MoorLIFE 2020 Business and Visitor Surveys

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Executive summary

The MoorLIFE 2020 (ML2020) project is a €16 million, five year programme that aims to protect and transform moorlands and blanket bog across the South Pennines and the Peak District National Park.

Natural Capital solutions have been commissioned to assess the impact of the ML2020 programme on visitors, the local community and the economy. This is being achieved through the delivery and analysis of surveys with local businesses, land managers and visitors to areas in and around the South Pennines and Peak District National Park, in areas close by, and downstream from where restoration activities are taking place. The surveys capture awareness and understanding of moorland/bog restoration and the benefits (or ecosystem services) potentially delivered by such restoration, as well as perceptions and actual impacts of restoration on local businesses, land managers and visitors. The business and land manager surveys are being conducted twice, early and late on in the programme so that any changes throughout the duration of the ML2020 programme can be captured. A single, large-scale visitor survey has been conducted. This report outlines the results from the first business survey and the visitor survey.

A total of 121 businesses were surveyed throughout September and early October 2017 from 17 different towns and villages in and around the South Pennines and Peak District National Park. The businesses found in these areas and therefore included in the survey, were primarily small, local businesses, most of which were from the retail and catering sectors. Attitudes towards moorlands and moorland restoration were generally very positive and considered to be of benefit to society and a worthwhile thing to do. There appeared, however, to be some confusion from respondents as to whether restoration activities would impact on their businesses. The majority of businesses neither agreed nor disagreed with the statement that restoring the moorlands would directly benefit their business, yet they also predicted that both customer numbers and revenue would increase slightly in the long-term as a result of restoration activities. Increases in visitor numbers were generally a welcomed prospect, though concerns were raised regarding the lack of adequate parking facilities and road capacity to cope with more visitors.

A total of 531 visitors from five different sites in and around the South Pennines and the Peak District were surveyed throughout May 2018. Nearly 60% of all respondents spent time in or very nearby areas undergoing restoration as part of the ML2020 project during their visit. Levels of awareness regarding the ML2020 programme and the restoration activities occurring as a result of it, as well as the benefits restoration can deliver, were all low. It would appear that the ML2020 restoration activities conducted thus far have had very limited impact on visitors to the area, the vast majority of whom valued moorland habitats and felt that the potential benefits of moorland and bog restoration were important. The benefits of restoration will, however, accrue over time, thus longer-term monitoring of the impact on visitors is required to determine any long-term impacts on the visitor experience. Raising awareness and understanding of the importance of moorland and bog restoration to people is likely to be important in improving support for these habitats.

Contents

1. Background

The MoorLIFE 2020 project is a €16 million, five year programme that aims to protect and transform moorlands and blanket bog across the South Pennines and the Peak District National Park. It is funded with €12 million from the EU LIFE programme, the largest ever award to a UK nature conservation project, with additional funding from Severn Trent Water, Yorkshire Water and United Utilities, and is being delivered by the Moors for the Future Partnership. The project will restore 95 km^2 of blanket bog using techniques such as bare peat stabilisation, raising water tables by gully blocking, and increasing the diversity and amount of Sphagnum moss. The project is also aiming to assess the potential impact of the works on visitors, the local community and the economy. Natural Capital Solutions have been commissioned to assess these impacts through delivery and analysis of surveys with local businesses, land managers and visitors to areas in and around the South Pennines and Peak District National Park. The surveys capture awareness and understanding of moorland/bog restoration and the benefits (or ecosystem services) potentially delivered by such restoration, as well as perceptions and actual impacts of restoration on local businesses, land managers and visitors.

The land manager and business surveys are being conducted twice, once before and during the restoration activities taking place and then again once these have been completed, allowing any changes resulting from the works and an active public engagement programme to be determined. There will only be one visitor survey. This is because the areas where major restoration activities will be taking place are generally not where popular visitor routes are and so it would have been difficult to get a meaningful sample size of respondents. The immediate visual impacts are also expected to be limited, making it unlikely that pre and post restoration surveys would differ significantly. It was thus decided that a single major visitor survey in more popular locations would be preferable as this would deliver a much larger sample size and would allow for methods such as Willingness to Pay to assess perceptions and impacts of restoration on visitors.

This report summarises the methods and findings from the baseline business survey (section 3) and the visitor survey (section 4). The land manager surveys were ongoing at the time of writing, and so the results will be written up in a separate report.

2. Methodology overview

Three surveys were designed, following consultation with Moors for the Future, to be delivered to local businesses, visitors and land managers in areas in and around the South Pennines and Peak District National Park. The baseline business survey took place in September-October 2017. The visitor survey was conducted throughout May 2018. The questionnaires consisted of a mix of closed and open ended questions broadly covering the key themes of awareness and understanding of moorland/bog restoration, the benefits potentially delivered by such restoration, as well as perceptions and actual impacts of restoration, though each one was tailored to the sector in question with additional questions of relevance to them. The land manager surveys are being delivered by Moors for the Future (ongoing) and the business and visitor surveys by Natural Capital Solutions (NCS). All analyses are, and will be, conducted by NCS.

3. Business surveys – methods and results

The business survey questionnaire is given in Annex 1, showing details of question structure and response options.

3.1 Survey design, sites and delivery

The survey was designed following consultation with the Moors for the Future Partnership and covered three core topics; 1) details of the business, 2) perceived importance of the natural environment to the business, and 3) perceived impacts of moorland restoration on the business (see Annex 1 for the full questionnaire). A leaflet was provided with the questionnaire, giving a brief overview of the MoorLIFE 2020 programme and purpose of the survey, as well as photo descriptions of three of the core restoration techniques to be deployed during the project (re-vegetating, gully blocking, and establishing sphagnum moss). Surveys were conducted in 17 towns and villages (both tourist and non-tourist destinations) in and around the South Pennines and the Peak District National Park (Figure 3.1, Table 3.1) in September and early October 2017. In the smaller towns and villages, all businesses were asked to participate in the survey. In the larger towns, a representative sample of the businesses present were approached and asked to take part. Questionnaires were delivered in person to staff members at the business location to complete, and collected again either later the same day or within the next few days. On some occasions, (nine businesses; 7%) the questionnaire was completed with the surveyor present, though minimal input was given to avoid influencing the respondent.

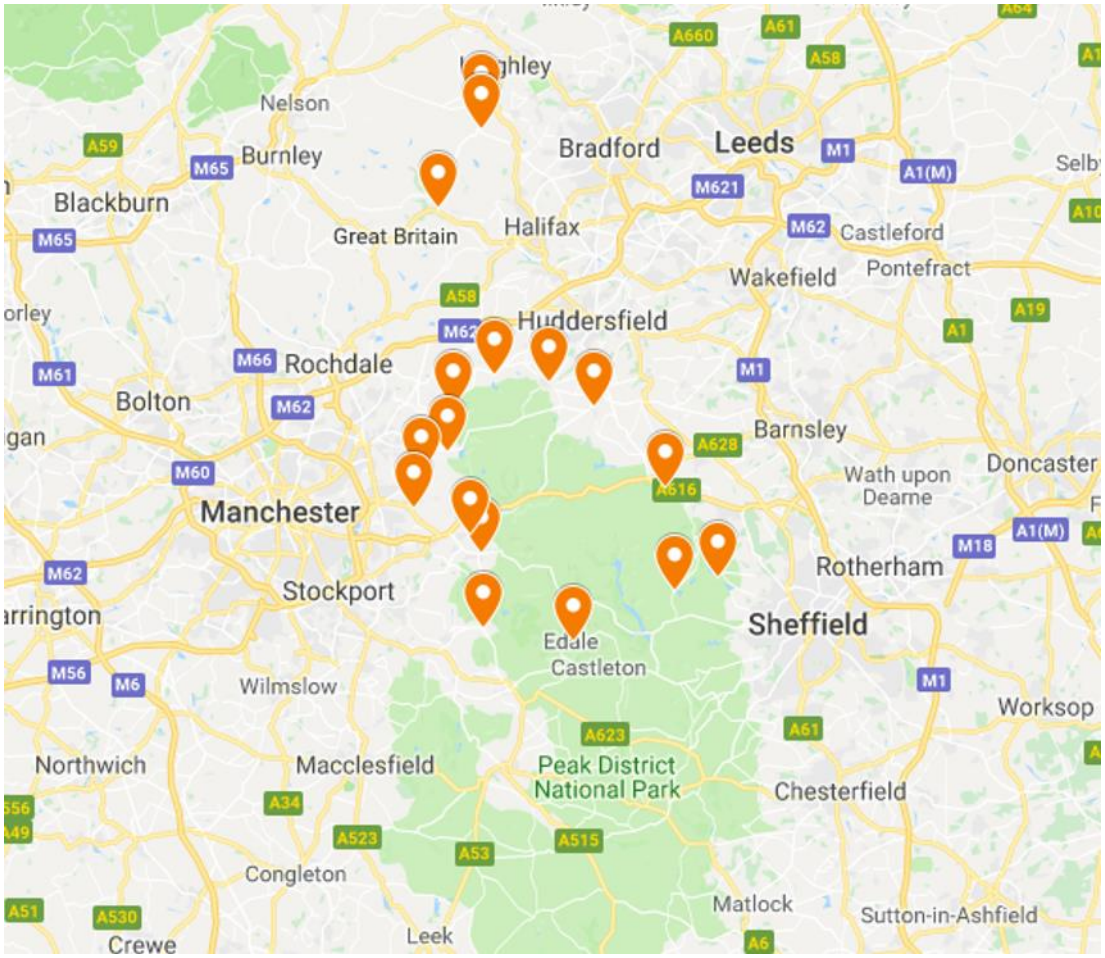

Figure 3.1 Business survey locations.

3.2 Sample size and response rate

A total of 121 businesses from 17 different towns took part in the survey (Table 3.1). The response rate was 73%.

Table 3.1 The towns/villages surveyed and number of business questionnaires collected from them.

Town	# Questionnaires
High & Low Bradfield	6
Diggle	3
Edale	5
Glossop	16
Greenfield	8
Hadfield	7
Hayfield	8
Hebden Bridge	15
Holmfirth	10
Howarth	5
Langsett	2
Marsden	6
Meltham	8
Mossley	8
Oxenhope	2
Stalybridge	11
Strines	1
Total	121

3.3 Respondent and business type

The majority (50%) of respondents were owners/directors of the business, followed by managers/assistant managers (22%) and other staff types (such as sales/catering assistants; 17%). No position was given by 11% of respondents.

The breakdown of respondents by sector is given in Table 3.2a. Some businesses were included in more than one sector such as pubs with accommodation being classified as both catering and accommodation. Businesses classed as "other" were financial services (N = 3), garage (N=1), golf club (1) and steam railway (1). The majority of businesses surveyed were retail outlets (43%), a further breakdown of which is given in Table 3.2b. Those classed as "retail - other" consisted of bookshops, newsagents, home and hardware, turf and animal feed.

Table 3.2a. Sector breakdown of businesses surveyed.

Sector	No.	%
Retail	56	43
Catering	39	30
Accommodation	13	10
Estate agent	8	6
Health & beauty	8	6
Other	6	5

Table 3.2b. Breakdown of businesses surveyed from the retail sector.

Retail breakdown	No.	%
Food and drink	16	29
Hobbies, art & gifts	8	14
Florist	7	13
Outdoor pursuits	6	11
Clothing & shoes	6	11
Other	13	23

Respondents were asked where they had premises, how many units/shops were part of the business and how many staff they employ, both at the survey location and across the business as a whole and how many Full Time Equivalents (FTEs) this represented. The vast majority of businesses were small, local businesses with 82% having premises in the survey location only, 77% having one unit/shop and 65% employing between 1-5 staff members (58% with 1-5 FTEs). Full breakdowns are given in Table 3.3.

There was considerable variation in the length of time businesses had been operating for, though the majority had been in operation for 10 years or less (Table 3.4).

Table 3.3. The percentages of businesses surveyed broken down by various determinants of business size.

Premises location	**Businesses (%)**	
This location only	82	
Here & neighbouring communities	10	
County-wide/regional	3	
National/international	4	
No answer	1	
Number of units/shops (No.)		
1	77	
2-10	16	
11-30	3	
>100	3	
No answer	2	
Employees (No.)	**Survey location**	**Whole business**
0 (e.g. cooperative)	3	3
1-5	65	58
6-10	17	15
11-15	8	9
16-20	3	3
21-60	3	6
>60	0	5
No answer	1	1
FTEs (No.)		
0	9	7
1-5	68	62
6-10	6	5
11-15	3	3
16-20	0	0
21-60	3	3
>60	0	3
No answer	13	18

Table 3.4. Length of time the businesses surveyed had been in operation for.

