use in assessing the impact of the project:

- Employment generated by or through the project;
- Expenditure by the project in the local economy;
- Expenditure by participants in project events;
- Resource provided to the project by volunteers;
- Training provided by the project to volunteers and others;
- Provision of information on lowland raised bog restoration, dissemination and provision of education and training;
- Increases in visitor numbers and promotion of sustainable tourism, and
- Contributions to networks in the scientific and practitioner communities.

Further to this, the EU Project Monitor proposed that the project report be split broadly into two sections – a quantitative analysis and a qualitative discussion – based on the availability of data for each indicator. The currency of the quantitative analysis is pounds sterling, although a conversion to Euros is given in the ‘Conclusions’ section for the high-level results. VAT is not included in the analysis as this is considered a transfer within the economy rather than expenditure on goods and services.

The financial analysis included all spend up to the end of June 2022. Although this is six months before the scheduled end of the project, the project manager has forecast overspend of £400-500,000 using monies not provided by the EU’s LIFE funding mechanism. As such, the spending up to the end of June 2022 is consistent with the financial support provided by LIFE and the outcomes of the project at this point were clear enough to justify using in this analysis.

The quantitative metrics of the analysis are job years of employment and Gross Value Added (GVA). Job years are the number of full time equivalent (FTE) roles multiplied by the time that the people in those roles were active on the project, so one FTE over the six-year course of the project is equivalent to six job years. This emphasises the temporary nature of the employment caused by the project’s expenditure, although the qualitative analysis shows how some people working in these temporary roles have moved on to find permanent work in the sector. This illustrates the importance of considering the quantitative and qualitative analyses together rather than prioritising the quantitative as is often the case.

GVA is a company or sector’s gross output minus its purchased inputs. This avoids double counting the outputs from companies that then become the inputs to other companies’ activities when calculating the size of the economy at whatever geographical scale is being considered. The methodology for deriving both GVA and associated employment from project expenditure is set out in the section on ‘Expenditure by the project in the local economy’.

## Definition of the local economy

In line with work by GHK (2009), Natural England (2013) and Cumulus Consultants (2022), the local economy was designated as the area within a 10-mile radius of the centre of the Mosses site. The regional economy was designated as the area within a 50-mile radius of the site, which includes the local economy within it. This approach contrasts with that proposed by AECOM (2016), which suggests the use of a 30-mile radius from the site. There are arguments for and against each approach and there are no hard-and-fast rules in this area so the GHK approach was adopted for the following reasons:

1. It is in line with Natural England's technical guidance on the evaluation of impacts that involve economic data or analysis (Natural England, 2019).
2. The Marches Mosses are in a relatively remote rural area of England; precisely the type of location where the European Union might hope that its funding would support the local economy. The option of differentiating the project's impacts on the area close to the site from its impacts on the wider economy was therefore felt to be more informative. This is particularly the case because key local conurbations such as Shrewsbury, Wrexham and Crewe, where a relatively large percentage of goods, services and staff are sourced from, are around 20 miles away and so an analysis limited to a single radius of 30 miles would fail to differentiate impacts on these economies from those on the area immediately surrounding the Mosses.
3. The 10- and 50-mile radii are the same as those used by Cumulus Consultants (2022) in their socio-economic analysis of the LIFE project at Humberhead Peatlands and by Natural England (2013) in their analysis of the socio-economic impacts of all 143 national nature reserves (NNRs) managed by Natural England. The GHK report also includes more detailed case studies for the following NNRs: Wye Downs; Derbyshire Dales; Stiperstones; Shapwick Heath; Saltfleetby Theddlethorpe Dunes, and Moor House – Upper Teesdale. This allows better comparison of the socio-economic impact of the Marches Mosses project with the impact at these other sites.

Following the approach of AECOM (2016), which is quoted in Natural England (2019), expenditure with organisations defined as national or multi-national in scope was excluded from the analysis. This is because money spent in such organisations "would not generally contribute to the local economy". This includes expenditure with large non-private sector organisations, such as the Environment Agency and the Canal and Rivers Trust.

## Impacts on the local economy

There are three groups of impacts on the local economy caused by expenditure on the Marches Mosses project. The first are direct effects caused by spending on staff, goods and services. The second are known as indirect effects, whereby project expenditure in the local economy causes the companies whose goods and services have been bought to spend more on inputs from other companies. For example, if the project buys scrub

clearance services from a company, then that company will need to buy petrol to run its machinery and to transport staff and equipment. It may also need to buy new equipment or to repair existing equipment as the contract with the project progresses. Some of this extra spending will happen within the local economy, while some will leak out of it and some will displace purchases that would have been made in the absence of the project. The third group are induced effects, where employees of the companies that the project partners have spent money with earn more as a result and go on to spend a proportion of that income on goods and services. Again, there are risks around leakage and displacement associated with calculating the size of these effects.

Calculating indirect and induced effects in detail requires a large amount of data that is not available and, in any case, would constitute a disproportionate cost relative to the size of the Marches Mosses project, so a local and a regional multiplier have been applied to the direct impacts. The local multiplier is 1.2; in other words, for every one job year created directly by the project 0.2 job years are created by indirect and induced effects, and for every £1 of GVA created directly by the project, 20 pence of GVA is created by indirect and induced effects. The equivalent regional multiplier is 1.6.

These multipliers were used by GHK (2019) and Natural England (2013) in their socio-economic studies based on guidance from what was then English Partnerships. They were similarly used by Cumulus Consultants (2022) after being recommended for use by AECOM (2016), who in turn derived them from the Homes and Communities Agency (HCA) (2014). The HCA is the successor organisation to English Partnerships and although the HCA's guidance was withdrawn in May 2022 it is not clear why, nor what guidance might have replaced it. The advantage of using multipliers that allow comparison with other relevant socio-economic analyses was therefore considered to outweigh the disadvantage of using guidance that was only a few months out of date at the time of writing. The derivation of these multipliers is set out in detail in HCA (2014) and AECOM (2016).

## **Employment generated by or through the project**

Data on staff numbers, total employment costs, hours worked on the project and home postcodes were made available by the project manager. Total employment costs included salaries, pensions and National Insurance contributions in line with the methodology developed by AECOM (2016). Staff were then sub-divided into those living within 10 miles of the Mosses site and those living within 50 miles. Just under 6% of staff lived over 50 miles from the site and they accounted for approximately 2% of time spent on the project.

Where employment is based on income received primarily from outside the local area, the Green Book (HM Treasury, 2022) considers these jobs to be 'tradable' and allows a multiplier to be applied to them to recognise the impact of bringing expenditure into the local economy. Data from visitor surveys conducted at the Mosses site – discussed in more detail in the 'Expenditure by visitors' section below – showed that a substantial proportion of the visitors to the Mosses come from within the local area and so no multiplier was applied.

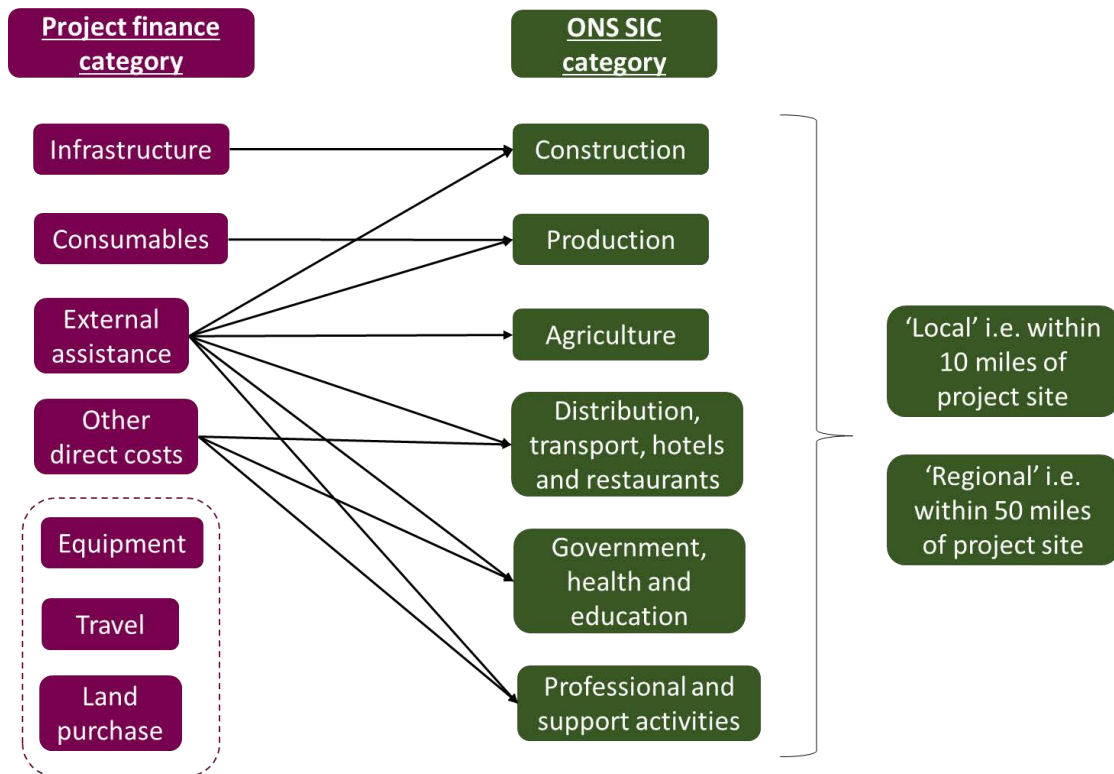


## Expenditure by the project in the local economy

Spreadsheets containing data on all project expenditure by NE, NRW and SWT were made available by the project manager. They were then categorised according to the Office for National Statistics' Standard Industrial Classification (SIC) high level groups and, using postcode data supplemented by internet searches where necessary, were further categorised as 'local', 'regional' or 'national/multi-national'.

Expenditure under the 'travel' and 'equipment' categories was excluded from this analysis as travel was mostly outside the region and, in both cases, money was spent with large national or multi-national organisations. Expenditure on land purchases was also excluded, in line with GHK (2013) who state that "land purchases should not be treated as a standard expenditure as they do not support business turnover in the same way as other types of expenditures". Figure 2 shows a high-level summary of the process.

**Figure 2: Categorisation of project expenditure**



The reason for using ONS SIC categories is that, whereas expenditure on staff can be considered equivalent to GVA, expenditure on goods and services cannot. Instead, this expenditure needs to be converted to GVA. As for the calculation of indirect and induced effects, doing this in detail would be disproportionate considering the size of the Marches Mosses project. However, an alternative approach is to use the methodology set out in Cumulus Consulting (2022), which calculates national ratios of output to GVA for each high level SIC group. These ratios are shown in Table 1.

**Table 1: Gross Value Added (GVA) ratios for relevant Office for National Statistics Standard Industrial Classification (SIC) categories**

ONS SIC category	GVA (£m)	Output (£m)	GVA ratio i.e. one unit of expenditure equals this many units of GVA
Agriculture	13,802	34,733	0.40
Production	276,394	755,374	0.37
Construction	129,134	338,397	0.38
Distribution, transport, hotels and restaurants	350,565	662,477	0.53
Professional and support activities	252,805	449,493	0.56
Government, health and education	369,748	587,071	0.63

Source: ONS (2019)

Expenditure in different sectors of the economy supports employment in those sectors. As for GVA calculations, deriving these figures precisely involves a significant amount of data and analysis so a similar high-level approach was adopted, the results of which are set out in Table 2.

**Table 2: Full Time Equivalent (FTE) ratios for relevant Office for National Statistics Standard Industrial Classification (SIC) categories**

ONS SIC category	Employment (thousands FTE)	Output (£m)	FTE ratio i.e. £100K of expenditure equals this much FTE
Agriculture	371	34,733	1.07
Production	3,047	755,374	0.40
Construction	2,325	338,397	0.69
Distribution, transport, hotels and restaurants	4,986	662,477	0.75

Real estate, professional and support activities	6,628	449,493	1.47
Government, health and education	8,945	587,071	1.52

Source: ONS (2021)

Once calculated, these ratios were used to convert project expenditure into GVA and job years, with one FTE as classified by the ONS being considered equivalent to one job year for the project.