Years	Businesses (%)
0-4	26
5-10	22
11-20	21
21-40	12
41-60	8
>60	8
No answer	3

3.4 The relative importance of the natural environment to the business

Respondents were asked to indicate how much they agreed, on a five point Likert scale of strongly disagree to strongly agree, with 15 statements relating to the importance of the natural environment to their business. The percentages of participants who disagreed, were neutral and agreed with each statement as well as the mean score across all businesses is given in Table 3.5 and discussed further here along with differences by sector.

Although the majority (41%) of respondents agreed that the core business was dependent on people coming to enjoy the outdoors, the average score was neutral overall, though this varied by sector. Those from the accommodation sector, retail of food and drink and outdoor pursuits all agreed that the core business was dependent on people coming to enjoy the outdoors, while all other sectors reported this as neutral, except for florists who disagreed. The majority of businesses surveyed disagreed that they sold products / services for use in the outdoors, with only those from retail outlets selling outdoor pursuit equipment agreeing with this statement. While both visitor and local trade were considered as being crucial to the businesses surveyed, local trade is of greater importance, with 83% of businesses agreeing local trade is crucial compared to 58% for visitor trade.

Most businesses (68%) agreed that the environment was important for attracting visitors (florists were neutral, the accommodation sector strongly agreed, while all other sectors agreed) and that the environmental setting of the town was important for attracting visitors. A significant proportion (73%) of respondents disagreed that the area has enough visitors already, with all sectors also disagreeing with this statement on average.

High proportions of businesses (73%) agreed that moorlands provide a number of benefits to society (retail of outdoor pursuit equipment strongly so) and there was overwhelming support (88%) for the statement that restoring the moorlands is a worthwhile thing to do (other, florists and retail-other all strongly agreed). However, far fewer businesses agreed that a poor quality environment would impact on their business, or that restoring moorlands would directly benefit their business. When broken down by sector, estate agents, other and retail-clothing all agreed that a poor quality environment would impact on their businesses while all other sectors were neutral. The accommodation sector agreed that restoring the moorlands would directly benefit their business while all others were neutral. The majority (63%) of sectors, however, agreed that restoring the moorland would increase visitor numbers, apart from retail-clothing, retail-hobbies and retail-other which were all neutral.

Though the majority agrees they were concerned about the risk of flooding and wild fires, average scores for these statements were neutral, though this does vary by sector and location (flooding

concern only). Health and beauty, other, as well as retail-food and drink and retail-other all agreed they were concerned about flood risk while all others were neutral. Businesses from towns/villages considered to be at risk of flooding did on average agree that they were concerned about the risk of flooding in the area, while those considered not at risk were neutral. Accommodation, health and beauty and retail-florist all agreed they were concerned about risk of wildfires, with all other sectors being neutral. NB, these surveys took place prior to the major wild fire incidents in the area during the summer 2018.

Table 3.5. Responses to statements on the relative importance of the natural environment to the businesses surveyed. The most common response is in bold.

Statement	Disagree (%)	Neutral (%)	Agree (%)	Mean response (score ± SE)
The core business is dependent on people coming here to enjoy the outdoors	21.4	37.6	**41.0**	Neutral (3.3 ± 0.1)
We sell products / services for use in the natural environment	**54.0**	20.4	25.7	Neutral (2.5 ± 0.1)
Visitor / tourist trade is crucial for this business	19.5	22.9	**57.6**	Agree (3.7 ± 0.1)
Local trade is crucial for this business	7.5	10.0	**82.5**	Agree (4.4 ± 0.1)
Most people come to this area because of the natural environment	7.5	24.2	**68.3**	Agree (3.9 ± 0.1)
The environmental setting of this town / village makes no difference to visitor numbers	**70.6**	15.1	14.3	Disagree (2.1 ± 0.1)
This area has enough visitors already	**73.1**	21.0	5.9	Disagree (2.0 ± 0.1)
The moorlands are unattractive	**84.3**	11.6	4.1	Disagree (1.7 ± 0.2)
The moorlands provide a number of benefits to society	6.7	20.0	**73.3**	Agree (4.1 ± 0.1)
A poor quality natural environment really impacts the business	22.0	35.6	**42.4**	Neutral (3.3 ± 0.1)
I am concerned about the risk of flooding in this area	27.7	25.2	**47.1**	Neutral (3.4 ± 0.1)
I am concerned about the risk of wild fires on the moorlands	23.7	31.4	**44.9**	Neutral (3.3 ± 0.1)
Restoring the moorlands is a worthwhile thing to do	2.5	9.1	**88.4**	Agree (4.4 ± 0.1)
Restoring the moorlands would directly benefit my business	24.2	**43.3**	32.5	Neutral (3.2 ± 0.1)
Restoring the moorlands would increase visitor numbers	10.0	26.7	**63.3**	Agree (3.8 ± 0.1)

3.5 Impact of moorland restoration work

Participants were told that a restoration project was being planned for the moorland in their area, which may deliver a number of benefits, and asked to score how important they thought 15 listed benefits (see Annex 1, question 3.1) would be to their business (1 = low importance, 2 = moderate importance, 3 = high importance).

There was little variation in how important the businesses scored each of the potential benefits (Figure 3.2), with the average score for each benefit across all businesses being moderately important, apart from enhanced air quality and increased visitor numbers which were both considered of high importance (only just, however, with average scores of 2.5). Participants were asked to add any additional benefits they felt the restoration work might deliver but none were given.

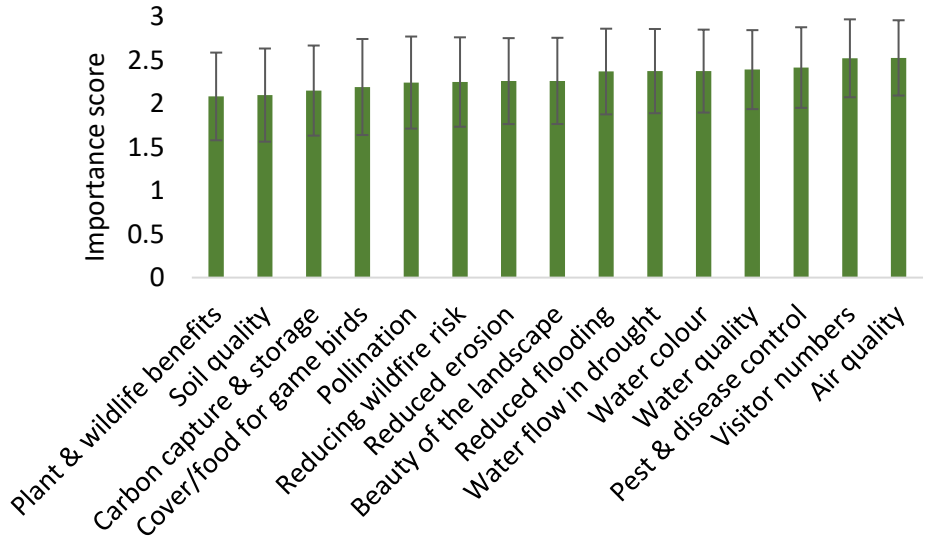

Figure 3.2. Average scores of perceived importance (low importance = 1, high importance = 3) of potential benefits of moorland restoration to businesses. All listed potential benefits are improvements (i.e. "improved soil quality" except where stated. Error bars are standard errors.

To determine possible drivers of perceived importance of moorland restoration benefits for businesses, we ran models that incorporated business and respondent details to see how these were associated with each of the potential moorland restoration benefits (see Annex 2 for the model details). It is plausible that businesses from tourist villages/towns or in areas prone to flooding could also influence the responses to some of the potential moorland benefits, and so these too were incorporated in to the models. The general patterns observed are described below, with the full result breakdowns given in Annex 2.

Whether participants were aware of the potential benefits of moorland restoration had no influence on how important any of these benefits were considered to be. There was no evidence that any of the business factors or respondent details incorporated into the models influenced how important participants considered reduced erosion, improved soil quality and increased visitor numbers to be to their businesses. Business sector was most commonly associated with how important the rest of

the potential moorland benefits were considered to be, with scores for eight of the 15 listed potential benefits varying according to sector. Participants from businesses within the accommodation sector generally scored benefits as being more important than other sectors, while estate agents often scored them lower. The location where businesses had premises (e.g. one location only, county-wide, nationally etc.) was associated with five of the 15 benefit scores, with those with premises nationally scoring water quality and colour improvements lower than businesses with premises at other locations. Conversely, participants from national businesses scored increased pollination, increased pest and disease control and enhanced beauty of the landscape higher than other business types.

Businesses from towns/villages of high flood risk, unsurprisingly, scored the benefits of decreased flood risk and water quality improvements as more important than those from non-high flood risk areas, while the opposite was true for enhanced cover or food for game birds. Businesses from tourist towns scored maintaining water flow in drought, reducing fire risk and increased pest and disease control of less importance than those from non-tourist towns.

How important increased pest and disease control, as well as plant and wildlife benefits were considered to be, varied depending on the position of the respondent within the business. Lower level employees scored increased pest and disease as being of greater importance than more senior employees, while directors/owners of the businesses thought plant and wildlife benefits were more important than did lower level employees.

The number of employees at the business where the survey took place was only associated with enhanced cover or food for game birds, with decreasing scores of importance as the number of employees increased. Carbon storage and capture was the only potential benefit that was associated with how long a business had been running for, with respondents from longer-running businesses scoring this benefit of greater importance.

3.6 Awareness of moorland restoration works

The majority of respondents (60%) reported that they were aware of the types of moorland restoration works outlined in the survey. A logistic regression analysis was conducted using the lme4 package (Bates et al. 2014) in R to determine potential drivers of levels of awareness. Participants from businesses in tourist towns/villages were significantly more aware of the restoration works ($B = 1.60$, $SE = 1.07$, $P < 0.01$) though those in towns/villages of high flood risk were less aware ($B = -1.35$, $SE = 0.64$, $P < 0.05$). No other factors were associated with awareness.

3.7 Expected impacts of restoration works on the number of customers and revenue

Respondents were asked what impact they would expect the restoration works to have on a) the number of customers and b) their revenue both during the works and in the long term on seven point scales from a large decrease (-3) to a large increase (+3). Average scores across all respondents indicated that no impact would be expected on either customer numbers or revenue during the works but that both would increase moderately in the long term (Figure 3.3).

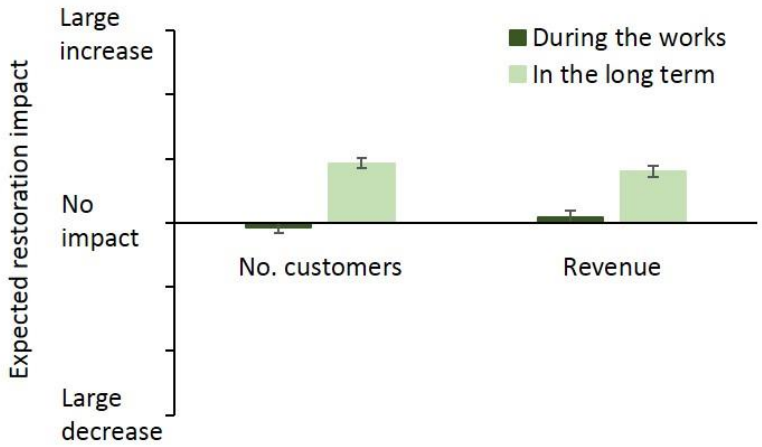

Figure 3.3. Expected impact of moorland restoration works on the number of customers and revenue for local businesses both during the works and in the long term. Error bars represent standard errors.