## Expenditure by visitors and participants in project events

Data from visitor surveys carried out between September 2021 and September 2022 were supplied by the project manager. These included the outward part of the visitors' postcode (e.g. SY3), which allowed an estimate of the potential number of visitors to the site from outside the regional economy. This was combined with an estimate of the value of visitor expenditure that could be attributed to the site, sourced from Natural England (2013) to produce an annual value of expenditure by visitors to the Mosses from outside the regional economy.

No data were available for expenditure by participants in project events as these were held in Whixall Marina café, a facility near to the Mosses with good links to the project partners, but which is privately owned. It was not possible to source the required data from the owners.

## Resource provided to the project by volunteers

Detailed spreadsheets were provided by the project manager showing: tasks (e.g. mammal trapping); task categories (e.g. skilled); the number of volunteers engaged on each task; the number of days they spent, and a conversion of this time into an equivalent financial value. The value of the volunteers' contribution has been calculated by using a 6-hour day and hourly rates of £50 for 'professional', £20 for 'skilled' and £10 for 'unskilled' tasks in line with the requirements of the National Lottery Heritage Fund (NLHF, 2021).

The ONS (2013) has set out three methods by which the value of volunteering can be calculated. These are: opportunity cost, wellbeing value, and replacement cost. The opportunity cost approach uses a person's hourly wage to value their volunteer time using the logic that this is the amount they could have earned instead of volunteering and have therefore given up to do so. There are a number of problems with this approach, including the fact that some people do not have a formal job and that the same activity could be valued very differently depending on who volunteers to do it.

“The Wellbeing Valuation approach estimates the increase in wellbeing associated with a particular good or service and then calculates the equivalent amount of money necessary to give the same boost to well-being (in order to keep well-being constant),” (Fujiwara, Oroyemi and McKinnon, 2013). Its output is a single value per volunteer per year, which is quoted in the Green Book Supplementary Guidance on Wellbeing (HM Treasury, 2021) as being £911. However the What Works Centre for Wellbeing (2020) states:

*“There is high quality evidence that volunteering is positively linked to enhanced wellbeing, including improved life satisfaction, increased happiness and decreases in symptoms of depression.*

*We can’t, however, categorically state that volunteering causes improved wellbeing. Just because volunteering can lead to positive changes in wellbeing it doesn’t mean it always does. Some studies also argue that happier and healthier people are more likely to get involved in volunteering in the first place, with this making the difference rather than volunteering itself.”*

This issue is explicitly addressed in work by Lawton et al (2020), which lead to the estimation of the £911 figure quoted in the Green Book Supplementary Guidance, but it appears that the expert community is still somewhat split on the issue. This may be one of the reasons why the wellbeing valuation approach is not used by the ONS.

The replacement cost approach uses a value that is equivalent to the cost of paying someone to undertake the work carried out by a volunteer. This method “has been recommended by the International Labour Office and is the most comparable to the National Accounts,” (ONS, 2013). However the way in which this methodology is used by the ONS (2013) to value volunteering in the UK is somewhat opaque. It appears to be an estimate of the number of hours of frequent volunteering per year split by the skill level associated with the volunteering activity and multiplied by the median hourly earnings of people at that skill level.

The skill levels used by the ONS do not correspond particularly well to those used by the project to comply with NLHF requirements. They are ‘professional’, ‘clerical and secretarial’ and ‘personal and protective’, which had median hourly wage rates of roughly £20, £10 and £8 respectively in 2012 prices. Those data came from the Annual Survey of Hours and Earnings. The most recent data from that survey (ONS, 2022a) does not split the workforce by category but does break it down by lowest decile, lower quartile, upper quartile and highest decile. Workers in the highest decile have earnings of approximately £30/hour, those in the upper quartile earn approximately £20/hour while those in the lowest quartile and decile have hourly earnings of approximately £10/hour. It seems reasonable to argue that these could roughly correspond to the ‘professional’, ‘skilled’ and ‘unskilled’ categories used by the NLHF, but it should be noted that hourly earnings are not the same as the total cost to the purchaser of services provided by people in those skill categories. This cost would include wages but also such things as company overheads, taxes and potentially pension costs as well.

The NLHF does not explicitly state what method it uses to value volunteer labour but the implication is that it is the replacement cost approach. As such, the figures of £50 for 'professional', £20 for 'skilled' and £10 for 'unskilled' appear roughly in line with the ONS approach to valuing the contribution of volunteers. There is possibly some over-estimation of the value per hour of professional labour and some under-estimation for unskilled labour, but overall these values appear reasonable for use in this context.

## **Wellbeing benefits to volunteers**

The short summary of the wellbeing valuation approach to volunteering above makes clear that, while there is significant uncertainty attached to this approach, there is enough confidence for it to be included in the Green Book Supplementary Guidance on Wellbeing. As such, the value quoted in that Supplementary Guidance has been used to make a tentative estimate of the wellbeing benefit to volunteers produced by the project.

Using the wellbeing valuation approach does not double count the benefits of the volunteers to the project because, as ONS (2013) makes clear, this approach values the benefits to the contributor of the voluntary labour, whereas the replacement cost approach values the benefit to the recipient of that labour. The estimate of a benefit of £911 per volunteer per year is used with the caveat that this can only ever be a rough estimate of the wellbeing benefits that the volunteers experienced.

## **Training provided by the project to volunteers and others**

The project manager provided spreadsheets setting out which staff and volunteers had undertaken which training courses and when. As training for existing staff was considered to be part of their ongoing role, the focus was on trainees whose skill levels were being increased to bring them up to comparable levels to members of staff in the organisations where they had been employed as a result of their traineeships.

## **Information dissemination and provision of education and training**

Data from the mid-term review of the Marches Mosses BogLIFE project (Plantagenet Consulting, 2021) was supplemented by a spreadsheet provided by the project manager setting out the wide range of targets for the project in this area and the latest progress made towards meeting them.

## Increases in visitor numbers and promotion of sustainable tourism

Data from automated people counters placed at the main entrances to the site were made available by the project manager along with a detailed list of activities designed to encourage visitors to the site. The limitations of the visitor data and their impact on the confidence with which conclusions can be drawn from it are set out in the 'Results' section below.

## Contributions to networks in the scientific and practitioner communities

As for the 'Information dissemination' section, data were drawn from the mid-term review and the spreadsheet provided by the project manager.