Ordinal regression models were run to determine potential factors influencing expected impacts of the restoration work. The predictors listed in Annex 2 were incorporated into the models, along with the combined importance scores of potential benefits of moorland restoration. There was no evidence that any of the predictors influenced expected impact of restoration on customer numbers during the works taking place. Businesses from more touristy locations, however, expected significantly less revenue during the works compared to non-tourist locations ($B = -1.44$, $SE = 0.57$, $P < 0.05$) while health and beauty and retail hobbies expected higher revenue during works compared to other sectors ($B = 2.33$, $SE = 1.19$, $P < 0.05$, $B = 2.54$, $SE = 1.13$, $P < 0.05$ respectively). Conversely, when considering the long term impacts of restoration, tourist village/town businesses predict significantly greater tourist numbers compared to non-tourist locations ($B = 1.00$, $SE = 0.49$, $P < 0.05$). No other predictors were associated with impacts on customer numbers or revenue.

Participants were also asked in an open-ended question whether they foresaw any other business impacts as a result of the moorland restoration works. Only 14 of the 121 participants made further comment. Eight of the comments referenced issues of congestion and lack of adequate parking for current numbers of visitors, implying improvements would be required should visitor numbers increase as a result of restoration work. Three participants mentioned concerns about increased traffic and hold ups on the roads caused by those conducting restoration works. One comment suggested that revenue could increase as a result of custom from the restoration workforce while another stated that “Any improvements to the natural environment has to be good for everyone really”. The final comment was that “Moorland restoration is not about business benefits, it’s about life, wildlife and heritage. The landscape and natural habitat cannot be judged against business benefits. It is about leaving the moor in a better state to hand over to the next generation”.

3.8 Summary

This survey aimed to capture people’s perceptions of moorland restoration impacts on businesses in villages and towns nearby and downstream from areas where restoration is taking place through the MoorLIFE 2020 programme prior to most of the works being conducted. The majority of businesses

in these areas (and thus in the survey) were small, local businesses that only existed at that location, had one unit/shop, five or fewer employees and had been operating for less than 10 years.

General attitudes towards moorland restoration were positive, with overwhelming support from businesses that they provide a number of benefits to society and that restoring them is a worthwhile thing to do. The potential benefits delivered through moorland restoration were also generally considered as moderately important to respondent's businesses, with none scored as low importance on average and only enhanced air quality and increased visitor numbers verging on scores of high importance on average. The variations in perceived levels of importance of restoration benefits that did occur were largely driven by differences in sector, with those from the accommodation sector consistently giving benefits the highest or second highest scores. A note of caution, however, as speaking to respondents after completing the survey it became apparent that in some cases scores were given to restoration benefits according to their own, general beliefs, as opposed to how important they thought they would be to the business specifically.

There appeared to be confusion, however, regarding whether or not restoration would actually impact on respondent's businesses. Although local trade was, on average, more important than visitor trade for most businesses, the majority stated that visitor trade was still crucial to their businesses, that the areas did not have enough visitors already and that the natural environment is important for attracting people to the area. The majority of businesses (63%) agreed with the statement that restoring the moorlands would increase visitor numbers, but only a third agreed restoration would directly benefit their business, with the majority scoring this statement as neutral. When asked directly what impact participants thought restoration works would have on customer numbers and revenue in the short and long-term, however, the majority felt there would be little change during the works taking place, but that both would increase in the long-term. Though theoretically more visitors would be welcomed by businesses, concern was raised regarding the lack of adequate parking facilities and road capacity to cope with such increases.

Although the majority of respondents said they were aware of the types of restoration works being conducted through MoorLIFE 2020, it appears there is some misunderstanding as evidenced, for example, by the concerns raised regarding impacts of the workforce causing disruptions to roads and traffic.

Thus is seems that respondents value the moorlands and appreciate the importance to society of restoring them but that there is confusion about the potential direct impacts on their businesses, with increases in visitor numbers considered the most likely outcome of restoration that would impact businesses, though any gains in revenue are predicted to be fairly modest.

4. Visitor surveys – methods and results

The visitor survey questionnaire is given in Annex 3 and shows details of question structure and response options.

4.1 Survey design, sites and delivery

The visitor surveys covered the topics of visitor background, visit details, awareness and perceptions of restoration and restoration benefits, moorland value to people, and well-being. The surveys were conducted at five sites in and around the South Pennines and Peak District National Park; Buckstones, Dovestone reservoir, Edale, near Holmfirth, and Langsett reservoir. The sites were all access points to moorland areas where ML2020 restoration activities have been taking place and were selected to represent a good geographical spread and locations with and without car parking fees. We selected areas that were busy to ensure a good sample size and as these are often locations with reservoirs in the immediate vicinity, also selected sites further away from reservoirs to account for any bias reservoirs may introduce to visitor type/experience. It was not possible to survey sites in the far north of the ML2020 project area due to logistical difficulties for volunteer helpers as well as in their support and coordination and because of uncertainty over exact locations of restoration activities in this area due to ongoing negotiations with some landowners. Much of the restoration work had already been completed at the survey sites, with some top-up work planned and underway in certain areas. No work was actually taking place during the visitor surveys, however, due to the bird breeding season.

The surveys were conducted throughout May 2018, between the hours of 9.30am and 5.30pm, with each site being surveyed on six or seven occasions, spread over weekdays, weekends and during half-term/bank holidays. Surveys were conducted face-to-face in car parks or on nearby trails with visitors, once they had spent time at the site, by two NCS staff members and eight volunteers from the MFTF Partnership.

4.2 Sample size & response rate

A total of 531 questionnaires were collected, with an overall response rate of 62%. The breakdown by site is given in Table 4.1. The variation in the number of questionnaires collected is primarily a reflection of how busy the sites are, as opposed to survey effort, as all sites were surveyed for between six and seven days.

Table 4.1. Number of questionnaires collected from each site

Site	# Questionnaires	Response rate (%)
Buckstones Edge	62	66
Dovestone	118	58
Edale	165	57
Near Holmfirth	78	78
Langsett	108	64
Total	**531**	**62**

4.3 Respondents

The majority of visitors who took park in the survey were employed (Figure 4.1), had a household income of between £50k and £75k (Figure 4.2), were over the age of 40 (Figure 4.3), male (59%), and from a White British ethnic background (described below). Our sample of the visitor population is broadly representative of visitor type reported in previous visitor surveys conducted in the Peak District National Park, which reflect known biases in the types of visitors to national parks compared to national averages (e.g. more men, retirees, older people, wealthier people, people with higher levels of education, and fewer people who are unemployed or from ethnic minority backgrounds). There were, however, a few exceptions, primarily in employment status. A much greater proportion of participants from the current surveys were in employment compared to visitor surveys conducted in the Peak District during 2014 (49%; Peak District National Park Authority 2014), and the national average (56%; ONS 2011). The proportion of students taking part was also much lower than in the 2014 survey (16%), but was closer to the national average of 5.8% (ONS 2011).

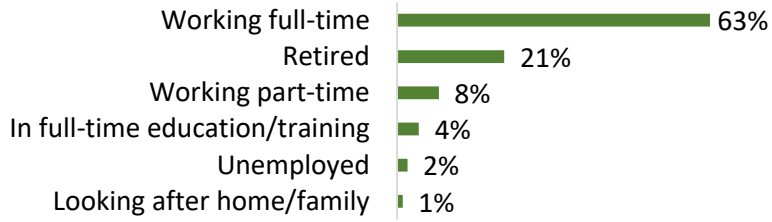

Figure 4.1. Employment status of survey participants.

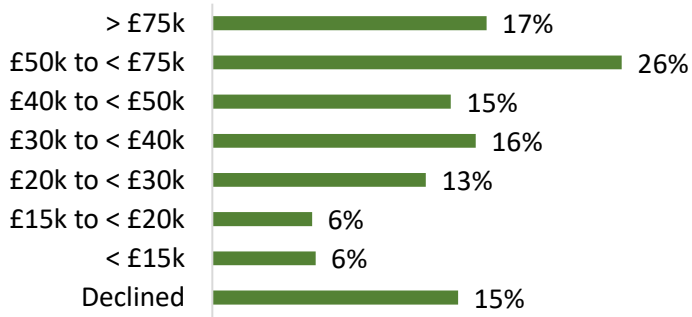

Figure 4.2. Total household income of survey participants.

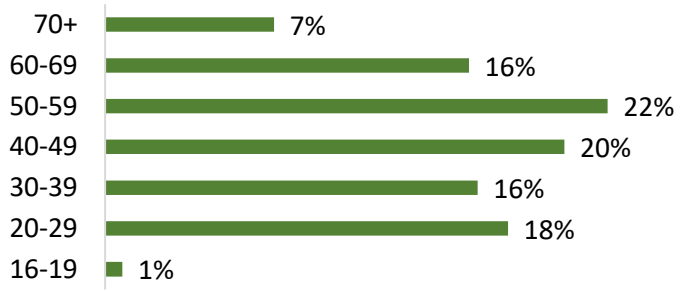

Figure 4.3. Age ranges of survey participants.

A total of 90.9% of respondents described themselves as White British. When combined with Irish and White Other this figure is 96.4%, which is significantly higher than the national level at 85.4%

(ONS 2011). The proportions of respondents who described themselves as being from other ethnic groups (2.5% Asian, 0.6% mixed, 0.4% Black, 0.2% other) were conversely lower than the national averages.

4.4 Visit details

The vast majority of respondents (85.5%) were on a day trip or short visit from home or work while the remaining 14.5% were on holiday staying away from home. The main activity undertaken by participants was walking with a variety of other activities stated (Figure 4.4).

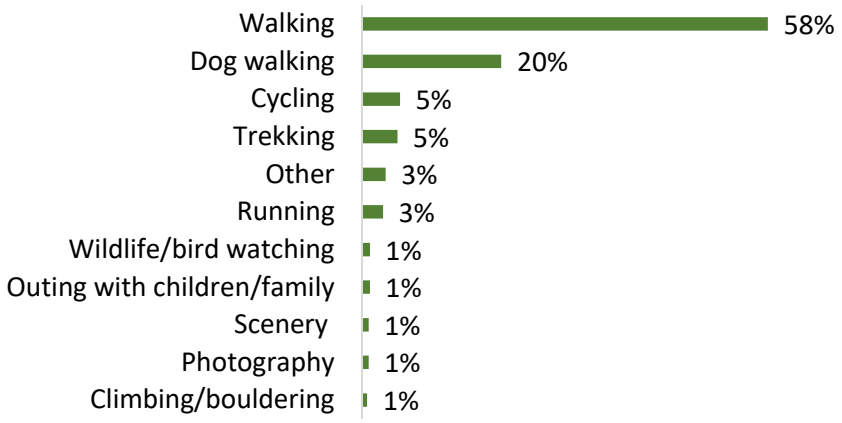

Figure 4.4. The main activities undertaken by survey respondents during their visit as selected from a list of options (one answer per participant).

The majority of respondents (66%) visit the sites on a less than monthly basis (Figure 4.5) though this varies by site and is primarily driven by a large proportion of visitors to Edale visiting on a less regular basis compared to other sites (more than half of all Edale respondents visit less than monthly compared to all other sites where at least half visit monthly or more regularly). Dovestone and Edale had the greatest proportion of first time visitors (17% and 16% respectively) while Buckstones had the fewest (10%).

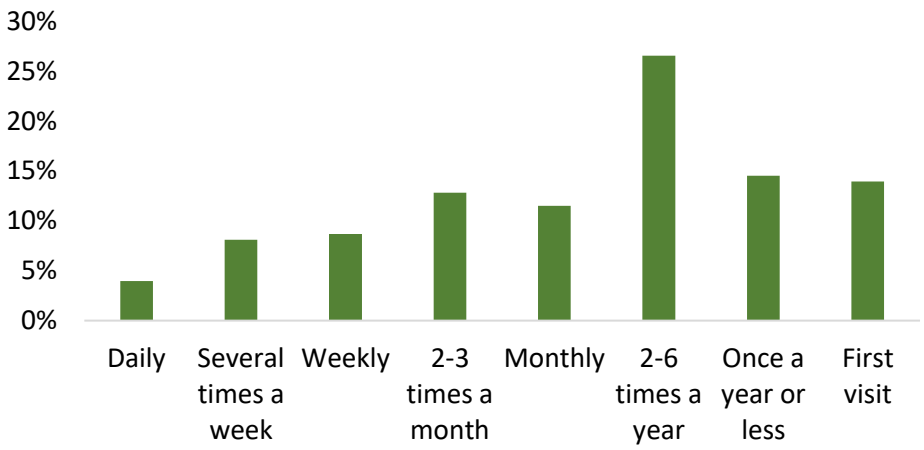

Figure 4.5. Visit frequency of respondents to the five survey sites.

Nearly half of all participants visited the sites in groups of two and just under a third came by themselves (Figure 4.6). Visit duration varied, with a quarter of all respondents spending between three and five hours at the sites (Figure 4.7). Three quarters of respondents travelled to the sites by car (Figure 4.8), a bias expected given most of the surveys were based within car parks. More than a third of participants travelled for under half an hour to reach the sites while another third travelled between 30 minutes and an hour (Figure 4.9). The majority of respondents came from towns and villages in and around the Peak District National Park (Figure 4.10) though others came from much further afield within the UK and internationally, including Australia (x1), New Zealand (x1), The U.S. (x2) and multiple locations across Europe (x7).

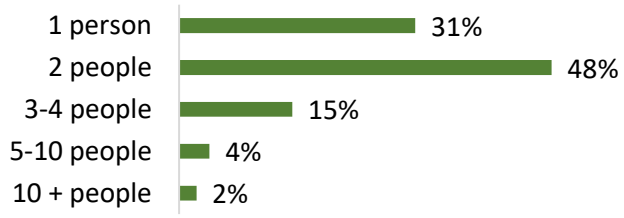

Figure 4.6. Group size of survey respondents.

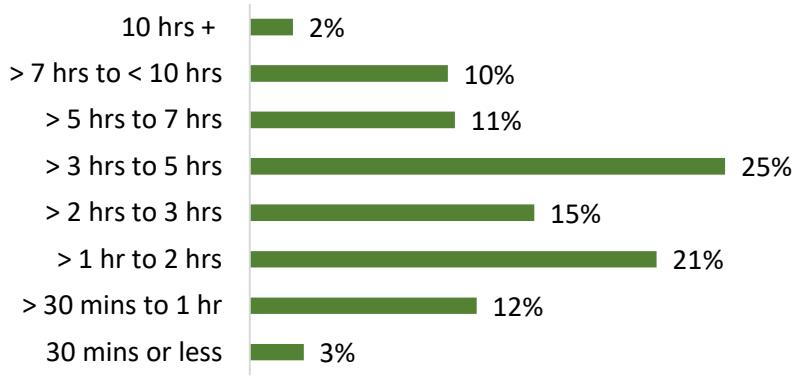

Figure 4.7. Visit duration.

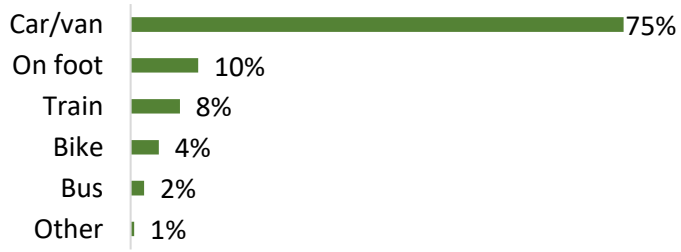

Figure 4.8. Modes of transport used by respondents to access the sites.

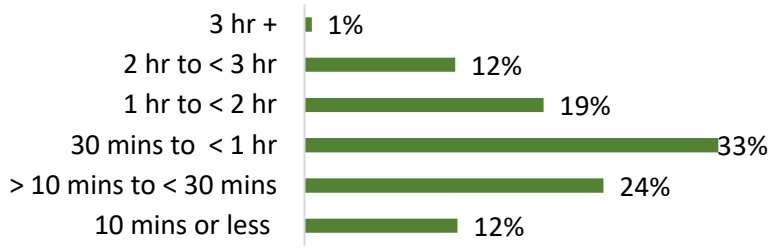

Figure 4.9. The length of time it took people to get to the sites from where they came from on the day by whichever form of transport.

a)

b)

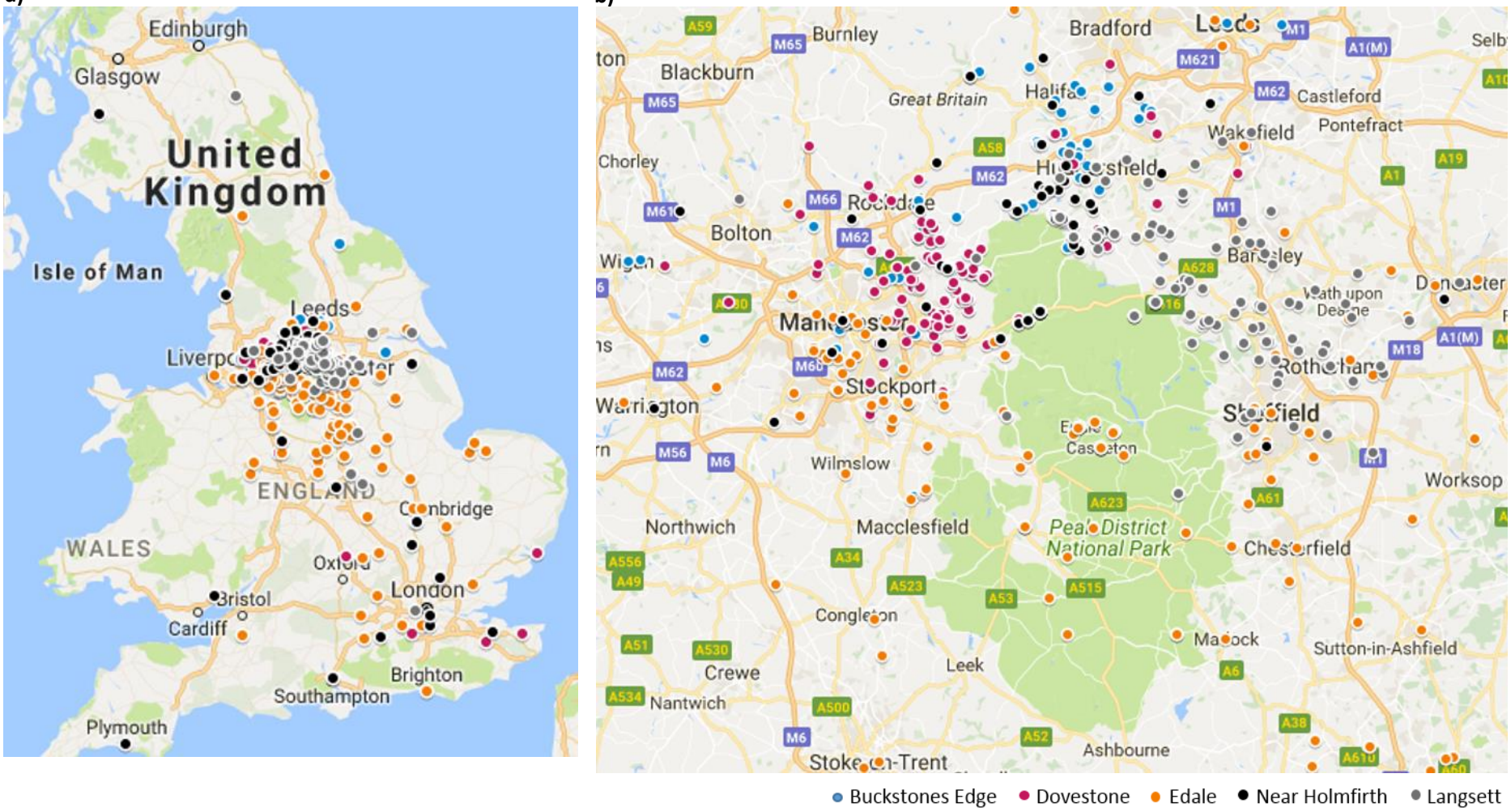

Figure 4.10. Postcodes of where respondents travelled from as shown across the UK (a) and zoomed in to the area surrounding the Peak District National Park (b) where the majority of people came from. Postcodes are colour coded by the site where the participant took part in the survey.

4.5 Reason for location choice and outcome of visits

Participants were asked why they had chosen to come to “this particular location” and “what words they would use to describe how they feel after they leave here today” in open ended questions. Answers are depicted in word clouds (Figures 4.11 and 4.12) and were also categorised based on the taxonomy of motivations and outcomes of greenspace visits derived by Irvine et al. (2013) (Tables 4.2 and 4.3 respectively).

The majority of reasons given for visiting the sites were related to space qualities with the most popular reasons given being site features such as proximity, that it is a nice or lovely place and it being good for dogs, for example. Aspects relating to nature were also popular reasons for visiting the sites, such as the views and scenery and good weather. Place identity and attachment were also identified as motivation for visiting the sites, with many respondents stating they have visited the site on a regular basis for years and/or that they like/love it respectively. Visiting the sites in order to be able to conduct physical pursuits such as walking and exercising was also a popular reason given for location choice.

Figure 4.11. Word cloud of reasons given for visiting the sites.

Table 4.2. Reasons given for visits to the sites where respondents completed the survey.

Domain	#	Theme	#	Code	#	Sub code	#
Space qualities	572	Site features	270	Proximity	66		
				Nice/lovely place	36		
				Peace and quiet	26		
				Good for dogs	25		
				Accessibility	25		
				Convenient	24		
				Specific location[b]	19		
				Facilities	15		
				Hills/mountains	15		
				Good footpaths/variety	11		
				Well maintained	5		
				Good cycle route	3		
		Nature	144	Beautiful/pretty	66		
				Views/scenery	53		
				Sunshine/nice weather	20		
				Wildlife	5		
		Place identity	88	History of use	88		
		Place attachment	70	Emotional attachment	70		
Physical	149	Physical pursuit	149	Walking	118	A walk/the walking	40
						Nice/good route/walk	35
						Specific walking trail[a]	30
						Walk the dog	8
						Easy/short walk	5
				Challenge	11		
				Exercise	6		
				Cycling	6		
				Running	5		
				Climbing	3		
Social	23		23	Invited by friends/friend's choice	18		
				Children	5		

Table 4.2. Continued

Domain	#	Theme	#	Code	#	Sub code	#
Cognitive	9	Mental pursuit	9	Work/course/volunteering	6		
				Photography	3		
Other	91		91	Recommendation	27		
				Not been before	18		
				Other[c]	46		

[a]The vast majority reference the Pennine Way but the Kirklees Way and Land's end to John o'Groats were also mentioned.
[b]The vast majority reference Kinder Scout but Black Hill and Mam Tor were also mentioned.
[c]All those mentioned by only one or two people.

The majority of words used to describe how visitors would feel after leaving the sites were physical responses, primarily tiredness (Table 4.3) though this was often used in conjunction with other words such as invigorated and exhilarated and was generally a positive reaction. A large proportion of visitors also felt revitalised and relaxed as a result of their visit. Many expressed positive emotions such as feeling happy and exhilarated while others were satisfied and tranquil. Very few negative responses were given with most of those that were arising due to concerns about site condition or how the site was being treated by visitors (letting dogs roam off the lead for example, or the amount of litter).

Figure 4.12. Word cloud depicting how respondents thought they would feel after leaving the sites from their visits.

Table 4.3. Words used to describe how participants thought they would feel after their visit. Respondents were asked to give a maximum of three answers.

Domain	#	Theme	#	Code	#
Physical	447	Depleted	194	Tired	160
				Hot/warm/sweaty	19
				Hungry/thirsty	15
		Revitalised	123	Refreshed	61
				Invigorated	47
				Exercised	5
				De-stressed	4
				Open air feeling	3
				Fitter	3
		Relaxed	121	Relaxed	121
		Uncomfortable	7	Cold/wet/wind swept	7
		Comforted	2	Rested	2
Affective	215	Positive emotions	154	Happy	89
				Good/fine/nice	41
				Enjoyed it	19
				Positive	5
		Intensely positive emotions	61	Exhilarated/fantastic/great	61
Cognitive	97	Satisfied	84	Satisfied/content/fulfilled	63
				Proud/sense of achievement	17
				Rewarded	4
		Attention restoration	13	Motivated/inspired	10
				Clear headed	3
Spiritual	38	Tranquil	35	Peaceful	18
				Calm	17
		Interconnected-ness	3	Connected to nature/sense of belonging	3
Place attachment	25	Value of the site	15	Upset about site condition/treatment of site by visitors	9
				Sad to leave	6
		Appreciation	10	Lucky/grateful/appreciative/love	10
Global well-being	24		24	Better/uplifted	13
				Healthy/cleansed	11
Other	33			Other	33

4.6 Visitor spend

The average spend by respondents as a result of their visit was £14.43 for those who spent and £9.35 for all participants, including non-spenders. These figures very closely match those from the Peak District surveys conducted in 2014, with average visitor spend of £14.37 for visitors who spent, and £10.35 for all visitors, including non-spenders, but is considerably higher than the national average spend on visits to green spaces (both urban and rural, including non-spenders) of £6.44 (Natural England 2017). The greatest proportion of respondents spent money on food/drink (76%

bought food/drink, spending £9.11 on average) while accommodation was the greatest expense (13% of respondents spent money on accommodation, costing £35.43 per person per night on average). Just under half (48%) of all visitors paid for car parking (average cost of £1.78) while only 14% paid for public transport (average spend £10.26). Other expenses including equipment hire/purchase, souvenirs and admission fees averaged £28.90 and was spent by 2% of participants.