## Data quality

The size of the Marches Mosses BogLIFE project is such that a proportionate approach to calculating its socio-economic impact relies on the methodologies described above. In order to give an indication of the level of confidence in the results produced by this analysis the table below sets out a qualitative description of the data and methodology for each section of the report.

**Table 3: Qualitative descriptions of confidence in the data and methodologies used**

Indicator	Data	Valuation methodology
Employment generated by or through the project.	High – employment data are detailed and accurate.	Medium – generic multipliers have had to be used to estimate the project's impact on employment in the wider economy.
Expenditure by the project in the local economy.	High – expenditure data are detailed and accurate.	Medium – generic multipliers have had to be used to estimate the project's impact on expenditure in the wider economy.

<p>Expenditure by visitors and participants in project events.</p>	<p>Medium – visitor survey data was provided for a reasonable sample size.</p> <p>No data were available on expenditure by participants in project events.</p>	<p>Low – the estimated spend per visitor from outside the regional economy is based on a single source, which is relatively dated.</p>
<p>Resource provided to the project by volunteers.</p>	<p>Medium – volunteer data are detailed and accurate but incomplete in some places.</p>	<p>Medium – there are a variety of potential methods for valuing volunteer time and all rely on generic multipliers based on skill levels.</p>
<p>Benefits to volunteers from their involvement in the project.</p>	<p>Medium – volunteer data are detailed and accurate but incomplete in some places.</p>	<p>Low – the value used in the Green Book Supplementary Guidance is a generic value per volunteer per year and there is some disagreement within the expert community about the direction of causation between wellbeing and volunteering.</p>
<p>Training provided by the project to volunteers and others.</p>	<p>High – data are detailed and accurate.</p>	<p>No valuation attempted.</p>
<p>Provision of information on lowland raised bog restoration, dissemination and provision of education and training.</p>	<p>High – data are detailed and accurate.</p>	<p>No valuation attempted.</p>
<p>Increases in visitor numbers and promotion of sustainable tourism.</p>	<p>Medium – data are incomplete and results have had to be extrapolated.</p>	<p>Low – methodology based on high quality national-level modelling, which however seems to particularly over-estimate visitor numbers</p>

		for the Marches Mosses site.
Contributions to networks in the scientific and practitioner communities.	High – data are detailed and accurate.	No valuation attempted.

### 3. Results

#### Gross Value Added (GVA) and employment

Just under 28% of the Marches Mosses non-staff expenditure was spent within the regional economy i.e. within 50 miles of the project site. This figure does not include land purchases because, as explained above, such purchases do not lead to an increase in economic output. If land purchases are excluded from the analysis then the percentage rises to just over 34%. As set out in the ‘Methodology’ section, just over 94% of staff working on the project are known to live within 50 miles of the site. This results in 50% of the project’s expenditure occurring within the regional economy; 58% if land purchases are excluded.

Table 4 summarises the expenditure by the project in the local economy, which is defined as within a 10-mile radius of the Marches Mosses site. It also shows the job years and GVA created by that expenditure. Note that a multiplier of 0.2, rather than 1.2, is used in this case because the indirect and induced effects are added onto the direct impact of the project’s expenditure.

The total GVA produced by the project within the local economy is estimated to be **£610,761** and the number of job years created is estimated at **30.31**.

**Table 4: Gross Valued Added (GVA) and job years created in the local economy**

	Amount	Job years	GVA
<b>Staff expenditure</b>	£497,913	25.10	£497,913
<b>Non-staff expenditure</b>			
Production	£19,910	0.08	£7,285
Distribution, transport, hotels and restaurants	£2,447	0.02	£1,295



Professional and support activities	£4,399	0.06	£2,474
Construction	£43,746	0.30	£16,694
<u>Direct Impact</u>		<u>25.26</u>	<u>£508,968</u>
Indirect and induced impacts (multiplier 0.2)		5.05	£101,794
<b>Total Impact</b>		<b>30.31</b>	<b>£610,761</b>

Table 5 summarises the same information for the regional economy; defined as the area within a 50-mile radius of the Marches Mosses site. As above, note that the indirect and induced effects are added onto the direct impact of the project's expenditure, which results in the use of a multiplier of 0.6 rather than 1.6. The total GVA produced by the project within the regional economy is estimated to be **£3,411,493** and the number of job years created is estimated at **123.33**.

**Table 5: Gross Valued Added (GVA) and job years created in the regional economy**

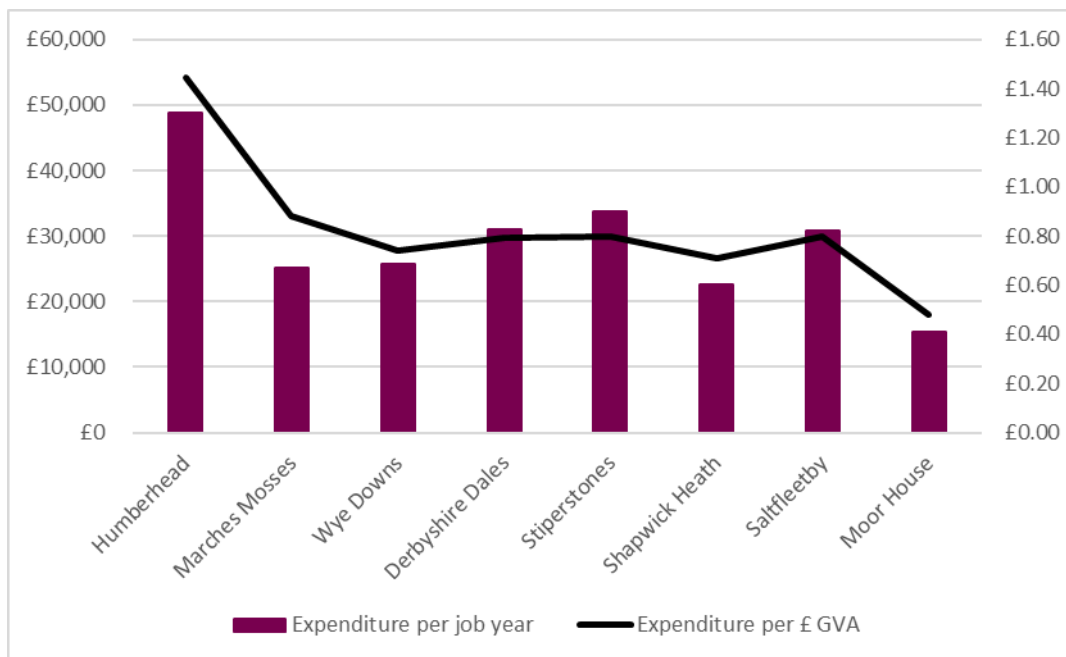
	Amount	Job years	GVA
<b>Staff expenditure</b>	£1,716,175	67.53	£1,716,175
<b>Non-staff expenditure</b>			
Agriculture	£529,615	5.66	£210,455
Production	£71,505	0.29	£26,164
Construction	£340,741	2.34	£130,028
Distribution, transport, hotels and restaurants	£3,292	0.02	£1,742
Government, health and education	£5,055	0.08	£3,184
Professional and support activities	£79,006	1.16	£44,435
<u>Direct Impact</u>		<u>77.08</u>	<u>£2,132,183</u>

Indirect and induced impacts (multiplier 0.6)		46.25	£1,279,310
<b>Total Impact</b>		<b>123.33</b>	<b>£3,411,493</b>

Given the need to use multipliers in the analysis above, it is reasonable to ask what confidence the reader can have in the results. Table 3 gives a qualitative description of the quality of the data and methodology used, but it is also useful to compare the results for the Marches Mosses BogLIFE project with those for other NNRs. Figure 3 uses data from Cumulus Consultants (2019) and Natural England (2013) to show how the estimates of employment and GVA generated for the Marches Mosses BogLIFE project compare to those for another Bog LIFE project at Humberhead and six NNRs run by Natural England. It should be noted that the figures for the NNRs are annual and have therefore been multiplied by six to give a fair comparison with the Marches Mosses BogLIFE project. They have also been updated to account for inflation since 2011/12 when the data were collected.

Figure 3 shows clearly that the estimate for the Marches Mosses is well within the overall range of this sample of NNRs, which gives some confidence that it is broadly correct. It is also worth noting that the reason why Humberhead's values are much larger than the others, including the Marches Mosses, is because that project spent a much larger proportion of its budget on non-staff expenditure. Staff expenditure translates directly to GVA and employment so has a much bigger impact on these metrics than non-staff expenditure.

**Figure 3: Expenditure per job year and per £ of Gross Value Added (GVA) within the local (<10 mile radius) economy for eight national nature reserves**



A further element of comparison is the percentage of project expenditure within the local and regional economy by each NNR. This is shown below. While the difference is large, there is high confidence in the underlying data and the Marches Mosses project was expected to have a lower percentage because of its relatively isolated location and the need to bring in specialised external contractors for several major elements of the project.

**Table 6: Percentage of total expenditure within the local and regional economies**

	Local	Regional
Marches Mosses	14%	49%
Humberhead (Cumulus Consultants, 2022)	55%	74%
Average of six NNRs (NE, 2013)	55%	Not given

## Expenditure by visitors

Data from visitor surveys carried out at the Marches Mosses site between September 2021 and September 2022 were made available. There were 255 responses, of which 247 provided a postcode. The distance from the centre of each postcode district (e.g. SY3 or CH2) to the centre of the Mosses site was calculated, which produced the following results.

**Table 7: Distance travelled by a sample of visitors to the Marches Mosses site**

Distance	Number	Percentage
Less than 10 miles	218	88.3%
Between 11 and 50 miles	25	10.1%
More than 50 miles	4	1.6%

This is a good sample size taken over an extended period of time, however it is not known how representative it is; a fact that would suggest some caution is needed in using the results. A good sense check is the data from Natural England (2013), which states that for NNRs generally, 79% of visitors are assumed to come from within 10 miles of the six case study sites. The fact that this is assumed, plus the high likelihood of site-by-site variation, does not give huge confidence in this as a comparator. On the other hand, the assumption is backed by interviews with representatives from the six NNRs, which gives some degree of confidence that it is roughly correct.

An estimate of the expenditure within the regional economy that can be attributed to the Mosses site again comes from Natural England (2013) who use the results of an RSPB study which calculated that overnight visitors each spent £161.60 per trip, of which £55.96 could be attributed to the RSPB site in question (2009 prices). Up-rating this value to 2022 prices using the UK GDP deflators gives a figure of £69.89.

The number of visitors from outside the regional economy is small in absolute terms, which again gives reason to treat this estimate with caution. However, this percentage can be combined with the estimates of visitor numbers in Figure 8 and the value calculated above to show how the Marches Mosses BogLIFE project has increased expenditure in the regional economy from external visitors. This shows that in 2022 the estimated expenditure was £16,475, while in 2013-14 it was £9,749: a difference of £6,726, which has been rounded to £6,500 to avoid the impression of spurious accuracy. This assumes that the ratio of external to local visitors stayed the same over that period.

While there are clearly many uncertainties with this estimate, there is no reason to suppose that those uncertainties only run in one direction. It seems just as likely that the figure of a £6,500 per year benefit to the local economy from this project is an under-estimate as that it is an over-estimate.

## Resource provided to the project by volunteers

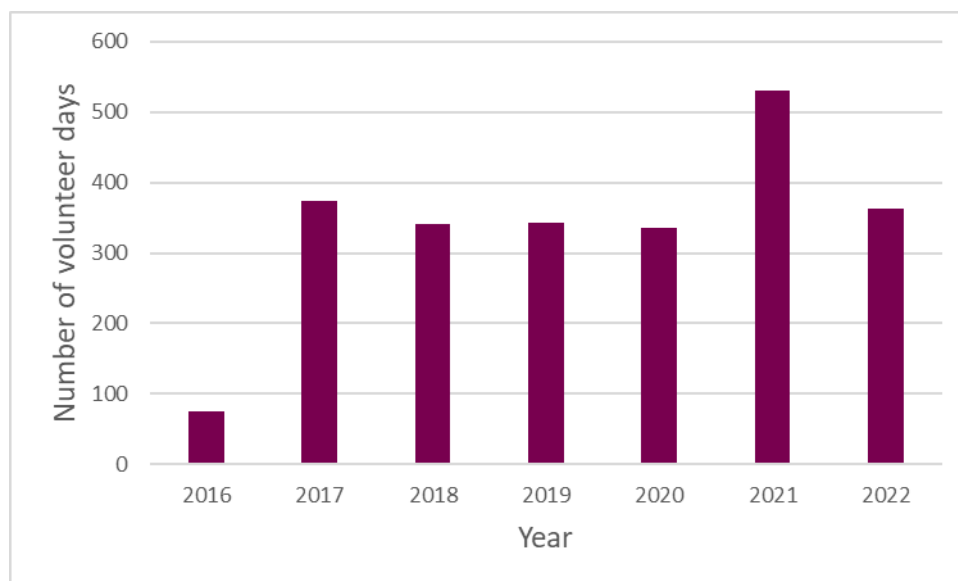
Between January 2020 and June 2022, the period for which data on individual volunteers' identities is available, 120 individuals contributed to at least one volunteer session, with many contributing far more. There were three group volunteer sessions with students from Reaseheath College (11 individuals) and Lysfasi College (7 individuals) and staff from Dechra Pharmaceuticals (28 individuals).