4.7 Awareness and perceptions of moorland restoration and its benefits

Awareness of MoorLIFE 2020

Only 8% of respondents were aware of the MoorLIFE 2020 (ML2020) project and what it aims to do. Participants were not, however, given any details of the project and so would have had to recognise the project by name. We suspect that although the vast majority of respondents were unaware of the restoration work, this 8% figure may nevertheless be an underestimate, as some visitors may be aware of the ongoing restoration work but not the overarching name of the programme.

Perceptions of restoration

In order to gain insight on whether people were aware of restoration work happening, they were asked whether they noticed any restoration work or changes to the moorland on their visit. Answers were categorised as ML2020 restoration activities or not and then grouped by type of activities. Respondents were also asked to draw their route on a map so that we could determine whether they were actually visiting moorland/moorland fringe areas during their visit and if they were spending time in areas where restoration work had taken place. Routes were subsequently coded as having been through moorland/moorland fringe areas or not and within restoration areas or not. A modelling approach was also taken to identify potential factors influencing whether people noticed ML2020 restoration activities. A mixed effect logistic regression analysis was conducted using the lme4 package (Bates et al. 2014) in the programming software R (RStudio Team, 2018), with whether people noticed ML2020 restoration activities as the response variable and visit frequency, being aware of ML2020 and all socio-economic and demographic factors incorporated as fixed predictors (site was also included as a random predictor to account for any site related differences).

Most respondents (81.5%) spent time in moorland/moorland fringe habitats during their visit and 58.1% passed by areas where restoration work has taken place as part of the ML2020 programme. The variety and intensity of techniques deployed within visited areas is variable, however, thus not all respondents who visited restoration areas will have been equally exposed to restoration efforts. Only 20.1% of respondents who spent time in areas where ML2020 restoration activities took place commented on these activities when asked whether they'd noticed any restoration work or changes to the moorland, the majority of which were at Edale (58.8%). The activities picked up on by respondents are summarised in Figure 4.13 and consist of experiences both during their visit that day as well as previous visits. The most frequently commented on activities included seeing the big white bags of material to be used in restoring areas, fencing erected to protect some of the restoration works, helicopter activities and gully/grip blocking.

Being aware of the ML2020 programme was significantly associated with how likely respondents were to notice ML2020 restoration activities (Annex 4). Males were also more likely to notice these activities. How regularly people visited the sites and socio-economic and demographic factors had no influence on noticing ML2020 restoration activities.

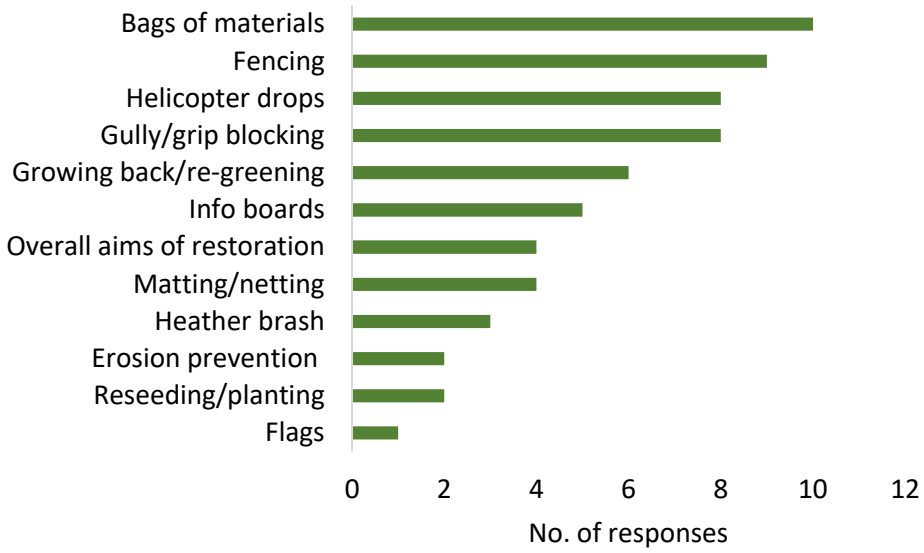

Figure 4.13. ML2020 restoration activities noticed by survey participants (flags are used to mark where dams will be installed).

The majority of responses about restoration activities and changes to the moorland were not activities undertaken as a part of the ML2020 programme (44.4% of respondents commented on these non ML2020 activities). A wide variety of responses were given that captured both conservation works conducted outside the ML2020 project as well as non-conservation activities (Figure 4.14). The vast majority (41%) of comments were regarding footpaths (new flagstone/paving, better condition, new paths etc). Long-term maintenance work was taking place along the dam wall at Dovestone, closing a popular path that completes a circular walk around the reservoir, which was commented on by a high proportion of visitors to this site. A new fish pass had also been installed at a weir at Langsett which was commented on by a number of people there. Comments about woodlands referenced both felling and planting of trees as well as ongoing maintenance. Heather burning was also commented on and comes under the vegetation category along with other comments regarding vegetation that were not associated with ML2020 activities such as “more foliage”, “more bilberries” and “vegetation clearing” (the latter was not referring to rhododendron removal).

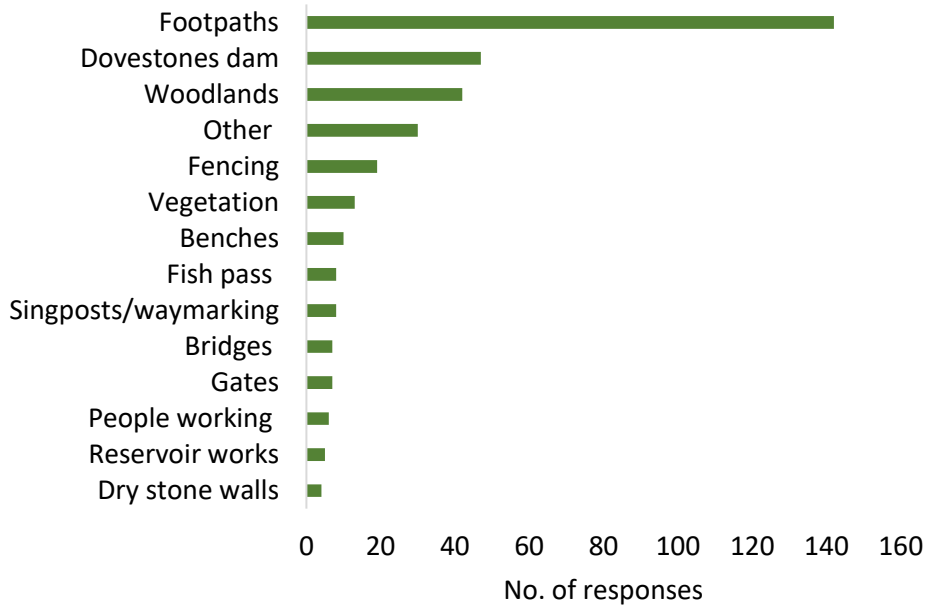

Figure 4.14. Non-ML2020 related activities commented on by respondents to the question of whether they noticed any restoration or changes to the moorland on their route.

Importance and awareness of moorland and bog restoration to people

Respondents were asked to score a list of 14 potential benefits of moorland and bog restoration (e.g. reducing downstream flooding, carbon storage and capture) for their importance to people on a scale of one to five (1 = low importance, 5 = high importance) and to state whether they had been aware of each benefit (yes/no). Although awareness for all benefits was less than 50%, they were all considered of at least moderate-high importance (Figure 4.15). Improvements to water colour were, on average, considered of least importance (3.70 +/- 0.05) with many respondents commenting that the colour of the water did not bother them provided it was safe, with some suggesting it was more natural when coloured. Enhanced cover or food for game birds was considered second least important with comments suggesting people did not support the game industry and others saying they thought improving cover was important to help protect the birds against shooting. Although participants were asked and encouraged to answer how important these benefits were to people generally, some appeared to answer thinking of how important these benefits were to them personally, while others appeared to score these according to how likely they thought these benefits could be delivered. This latter point may perhaps explain why plant and wildlife benefits was the highest scoring benefit (4.63 +/- 0.03).

Levels of awareness were lowest for enhanced beauty of the landscape, increased pest and disease control and maintaining water flow in drought periods. Respondents often commented that the landscape was already beautiful and scored enhanced beauty of the landscape lower as a result. Participants often expressed uncertainty about if and how pests and disease could be controlled through restoration, with some raising concerns about how this would be achieved, questioning use of pesticides for example. Awareness was greatest for water quality improvements, improved water colour and reducing wildfire risk. Interestingly, levels of awareness and perceived importance of benefits did not map on to each other with, for example, awareness of restoration benefits for

improving water colour being the second highest in terms of awareness, yet scoring the lowest in terms of perceived importance.

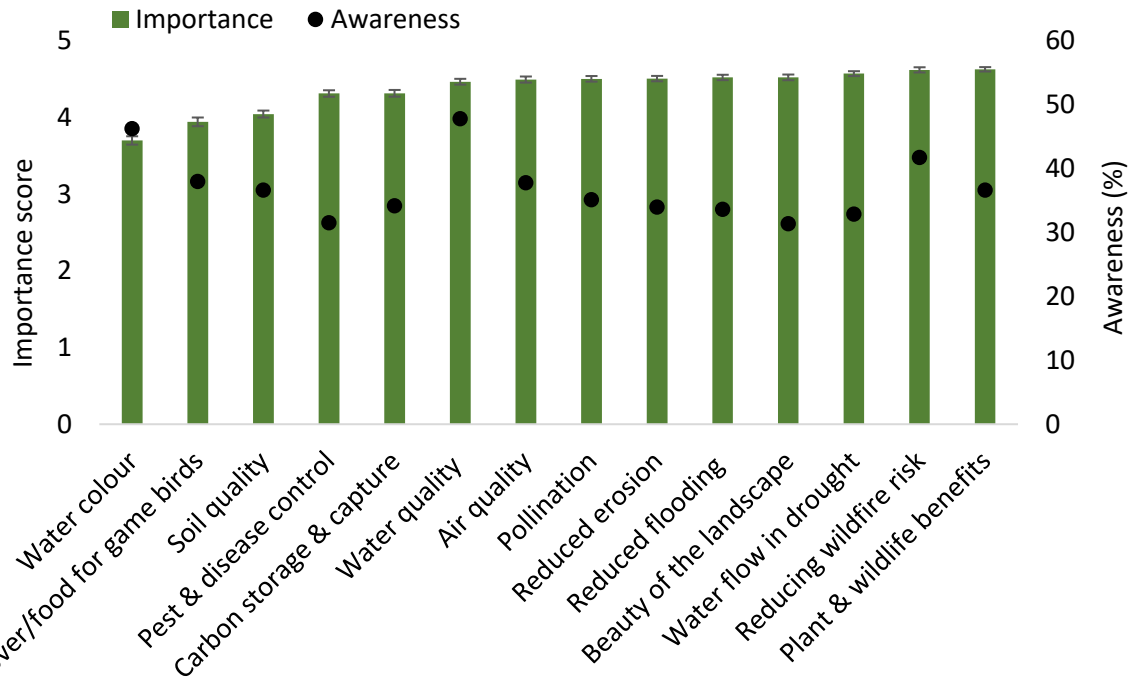

Figure 4.15. Average scores of perceived importance (low importance = 1, high importance = 5) of potential benefits of moorland and bog restoration to people and the percentage of survey respondents who stated they were aware of these benefits. All listed potential benefits are improvements (i.e. "improved water colour" except where stated. Error bars are standard errors.