Over the entire course of the project, volunteers provided just over 2,362 days of their time at a value of £236,700. This headline figure is broken down by skill level in Table 8 and by year in Figure 4 and is the equivalent of increasing the salary expenditure of the project by 13.5%.

**Table 8: Volunteer contributions to the Marches Mosses BogLIFE project**

Skill category	Number of days	Value of contribution
Professional	217	£65,100
Skilled	714.75	£85,770
Unskilled	1430.5	£85,830
<b>Total</b>	<b>2362.25</b>	<b>£236,700</b>

**Figure 4: Volunteer days per year of the project**



Note: 2016 data are for October 2015 to March 2016; 2022 data are for March to September only

Examples of the different types of activities undertaken by volunteers in each skill category are as follows:

- Professional: bird ringing, adder surveys and media interviews.
- Skilled: tree felling, bird surveys, nest box monitoring, water level monitoring, leading guided walks and giving presentations to community groups.
- Unskilled: Sphagnum planting, weeding, litter picking, fence line removal and boardwalk construction.

## Training provided by the project to volunteers and others

Seven trainees were taken on during the course of the project, working a total of 6.5 job years at a cost of £81,334. Their bursaries are included in the GVA and employment calculations above. Of these individuals, two live within 10 miles of the Marches Mosses site and the other five live within 50 miles. Three of the trainees went on to take up fixed term appointments with the project partners, while the other four have all progressed into employment in the conservation sector directly upon leaving their traineeship. As part of their roles they have been trained in a wide range of relevant skillsets including such things as: forestry first aid; chainsaw use; 4X4 off road driving; safe use of excavators; safe use of pesticides, and managing and preventing wildfires. Twenty-eight volunteers also increased their skills through training provided by the project, with many of these taking multiple courses. They were trained in the same skillsets as the salaried workers on the project.

The site management sub-sector of the nature conservation field is traditionally competitive to enter because of an emphasis on the need for experience and practical skills. The traineeships have been very effective at providing an opportunity for trainees to build up 'on the job' practical experience that employers are seeking whilst also acquiring

key skills through formal accredited training courses. As a consequence, all trainees have directly progressed to full-time jobs in the nature conservation sector with organisations such as the National Trust, Cheshire Wildlife Trust, Natural England and an environmental consultancy.

This investment in the human capital of the local and regional economies will have spillover effects in terms of GVA and employment. More skilled workers within an economy attract higher salaries, a proportion of which they then spend on local goods and services. The hourly rates used to estimate the value of volunteers' contributions give an indication of the scale of this impact, with the move from unskilled to skilled work providing a doubling of income for example.

While the volunteers may not be paid for their efforts, the increase in their skillsets means that any future projects directed at improving the Marches Mosses will be more efficient and effective. Such projects will either be able to use the skilled volunteers to produce the same outcomes they would have achieved with only salaried staff for less, or will be able to achieve better outcomes for the same amount of investment than would have been the case had the Marshes Mosses project not gone ahead. An indication of the level of advantage that future projects will gain thanks to the investment of the Marches Mosses project is shown by the fact that skilled and professional volunteer labour was equivalent to 8.6% of total project expenditure on staff, or just over £150,000.

## **Wellbeing benefits to volunteers**

The wellbeing benefits to the volunteers is difficult to estimate, as set out in the 'Methodology' section above, but multiplying the estimated number of individual volunteers by the estimated wellbeing benefit value and by the number of years of volunteering gives a value of £655,920. To reflect the significant uncertainty in this estimate it has been rounded down to £650,000.

## **Information dissemination and provision of education and training**

Over 150 events have been held by the Marches Mosses BogLIFE project, reaching over 5,000 people. Although there is a need to allow for the fact that some people may be repeat attendees, these are still significant figures, especially given the rural location of the site. For example, the entire population of the county of Shropshire is only around 325,000 people (ONS, 2022b). The significant impact of the Covid pandemic should also be taken into account when considering these figures.

**Figure 5: A school visit to the Mosses**



**Table 9: Events designed to disseminate information and provide education and training**

Event description	Targets	Number of events	Number of attendees
Work with young people groups to encourage use of the Mosses.	5 groups engaged.	5 groups	Approximately 60
Expert-led guided walks led by a variety of specialists in fields such as ornithology, ecology and natural history.	10 events per year, 20 people at each, 1200 people overall.	42	859 plus 6 self-led or online walks for 3,200 people.
Events programme for adults, including topics such as willow weaving and photography.	10 events per year, 15 people at each, 750 people overall.	20	747
Weekly activities over the school holidays aimed at families.	15 events per year increasing as project progresses.	11	764

Parent and toddler sessions including activities such as pushchair safari, bug hunts, nature craft and wild story telling.	12 events per year over 2 years, 10 people at each, 240 people overall.	10 groups	165 children and 86 adults
Drop-in family activities all year round.	50% of families attending visitor centre to take part.	7 events	688
Get Moving on the Moss in partnership with Energize. Fitness activities such as a Sports Relief mile, fitness trail and health wanders.	10 events per year in the last 2 years, 10 people at each, 200 people overall.	6	84
Bird Hide Events programme aimed at adults.	5 events per year, 10 people at each, 250 people overall.	10	231
Bird Hide Events programme aimed at children.	5 events per year, 10 people at each, 250 people overall.	39	502
Educational visits through the John Muir Award, an environmental award scheme that encourages young people to connect with, enjoy and care for wild places.	10 schools and 300 children engaged. 18 training sessions for 30 teachers or teaching assistants.	10 schools, 23 training sessions	500 children and 88 teachers or teaching assistants engaged
Presentations and talks for the community and local stakeholders to explain the project and engage them in	10 events in total, 200 people overall.	33	986



the heritage and ecological value of the site.			
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**Figure 6: Education and knowledge transfer – a tertiary college field visit to the project to learn about tree harvesting and wetland restoration**



**Table 10: Information dissemination activities**

Dissemination activity	Targets	Outputs
Media releases.	10 press releases per year with a reach of 100,000 people.	63 press releases to in excess of 7 million people. Two television features alone (Countryfile in Year 1 and Springwatch in Year 5, both shown on the BBC) brought the project to the attention of an audience numbering in the millions.
Promotion of the project's website through Natural England and Shropshire Wildlife Trust's websites. Use of social media.	3,000 views per year; 5,000 consistently following project by 2021.	The 'Visiting the Mosses' section of the website is consistently attracting over 3,000 visitors per year.  The project has 2,200 regular followers on

		Twitter and 853 on Facebook.
Site videos to be used in presentations and online; use of drone technology to give a view from the air.	No target.	Three site videos produced.
Design and production of information material.	Given the dominance of digital means of information dissemination, this target was amended to one paper leaflet.	New paper leaflet produced for the Marches Mosses.  Online project leaflet and technical report also produced. Lay person's report pending as at time of writing.
Design and production of interpretation panels to be situated in the bird hide as well as signage throughout the site.	No target for interpretation panels, Signage: two moveable banners, seven weatherproof boards, six on/offsite panels.	Four project information notices displayed at NE, NRW and SWT offices; four weatherproof boards displayed at main site car parks; dual language 'welcome' signs erected at 32 access points to the project site; two moveable banners created for mobile display at public events; tactile interpretation installed at the viewing platform and a mural at the bird hide. interpretation panels.
Support the local flood action group – a self-led independent group set up to look at local flooding issues.	No target.	Support provided to what is now a self-sustaining group involving over ten landowners, with the hope for this to become a subgroup of the Parish Council.

Support a local group of horse riders.	No target.	A self-sustaining group of over 20 local horse riders engaged.
Trail markers for new circular access routes onto the Mosses.	No target.	No new circular routes created, instead promotion of existing green trail and the walk from Whixall Marina.

## Increases in visitor numbers and promotion of sustainable tourism

The plan for the Marches Mosses project envisaged creating a range of marketing materials to support interaction with local tourism providers. This in turn, it was hoped, would lead to an increase in visitor numbers; an important part of making the regeneration and preservation of the Mosses self-sustaining. More detail on the huge range of information dissemination activities carried out by the project is set out in the sections above and below this one. These support the work to build links with local tourism providers, which is the focus of this section of the report.

**Figure 7: Temporary tactile interpretation installed at the Viewing Tower**



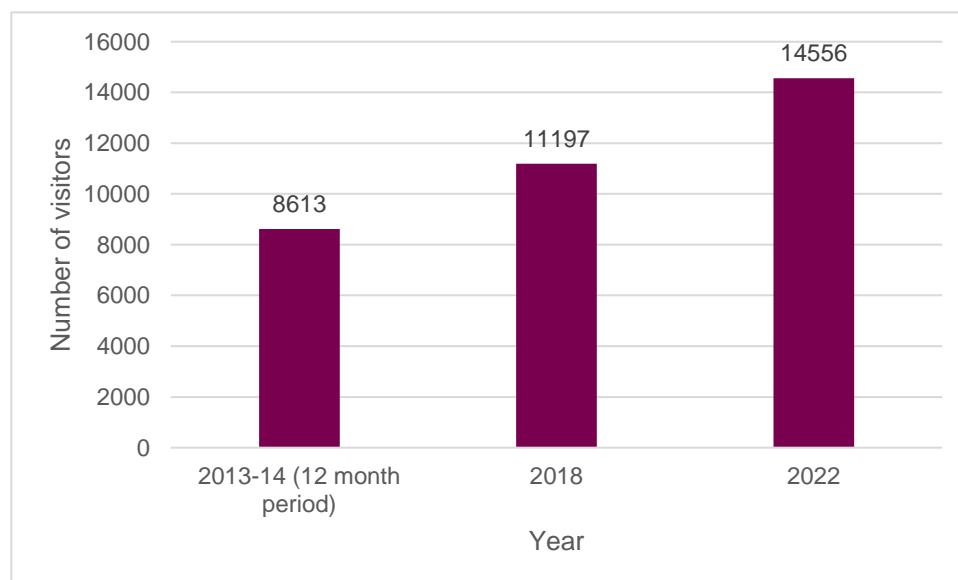
Work with tourism partners was significantly delayed by the onset of the Covid pandemic, which led to travel restrictions and the forced closure of tourism businesses. Delays in

being able to carry out essential infrastructure work on-site also meant that the production of a tourism ‘pack’ had to wait until the viewing tower and bird hide had been completed.

Once work in this area could proceed, the focus shifted from a physical printed pack to social media and online promotion. Over 100 potential local tourism partners were contacted through emails, phone calls and visits, with this number refined to a short list of 25, on which efforts to promote the Mosses were focused. Links to 21 local hospitality providers’ sites were added to the Marches Mosses website and links to that website are now on 33 tourism providers’ websites. Strong, ongoing relationships were also established with the Whixall Marina café and the Lyneal Trust, both important local tourism providers. These ongoing relationships were further cemented by a tour of the Mosses in early March 2022 for a carefully selected group of 15 hospitality providers in the local area, including representatives from Whixall Marina, the Lyneal Trust and local restaurants and B&B owners.

It is estimated that there has been a 70% increase in visitor numbers between 2014 and 2022, as shown in Figure 8. However, over the duration of the project there were a variety of technical issues with the automatic people counters in place at each of the main entrances to the Mosses. In particular, the estimate for visitor numbers for 2018 and 2022 have had to be extrapolated using data for the period April to June. The figures below therefore represent the best available estimate of visitor numbers to the Mosses but should be treated with caution.