Only 36 participants (7%) suggested additional benefits of moorland and bog restoration when asked, giving a total of 43 responses between them (Figure 4.16). The majority of these were concerning improved access for people with references to urban communities, older people, disabled people and ethnic minorities. Although plant and wildlife benefits were listed in the previous question for participants to score, seven people mentioned this again when discussing additional benefits of moorland restoration. Improvements to footpaths was also stated by seven people. Other benefits mentioned included health and well-being benefits and that it was good for tourism.

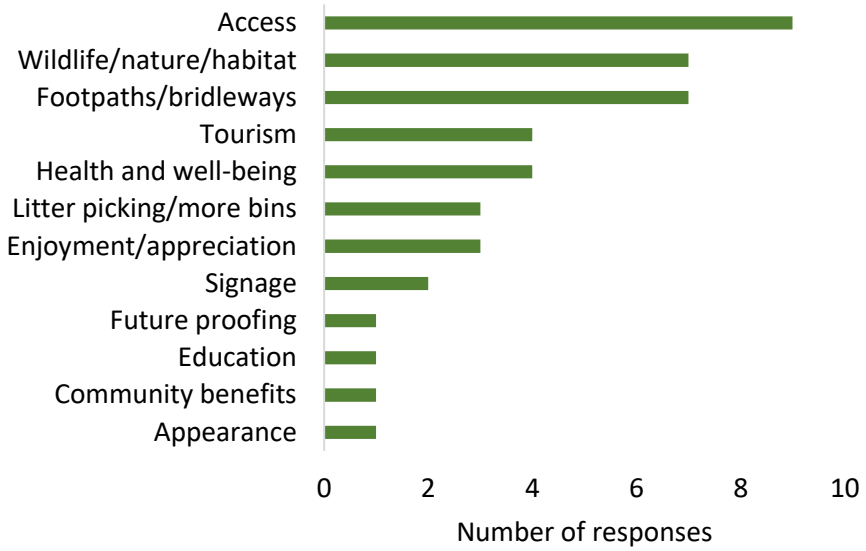

Figure 4.16. Additional benefits of moorland and bog restoration stated by survey respondents.

Willingness to pay

Capturing the value of natural environments can be difficult as these encompass aspects for which there is no market value, such as health and social benefits derived from visits to them, nor for the non-use values often associated with natural environments, such as aesthetic and existence value. A method thus commonly used in environmental valuation is willingness to pay (WTP), which asks participants how much they would, hypothetically, be willing to pay to enhance a particular environmental service or resource, set within a specific scenario.

We took this approach to determine how much people value moorlands by asking how much they would, hypothetically, be willing to pay on top of existing car parking charges on their visits to moorlands, based on the assumption that these fees contribute to management and restoration that helps prevent moorland degradation. Answer options were on a 21 point scale in £0.10 increments from £0 to £2. The amounts stated actually hold limited value in themselves and should not be taken as a true indication of what people would pay, but instead as a relative value of moorland importance to them, as judged by whether they would be willing to pay more or less.

83.8% of participants stated they would be willing to pay increased parking fees, assuming those funds were to be directed into moorland management and restoration. The majority (37.5%) were willing to pay the maximum possible value (see figure 4.17 for the breakdown of amounts), suggesting moorlands hold high value for a significant proportion of respondents.

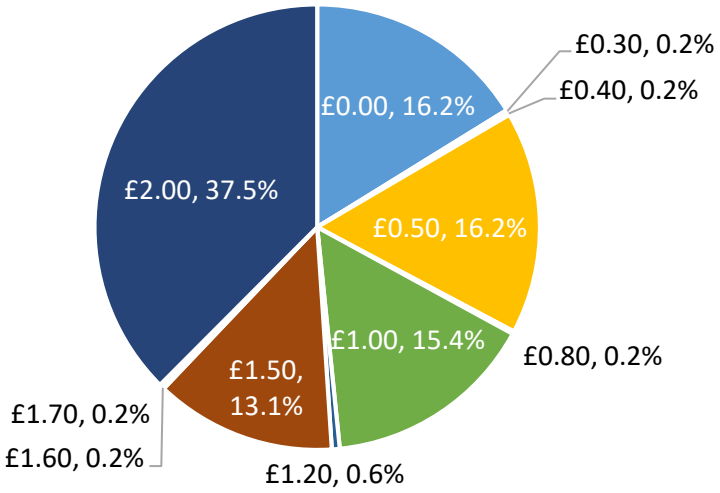

Figure 4.17. How much survey participants value the moorland habitat, quantified using the percentages of respondents willing to pay additional car parking charges, were it to be directed into moorland management and restoration. The sums of money act only as an indication of value and should not be considered a true indication of how much people would pay in reality.

A modelling approach was used to determine what factors influence how much people value moorland habitats using the WTP values as the response variable, and factors listed in Table 4.4 as predictor variables. Only 11 of the 21 possible WTP values were selected by respondents with only five of these selected by more than three participants, thus ordinal models were deemed more appropriate than linear models for this analysis (both were, however, conducted and found to give very similar results from which the same conclusions would be drawn). WTP varied significantly by site (those from Edale were willing to pay most, followed by those from Buckstone, Holmfirth, Dovestone and lastly Langsett) and so site was incorporated into models as a random factor to control for its influence. We thus conducted mixed ordinal regression models using the ordinal package (Christensen, 2015) in RStudio.

Participants who scored the potential ecosystem service benefits of moorland and bog restoration higher were willing to pay significantly more to help prevent moorland degradation (Annex 4). How frequently people visited the sites was also significantly associated with WTP, though this did not follow a consistent pattern (e.g. WTP did not increase consistently with more frequent visits), with those visiting several times a week willing to pay least and those visiting monthly willing to give most. It is possible that this is a result of people who visit the sites more regularly valuing them more, but equally being more conscious of costs if having to pay for parking every time they come when frequent visitors. Some respondents agreed they would be willing to pay more to help prevent moorland degradation but raised concerns that increased parking charges could lead to more damage as a result of people parking on verges for example to avoid such fees.

Participants were shown to be less willing to pay if they were unemployed or from an ethnic minority background. Whether or not people noticed restoration work at the sites (either restoration undertaken through ML2020 or anything they considered to be restoration) did not influence WTP, nor did levels of psychological well-being delivered by the sites, or whether participants spent time in areas of moorland/moorland fringe during their visit. Awareness of the

ML2020 programme, awareness of the potential benefits of moorland and bog restoration, household income, age and gender all had no influence on WTP either.

Table 4.4. Predictor variables incorporated into models of willingness to pay.

Predictor variable
Importance of potential restoration benefits
Awareness of potential restoration benefits
Visit spent in moorland areas / visit spend in restoration areas
Visit frequency
Noticed restoration activities (ML2020 restoration only / any perceived restoration)
Awareness of the ML2020 programme
Psychological well-being (reflection, attachment and continuity with the past)
Employment status
Household income
Age
Gender
Ethnicity

Who should pay for the increased costs of managing moorlands/bogs for the delivery of a broader range of benefits?

Respondents were given a list of seven sectors and asked who they thought should pay for increased costs of management were it to be altered so that a broader range of benefits could be delivered to society. Respondents were able to select as many as they liked and suggest any others not already listed. The majority of participants felt that multiple sectors should be responsible for the increased costs of managing moorlands and bogs for the delivery of benefits (Figure 4.18). 16% of respondents stated that all of the seven listed sectors should pay, with many commenting that we are all responsible and that sharing the costs was fair and just and would ease the pressure on any one sector. Central government was the most popular choice of who should foot the bill, while local residents were the least.

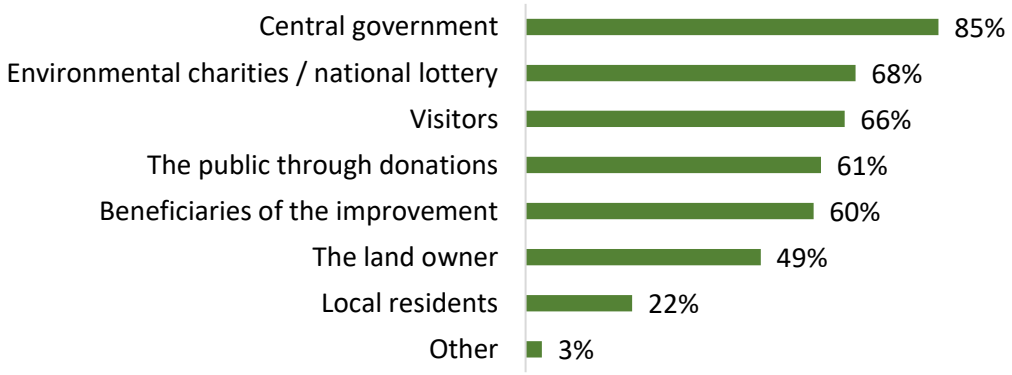

Figure 4.18. Who should be responsible for the increased costs of managing moorlands and bogs for the delivery of benefits, by percentages of respondents who agreed with each sector having to pay.

Psychological well-being

Psychological well-being is a term generally used to capture a range of elements that ultimately describe whether someone is a happy, satisfied person (SOSP 2010). It can be broken down into a number of different dimensions, many of which have been shown to be positively associated with spending time in natural environments, with some evidence that the quality of the natural environment influences the well-being benefits delivered (Bowler et al. 2010, van den Berg et al. 2015). We, therefore, wanted to capture the self-reported psychological well-being benefits delivered by sites undergoing ML2020 restoration works, and whether restoration activities influence this.

There is currently no consensus on how best to measure the psychological well-being benefits gained from visiting natural environments, so we followed the approach taken by Fuller et al. (2007) and Dallimer et al. (2012) to condense a series of statements grounded in the theoretical frameworks representative of cognitive restoration/reflection and sense of place (i.e. three dimensions of self-reported psychological well-being). Participants responded to statements on a standard five point Likert scale of agreement (scored 1-5). The scores from negatively phrased statements were reversed and factor analysis then conducted. Factors were retained based on visual inspection of the data and eigenvalues greater than one, and factor structure was based on items with loadings of +/- 0.4 or above, and Cronbach alpha coefficients of at least 0.70. This analysis (Annex 5) identified three dimensions: i) cognitive restoration and reflection (termed reflection), ii) attachment, and iii) continuity with the past (how sense of identity is formed in connection with the site through continuity with the past). These three dimensions closely match those identified by Fuller et al. (2007) and Dallimer et al. (2012). Participant scores from the statements representing each of the three factors were averaged to produce a continuous score per individual for each of these three self-reported well-being dimensions used in subsequent analysis. A modelling approach was taken to determine the potential influence of multiple factors on psychological well-being. We used linear mixed regression models in the lme4 package (Bates et al. 2014) in RStudio with each of the three components of psychological well-being as the response variables and the same predictors listed in Table 4.4, with the addition of visit duration and whether the respondent was on holiday or not (and obviously none of the three well-being measures as predictors).

A high level of psychological well-being is being delivered by visits to the survey locations. Average scores were highest for attachment with 4.8 out of 5, followed by reflection with 4.4, then continuity with the past with 3.9. How important respondents considered potential benefits of moorland restoration was significantly associated with all three components of psychological well-being, with scores for attachment, reflection and continuity with the past all increasing with higher scores of benefit importance (Annex 4). How often participants visit the site was also associated with well-being. Generally, the more frequently people visit the sites, the higher the levels of well-being, though this was only significant overall for reflection and continuity with the past. Unsurprisingly, the relationship was much stronger with continuity with the past than the other two components of well-being. Participants who noticed ML2020 restoration activities had lower levels of attachment though this, nor noticing any other restoration activities, was not associated with any other aspects of well-being. How long respondents spent at the sites was also positively associated with levels of reflection, while those who were aware of the ML2020 project reported higher levels of continuity with the past. Women reported higher levels of attachment and reflection while those from ethnic minority backgrounds reported higher levels of reflection. Spending time in moorland areas and areas where restoration activities have taken place as part of ML2020 did not appear to influence levels of well-being nor did awareness of the potential benefits delivered through moorland and bog

restoration. Whether participants were on holiday or not, their employment status, household income and age had no influence on well-being derived from visiting the sites.