**Figure 8: Estimated visitor numbers at the Marches Mosses site**



The recreational value of these visits can be estimated and the most proportionate way to do so is to use the University of Exeter’s ORVal (Outdoor Recreation Valuation) tool (University of Exeter, 2018). This tool uses data from Natural England’s MENE (Monitor of Engagement with the Natural Environment) survey combined with statistical modelling to estimate the value of accessible green spaces to society.

ORVal's estimate of annual visitor numbers to the Marches Mosses is 170,280. Clearly this is an over-estimate but it occurs because the tool uses standardised land use cover types as an input to the modelled estimates of both visitor numbers and welfare benefits. It does not account for the quality of the land use cover at any particular site, which would be expected to impact visitor numbers. Given that access to the Marches Mosses is restricted in some areas to protect sensitive wildlife and in others by legacy drains and former cuttings that frequently flood, it is hardly surprising that ORVal produces such an over-estimate.

The approximate nature of this part of the analysis means that the figures that follow have been rounded to avoid the impression of spurious accuracy. The estimated visitor numbers to the site in 2013-14 were around 5% of those predicted by ORVal. This percentage, when applied to the welfare value estimated by ORVal gives a value of approximately £50,000 per year for the Marches Mosses site. Applying the same calculation to the visitor numbers in 2022 shows an increase in the welfare value provided by the site of around £30,000 per year to £80,000.

Some of this increase might have occurred in any case, for example as a result of the change in peoples' relationship with nature following the pandemic. Nevertheless, there does appear to be some evidence to suggest that the recreational benefits of the Mosses have been improved by the BogLIFE project. The precise value is uncertain but £30,000 per year is a central estimate. On the downside the estimated visitor numbers or the estimate of welfare benefits by the ORVal tool may be too high. On the upside, visitor numbers might be an under-estimate and as the benefits of the project continue into the future both the number of visitors and the value they get from visiting the site could increase.

## Contributions to networks in the scientific and practitioner communities

The key project targets and progress against them are set out in the table below.

**Table 11: Dissemination to scientific and practitioner communities**

Networking activity	Targets	Outputs
Project staff networking with a minimum of five other projects.	Five other projects.	Seven projects: Humberhead Levels LIFE Project Moors for the Future Cumbrian BogLIFE project

		Welsh Raised Bogs project LIFE Mires Estonia Peat-Care Project LIFEquake
'End of LIFE' 2-day conference.	One event for 80 people.	70 people attended this event, held at Harper Adams University on 20 <sup>th</sup> July 2022.
Events, including demonstration days, to explain the technical aspects of the project to special interest audiences.	10 events, 30 people at each, 300 people overall.	30 events in person and online for 1,764 people.

**Figure 9: Delegates at the end-of-project conference**



A number of highlights of the project's dissemination activities for this audience are not captured in detail in the table above and are worthy of note. They are as follows:

- Presentations at the International Union for Conservation of Nature UK Peatland Programme Conferences in 2016, 2020 and 2022, with site visits included in 2016 and 2022;
- A presentation at the 16<sup>th</sup> International Peatland Congress;
- A presentation to the Chartered Institute of Ecology and Environmental Management with an article in the Institute's magazine in press at the time of writing, and
- A presentation to Eurosite and membership of its Europe-wide Peatland Restoration and Management Working Group.

## 4. Conclusions

The Marches Mosses BogLIFE project has made an impressive social and economic impact both locally and, through the dissemination activities associated with the project, nationally and at European level. Although the proportion of the project's overall expenditure that was spent in the local and regional economies was lower than other comparable sites, this was expected because of the Mosses' relatively isolated location and the need to bring in specialised external contractors for several major elements of the project. Despite this, the project managed to generate GVA and job years per £ of investment comparable to other similar sites because of the emphasis placed on employing a local workforce.

The social impacts in terms of volunteer engagement, communication and dissemination activities and increasing visitor numbers are also substantial, with most measures far exceeding the targets set for the project. The improvement in recreational value of the site and the wellbeing value to volunteers are worthy of note, with just these two measures of social value combining to produce approximately £140,000 per year in benefits, working out at an annual return on investment of 2.3% for the project budget as a whole.

The project had a total budget of 7,141,352€ (£6,139,449<sup>1</sup>) with an EU Contribution of 5,356,014€ (£4,604,587). It ran from October 2016 to December 2022. The socio-economic benefits produced by the project are as follows:

1. The total GVA produced by the project in the local economy (i.e. within 10 miles of the Marches Mosses) is estimated to be **710,431€ (£610,761)** and the number of job years created is estimated at **30.3**.
2. The total GVA produced by the project in the regional economy (i.e. within 50 miles of the Marches Mosses and including the local economy area) is estimated to be **3,966,852€ (£3,411,493)** and the number of job years created is estimated at **123.3**.

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<sup>1</sup> All currency conversions use the exchange rate provided by xe.com on 31<sup>st</sup> August 2022 of 1€ to £0.86

3. The increase in expenditure within the regional economy from visitors living more than 50 miles away from the Marches Mosses site is estimated at around **7,558€ (£6,500)** per year.
4. Volunteers provided just over 2,362 days of their time to the project at a value of **275,327€ (£236,700)**. This is the equivalent of increasing the salary expenditure of the project by 13.5%.
5. Seven trainees were taken on during the course of the project, all of whom lived within 50 miles of the Marches Mosses and all of whom have directly progressed to full-time jobs in the nature conservation sector.
6. Twenty-eight volunteers increased their skills through training provided by the project, meaning that any future projects directed at improving the Marches Mosses will be able to build on this human capital foundation and therefore be more efficient and effective.
7. The estimated wellbeing benefit to the volunteers over the course of the project is approximately **755,814€ (£650,000)**.
8. Over 150 events aimed at the general public were held by the project, reaching over 5,000 people, including a wide range of individuals, from primary school children to the elderly, and with a focus on connecting local people with the Marches Mosses. This was despite the impact of the Covid pandemic.
9. Engagement through traditional and social media exceeded most targets set at the beginning of the project, with national television coverage bringing the project to the attention of millions of people.
10. Estimated visitor numbers increased by around 70% over the course of the project producing estimated recreational benefits to society of approximately **34,884€ (£30,000)** per year.
11. The targeted number of events, and people reached through those events, held for the scientific and practitioner communities was substantially bettered, with 30 events in person and online reaching 1,764 people.



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