4.8 Summary

This survey set out to capture the impact of the ML2020 programme on visitors as well as their perceptions of restoration activities and its knock on effects. The importance of doing so was highlighted by the fact that nearly 60% of all respondents had spent time in or very nearby areas undergoing restoration as part of the ML2020 project during their visit. Despite this, levels of awareness regarding the ML2020 programme and the restoration activities occurring as a result of it, as well as the benefits restoration can deliver, were all low. These findings are consistent with previous research conducted on the impacts of the Dark Peak Nature Improvement Area (NIA), another landscape scale restoration project within the Peak District National Park, on the visitor experience. The NIA study found that visitors were more aware of other aspects of the sites besides restoration activities, primarily footpath condition and maintenance, which was also the case for respondents to the ML2020 visitor survey. The few who were aware of the ML2020 programme were significantly more likely to notice restoration activities during their visit, suggesting that prior knowledge of conservation programmes is a key driver in picking up on these activities while out in the moors.

Although levels of awareness were low, the potential benefits delivered by the ML2020 project were considered important by the majority of participants, who were also shown to value moorland habitats, as evidenced by the large proportion of them willing to pay additional parking fees to prevent their degradation. In addition, the more important the potential benefits of restoration were considered, the more respondents were willing to pay to protect moorland environments (though cause and effect cannot be established here). This highlights the importance of raising awareness about the potential benefits of moorland restoration activities in order to increase support. The ML2020 project has been aiming to do just that with the use of tools such as the Bogtastic van. Some respondents mentioned they would like to see more information available out in the moorlands themselves, as well as in visitor centres such as the Moorland Centre in Edale and Langsett Barn. It is important to note, however, that raising awareness will not automatically increase support for all restoration benefits, as evidenced by the relatively high levels of awareness of restoration impacts on water colour improvements which was considered the least important benefit by respondents (though this still averaged as moderate to moderate-high importance).

The sites currently deliver substantial well-being benefits as evidenced by the high psychological well-being scores and the abundance of positive words used to describe how people would feel upon leaving the sites after their visits. There was very limited evidence that the ML2020 project has impacted on the delivery of these benefits, either positively or negatively. Only levels of attachment were lower in respondents who had noticed ML2020 restoration activities during their visits. This could perhaps be a result of people not liking change, though it is also worth noting that the main activity noticed was the presence of large white sacks containing restoration materials, which do stand out in the landscape and may detract from site aesthetics (and are a temporary feature). Place identity through continuity with the past was shown to increase if the participants were aware of the ML2020 programme, though it seems likely that this is a result of those who have a longer history with the site being perhaps more aware of what is going on. Simply spending time in areas where restoration has/is taking place without noticing restoration activities or being aware of the

ML2020 programme, as was the case for the majority of participants, however, had no impact on well-being nor on how much respondents valued the sites.

Thus the restoration work that has so far taken place through the ML2020 programme has had very limited impact on visitors to the area, the vast majority of whom valued moorland habitats and felt that the potential benefits of moorland and bog restoration were important. The benefits of restoration will, however, accrue over time, thus longer-term monitoring of the impact on visitors is required to determine any long-term impacts on the visitor experience. Raising awareness and understanding of the importance of moorland and bog restoration to people is likely to be important in improving support for these habitats.

References

Bates, D., Maechler, M., Bolker, B. & Walker S. (2014) lme4: Linear mixed-effects models using Eigen and S4. R package version 1.1-7, http://CRAN.R-project.org/package=lme4.

Christensen RHB. (2015) ordinal - Regression Models for Ordinal Data. R package version 2015.6-28, http://www.cran.r-project.org/package=ordinal/.

Dallimer, M., Irvine, K.N., Skinner, A.M.J., Davies, Z.G., Rouquette, J.R., Maltby, L.L., Warren, P.H., Armsworth, P.R. & Gaston, K.J. (2012). Biodiversity and the Feel-Good Factor: Understanding Associations between Self-Reported Human Well-being and Species Richness. *BioScience*, 62, 47-55.

Fuller, R.A., Irvine, K.N., Devine-Wright, P., Warren, P.H. & Gaston, K.J. (2007) Psychological benefits of greenspace increase with biodiversity. *Biology Letters,* 3, 390–4.

Irvine, K.N., Warber, S.L., Devine-Wright, P. & Gaston, K.J. (2013) Understanding urban green space as a health resource: a qualitative comparison of visit motivation and derived effects among park users in Sheffield, UK. *International Journal of Environmental Research and Public Health*, 10, 417-442.

Natural England (2017) Monitor of Engagement with the Natural Environment, Technical Report to the 2009-16 surveys. Natural England Joint Report JP023.

ONS (2011) Census 2011 data. Office for National Statistics. https://www.ons.gov.uk/census/2011census

Peak District National Park Authority (2014) Peak District National Park Visitor Survey 2014. http://www.peakdistrict.gov.uk/__data/assets/pdf_file/0005/538772/vistor-non-visitor-survey-2014.pdf

RStudio Team (2016). RStudio: Integrated Development for R. RStudio, Inc., Boston, MA URL http://www.rstudio.com/.

SOSP (2010) Psychological Well-being. Staff and Organisation Suport Programme.https://www.sosp.org.mt/2010/12/22/psychological-well-being/.

Annex 1 Business survey questionnaire

Impact of moorland restoration on local businesses

Business name: _____ Town / village: _____

Your name: _____ Position: _____

Date: _____

1. Type of business

1.1 In what sector does the business operate (e.g. clothing, food and drink, agricultural etc.)?

_____

1.2 Over what area do you have premises? (*please circle*):

This location only This town only Here & neighbouring communities
County-wide or regional National / international

1.3 How many units / shops are part of the business? _____

1.4 a.) Approximately how many people does the business employ?

Here: _____ Across the whole business: _____

b.) And how many FTE's (full-time equivalent) does this represent?

Here: _____ Across the whole business: _____

1.5 When did the business begin operating here? _____

2. The relative importance of the natural environment to the business

Please indicate how much you agree with each statement (*circle, use scale below*):

1 = strongly disagree	**2 = disagree**	**3 = neutral**	**4 = agree**	**5 = strongly agree**

1	2	3	4	5	The core business is dependent on people coming here to enjoy the outdoors
1	2	3	4	5	We sell products / services for use in the natural environment
1	2	3	4	5	Visitor / tourist trade is crucial for this business
1	2	3	4	5	Local trade is crucial for this business
1	2	3	4	5	Most people come to this area because of the natural environment
1	2	3	4	5	The environmental setting of this town / village makes no difference to visitor numbers
1	2	3	4	5	This area has enough visitors already

1	2	3	4	5	The moorlands are unattractive
1	2	3	4	5	The moorlands provide a number of benefits to society
1	2	3	4	5	A poor quality natural environment really impacts the business
1	2	3	4	5	I am concerned about the risk of flooding in this area
1	2	3	4	5	I am concerned about the risk of wild fires on the moorlands
1	2	3	4	5	Restoring the moorlands is a worthwhile thing to do
1	2	3	4	5	Restoring the moorlands would directly benefit my business
1	2	3	4	5	Restoring the moorlands would increase visitor numbers

3. Impact of moorland restoration works

3.1 A restoration project is being planned for the moorlands in this area, which may deliver a number of benefits. How important do you think that each of these are to <u>your business</u>? (*score using this scale*):

1 = Low importance 2 = moderate importance 3 = high importance

Benefit	**Importance**		**Importance**
Decreased flood risk		Increased pollination	
Maintaining water flow in drought periods		Increased pest and disease control	
Water quality improvements		Enhanced shelter or food for game birds	
Improved water colour (less brown)		Biodiversity (plant & wildlife) benefits	
Reduced erosion		Enhanced aesthetics (beauty of the landscape)	
Improved soil quality		Increased visitor numbers	
Reducing fire risk		*Please add any other benefits:*	
Carbon storage and capture			
Enhanced air quality			

3.2 Are you aware of these types of moorland restoration works? (*please circle*) YES NO

3.3 What impact would you expect the restoration works to have on the number of customers? (*please circle based on scale below*)

	Large decrease ←			**No impact**		→ **Large increase**	
a.) During the works	-3	-2	-1	0	1	2	3
b.) In the long term	-3	-2	-1	0	1	2	3

3.4 What impact would you expect the restoration works to have on your revenue?

a.) During the works	-3	-2	-1	0	1	2	3
b.) In the long term	-3	-2	-1	0	1	2	3

3.5 Do you foresee any other business impacts?

Thank you for taking the time to complete this survey.

Annex 2 Business survey models

A modelling approach was used to determine potential drivers of the perceived importance of moorland restoration benefits for businesses. Ordinal regression models using the ordinal package (Christensen 2015) were conducted using the software program R (RStudio Team, 2018) with each benefit as the response variable and the predictors listed in Table A2.1. We derived predictors for whether a survey location was a tourist village/town using the average agreement scores across all respondents from each location to the statement "visitor/tourist trade is crucial for this business" that was included in the questionnaire. All locations with average scores that equated to agreeing or strongly agreeing that tourist trade was crucial were classed as tourist towns/villages. Flood risk towns were determined using a combination of guidance from the Moors for the Future Partnership and Environment Agency data (EA 2015). The model results are given in Table A2.2.

Table A2.1. Factors used in ordinal regression models to determine their influence on perceived moorland restoration benefits and impacts on local businesses. Abbreviations used in the model results table are also given.

Factor	Categories/levels	Examples	Abbreviat-ions
Respondent position	Top Manager/assistant manager Other	Director/owner Sales assistant	 Manager
Business sector	Accommodation Catering Estate agent Health & beauty Retail Other	Pub/campsite Café/restaurant Hairdressers/spa Finance/garage	Accom Estate Health
Premises location	This location Here & neighbouring communities County-wide/regional National/international	 	 Neigh County National
Employees at the survey location	Number		
Years the business has been operating	Number		
High risk flood town/village	Yes / no		
Tourist town/village	Yes / no		
Aware of these types of moorland restoration works	Yes / no		

Table A2.2. Factors associated with importance of moorland restoration benefits as scored by local businesses, determined using ordinal models in R. Only statistically significant results are shown. *P<0.05, **P<0.01, ***P<0.001. Where factors have multiple levels (e.g. sector), they are listed in order of the scores given to that benefit, from highest to lowest. For all other factors, the direction of the impact is given as well as the significance level. For example scores for, "enhanced cover or food for game birds" were highest in the accommodation sector and lowest in the health and beauty sector, and significantly lower for businesses with more employees and those from towns of high flood risk.

Benefit	Position	Sector	Premises	Employee (no.)	Years (no.)	Flood risk town	Tourist town
Decreased flood risk						↑***	
Maintaining water flow in drought							↓**
Water quality improvements		Health > accom > catering > estate > retail > other	Neigh > this location > county > national			↑*	
Improved water colour		Health > accom > catering > estate >retail > other	County > neigh > this location > national				
Reducing fire risk		Health > accom > other > catering > estate > retail					↓*
Carbon storage & capture					↑*		
Enhanced air quality		Accom> catering > other > health > retail > estate					
Increased pollination		Accom > catering > other > retail > health > estate	National > county > neigh > this location				
Increased pest & disease control	Other > top > manager	Accom > health > catering > retail > estate > other	National > county > neigh > this location				↓**
Enhanced cover or food for game birds		Accom> other > catering > retail > estate > health		↓**		↓**	
Plant & wildlife benefits	Top > other > manager						
Enhanced beauty of the landscape		Accom > catering > other > retail > health > estate	National > neigh > county > this location				

Annex 3 Visitor survey questionnaire

The uses, values and benefits of the moorlands to local site users

This questionnaire is aiming to find out what people think about the moorlands in this area. It is being conducted by Natural Capital Solutions on behalf of Moors for the Future and the Peak District National Park Authority as part of the MoorLife 2020 project.

Would you be willing to answer some questions? All answers are strictly confidential and anonymous and will be used only by ourselves and cannot be used to contact you. It should only take about 10 minutes.

Q1. How frequently do you come to this part of the Peak District / Pennines? (*please circle below*)

Daily Several times a week Weekly 2-3 times a month

Monthly 2-6 times a year Once a year or less First visit

Q2. Which of the following best describes your situation today? (*tick one only*)

☐ On a day trip or short visit from home or work

☐ On holiday, staying away from home

Q3. What is the main activity you are undertaking here today? (*please circle one answer below*)

Walking Nordic/power walking Running Trekking (multi-day walking)

Dog walking Outing with children / family Cycling Wildlife / bird watching

Enjoying scenery Meeting with friends Photography Field sports (shooting etc.)

Going to pub/café/teashop Visiting indoor attraction Attending outdoor event

Other:_____

Q4. Thinking about your journey today:

a) How did you travel here (from home/your accommodation)? (*please circle*)

On foot Car/van Train Bus Bicycle Motorbike Other: _____

b) About how long did it take you to get here _____ (minutes)

c) What is the postcode of the place that you came from today?

(or name of place) _____

d) If you came from somewhere other than your home today, what is the postcode of your home?

(or name of place) _____

Q5. How long have you spent / will you spend in the area today (total trip time)? _____ hours / minutes

Q6. How many people are in your party today (including yourself)? _____

Q7. Why have you chosen to come to this particular location? (as opposed to an alternative location)

_____

_____

Q8. What words would you use to describe how you feel <u>after you leave</u> here today? (*max of 3 different things*)

_____

Q9A. Now I'd like to ask you about your <u>route</u> today. Looking at this map, can you show me where you parked or arrived to start your visit today? And your route. And the finish point.

Q9B. Did you notice any restoration work or changes to the moorland on your route? If so, please provide brief details of what these were:

_____

_____

Q10. During this visit, how much did you/do you anticipate spending on the following <u>per person</u> *(or give group size if total per group e.g. petrol £20/4)***:**

Food and drink	
Petrol\diesel\LPG	
Car parking	
Bus\train fares	
Hire of equipment	
Purchase of equipment\outdoor gear	
Maps\guidebooks\leaflets	
Gifts\souvenirs	
Admission fees	
Accommodation	
Other items	

Q11. Now I would like to find out how much you value the moorland habitat, by asking a question about how much you would be willing to pay to avoid its degradation. This is a purely hypothetical scenario, based on the assumption that car parking fees will contribute to the income of the park, which can then be directed into its management and restoration. No car parking fees will be increased as a result of this survey.

The car parking fee for a stay above 4 hours in the Peak District National Park is generally £4.50. How much **extra** would you be willing to pay on car parking on your visits to the moorlands to prevent their degradation? (*circle one amount).*

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
£0	£0.10	£0.20	£0.30	£0.40	£0.50	£0.60	£0.70	£0.80	£0.90	£1.00

12	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
£1.10	£1.20	£1.30	£1.40	£1.50	£1.60	£1.70	£1.80	£1.90	£2.00

Q12. Using the first answer scale on your sheet, please indicate how much you agree with each statement about your visit to the moorlands today (*circle, use scale below*):

1 = strongly disagree	**2 = disagree**	**3 = neutral**	**4 = agree**	**5 = strongly agree**

1	2	3	4	5	I do not gain pleasure from visiting this part of the moorlands
1	2	3	4	5	I feel happy when I am here
1	2	3	4	5	I look forward to coming here in the future
1	2	3	4	5	lots of things in this part of the moorlands remind me of past experiences
1	2	3	4	5	coming here clears my head
1	2	3	4	5	I am not proud of this part of the moorlands
1	2	3	4	5	I can easily think about personal matters when here
1	2	3	4	5	this part of the moorlands feels almost like a part of me
1	2	3	4	5	I do not feel calm when I am here
1	2	3	4	5	being here makes me feel more connected to nature
1	2	3	4	5	I am not satisfied with this part of the moorlands
1	2	3	4	5	I've had a lot of memorable experiences along this part of the moorlands
1	2	3	4	5	I really miss this part of the moorlands when I am away from it for a long time
1	2	3	4	5	I feel peaceful when I am here
1	2	3	4	5	when I am in this part of the moorlands I feel strongly that I belong here
1	2	3	4	5	I gain perspective on life when I come here
1	2	3	4	5	I like this part of the moorlands

Q13. Are you aware of the MoorLIFE 2020 project and what it aims to do? (*circle*) Yes No

Q14. Using the second answer scale on your sheet could you please tell me how important you think each of the following potential benefits of moorland and bog restoration are <u>to people</u>?

Score in "importance" column in below using the following scale:

1 = Low importance 2 = low to moderate importance 3 = moderate importance
4 = moderate to high importance 5 = high importance

Benefit	**Importance** *(Score 1-5)*	**Awareness** *(tick)*
Reduced flooding downstream		
Maintaining water flow in drought periods		
Water quality improvements		
Improved water colour		
Improved soil quality		
Reduced erosion		
Reducing risk of wild fires		
Carbon storage and capture (sequestration)		
Enhanced air quality		
Increased pollination		
Increased pest and disease control (livestock/plants)		
Enhanced cover or food for game birds		
Plant and wildlife benefits		
Enhanced beauty of the landscape		
Are there any other benefits that you are aware of?		

Q15. Were you aware of any of these benefits? If so, which ones *(please tick in the awareness column in the table above)*

Q16. If the management of moorlands and bogs was altered so that a broader range of benefits could be delivered to society, who should pay for any increased costs? (*tick as many as you like*)

- ☐ The land owner
- ☐ Central government
- ☐ The general public through donations
- ☐ Beneficiaries of the improvements (e.g. water companies, people who live downstream)
- ☐ Environmental charities / National Lottery
- ☐ Local residents
- ☐ Visitors
- ☐ Other (please describe):_____

The following questions allow us to understand more about the responses you have given earlier in the questionnaire and to capture the types of visitors to these areas. We will not share this information with third parties and it will be treated entirely confidentially. So if you are comfortable in answering these questions could you please tell us:

Q17. The number of people in your household?

Adults: _____

Children: _____

Q18. Your total household income?

- ☐ Under £15,000 per year
- ☐ £15,000 – £20,000
- ☐ £20,000 – £29,999
- ☐ £30,000 – £39,999
- ☐ £40,000 – £49,999
- ☐ £50,000 – £75,000
- ☐ Over £75,000
- ☐ Declined

Q19. Your age:

- ☐ 16 – 19 yrs old
- ☐ 20 – 29 yrs old
- ☐ 30 – 39 yrs old
- ☐ 40 – 49 yrs old
- ☐ 50 – 59 yrs old
- ☐ 60 – 69 yrs old
- ☐ 70 or more yrs old

Q20. Employment status:

- ☐ Working full time (>30 hrs per week)
- ☐ Working part-time (<30 hrs per week)
- ☐ In full time education or training
- ☐ Homemaker
- ☐ Not working, seeking employment
- ☐ Not working, not seeking employment
- ☐ Retired

Q21. Please choose one option from the back of the answer sheet that best describes your ethnic group or background *(enter corresponding number):* _____

Please thank the respondent for their time!

Gender (*please circle*): M F

*Date:*_____ *Time:* _____

*Surveyor:*_____ *Location:*_____

****Please place the map in between the questionnaire pages!****

Annex 4 Visitor survey model outputs

a) Notice ML2020 restoration activities

Mixed ordinal regression model result of factors associated with whether respondents notice ML2020 restoration activities. Only significant predictors are shown. Non-significant predictors included in the model were visit frequency, household income, age, employment status and ethnic background.

Predictor variable	Parameter estimate	SE	P value
Aware of ML2020 (ref: no)	1.35	0.51	0.009**
Gender (ref: female)	0.93	0.43	003*

b) Willingness to pay

Mixed ordinal regression model result of factors associated with participants' willingness to pay additional car parking fees were the money to be spent on moorland management and restoration. Only significant predictors are shown. Non-significant predictors included in the model were whether participants spent time in moorland areas during their visit, whether participants noticed restoration activities (separate models run for consideration of ML2020 restoration activities only and all restoration activities mentioned by respondents to avoid issues of collinearity), awareness of the ML2020 programme, awareness of potential moorland restoration benefits, each of the three components of psychological well-being (reflection, attachment and continuity with the past), household income, age and gender.

Predictor variable	Parameter estimate	SE	P value
Importance of potential restoration benefits	0.03	0.01	0.004**
Visit frequency (ref: first visit)			0.01*
Once a year or less	-0.11	0.33	0.75
2-6 times a year	-0.40	0.29	0.16
Monthly	0.22	0.36	0.54
2-3 times a month	-0.22	0.35	0.53
Weekly	-0.16	0.40	0.69
Several times a week	-1.32	0.41	0.001**
Daily	-0.25	0.53	0.63
Employment status (ref: full-time employed)			0.16
Part-time employed	-0.21	0.33	0.52
Full-time education	0.20	0.44	0.65
Homemaker	0.33	0.79	0.68
Retired	-0.41	0.29	0.15
Unemployed	-1.32	0.54	0.01*
Ethnic background (ref: white)	-1.33	0.43	0.002**

c) Psychological well-being

Mixed linear regression model results of factors associated with psychological well-being delivery of the visitor survey sites. Only significant predictors are shown. Non-significant predictors included in the models (when not shown as significant) were whether participants spent time in moorland areas during their visit, whether participants noticed restoration activities (separate models run for consideration of ML2020 restoration activities only and all restoration activities mentioned by respondents to avoid issues of collinearity), awareness of the ML2020 programme, awareness/importance of potential moorland restoration benefits, whether participants were on holiday or not, visit duration, employment status, household income, age, gender and ethnicity.

Predictor variable	Parameter estimate	SE	P value
Attachment			
Importance of potential restoration benefits	0.01	0.002	0.000***
Noticed ML2020 restoration (ref: no)	-0.14	0.06	0.02*
Visit frequency (ref: first visit)			0.19
Once a year or less	0.03	0.06	0.63
2-6 times a year	0.09	0.06	0.13
Monthly	0.15	0.07	0.03*
2-3 times a month	0.14	0.07	0.03*
Weekly	0.14	0.07	0.06
Several times a week	0.16	0.08	0.04*
Daily	0.19	0.10	0.05*
Gender (ref: female)	-0.07	0.04	0.05*
Reflection			
Importance of potential restoration benefits	0.01	0.002	0.000***
Visit duration	0.0005	0.0002	0.008**
Visit frequency (ref: first visit)			0.002**
Once a year or less	-0.03	0.08	0.72
2-6 times a year	0.13	0.07	0.07
Monthly	0.12	0.09	0.20
2-3 times a month	0.20	0.09	0.02*
Weekly	0.23	0.10	0.02*
Several times a week	0.34	0.10	0.001***
Daily	0.34	0.13	0.006**
Gender (ref: female)	-0.13	0.05	0.005**
Ethnic background (ref: White)	0.25	0.11	0.03*
Continuity with the past			
Importance of potential restoration benefits	0.02	0.004	0.000***
Aware of ML2020 (ref: no)	0.34	0.12	0.004**
Visit frequency (ref: first visit)			0.000***
Once a year or less	0.18	0.12	0.11
2-6 times a year	0.63	0.10	0.000***
Monthly	0.72	0.13	0.000***
2-3 times a month	0.91	0.12	0.000***
Weekly	1.00	0.14	0.000***
Several times a week	1.15	0.14	0.000***
Daily	1.31	0.18	0.000***

Annex 5 Factor analysis

Factor loadings for statements within three factors of psychological well-being. Factor analysis conducted with oblique rotation (oblimin) and pair-wise deletion of missing data following Tabachnick and Fidell (2001).

Statement	Reflection	Attachment	Continuity with the past
I feel peaceful when I'm here	0.673		
I can easily think about personal matters when here	0.482		
I gain perspective on life when I come here	0.698		
Coming here clears my head	0.632		
Being here makes me feel more connected to nature	0.687		
Eigenvalue	2.62		
Percentage of total variance	52.37		
Scale mean (SD)	4.43 (0.51)		
Scale median	4.60		
Cronbach's alpha	0.74		
I like this part of the moorlands		0.724	
I look forward to coming here in the future		0.724	
I am not satisfied with this part of the moorlands (r)		0.555	
I feel happy when I am here		0.851	
I am not proud of this part of the moorlands (r)		0.411	
I've had a lot of pleasant memorable experiences along this part of the moorlands			0.642
This part of the moorlands feels almost like a part of me			0.741
When I am in this part of the moorlands, I feel strongly that I belong here			0.728
I will really miss this part of the moorlands when I am away from it for a long time			0.825
Eigenvalue		3.85	1.53
Percentage of total variance		42.81	16.97
Scale mean (SD)		4.76 (0.38)	3.88 (0.81)
Scale median		5.00	4.00
Cronbach's alpha		0.76	0.82

(r) Scores reversed

Statements that did not load – excluded from analyses

I do not feel calm when I am here (r)
I do not gain pleasure from visiting this part of the moorlands (r)
Lots of things in this part of the moorlands remind me of past experiences