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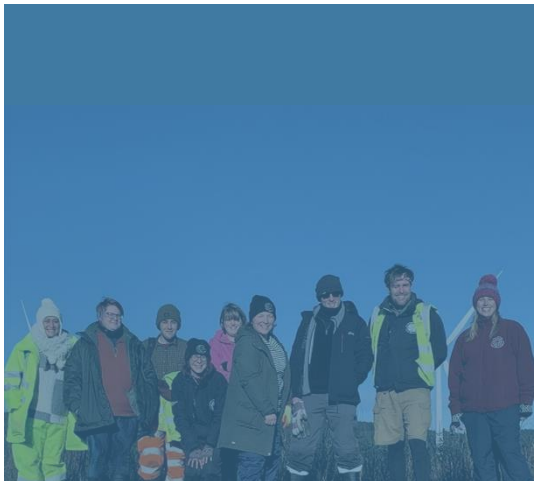

Lost Peatlands of South Wales: Final Report

March 2025

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Contents

Executive summary

The Lost Peatlands of South Wales, located in the Afan and Rhondda Valleys, spanning an area of 6,700 hectares, is a £2.8 million pound project which broadly aimed to:

- Restore peatland habitat so that it can contribute to climate mitigation and resilience and improve local and national biodiversity;
- Raise awareness and engage the local community to improve health and wellbeing, increase knowledge and skills, and ensure the legacy of the project; and,
- Contribute to the evidence base of peatlands' contribution to our climate and inform and inspire future projects.

The project is funded predominantly by the National Lottery Heritage Fund (NLHF) with match funding provided by Vattenfall's wind farm Pen y Cymoedd (PyC) and other partners. This partnership project was led by Neath Port Talbot County Borough Council (NPTCBC) and supported by Natural Resources Wales (NRW), Coed Lleol/Small Woods, Swansea University, and Rhondda Cynon Taf Council (RCT).

With nine project aims covering four key domains, the Lost Peatland project was broken into six Programmes of Works, covering a range of activities including restoration, education and engagement, interpretation and access and management and monitoring. The need for a project of this scale was an environmental necessity, with a pressing need to reduce greenhouse gas emissions and stop biodiversity declining further. Due to historical peatland management, these vital habitats have turned from a carbon sink to a carbon emitter, and it is paramount to return these habitats back to their natural state. By engaging local communities to learn about this habitat, the hope was that together communities could get involved in the processes, supporting the peatland restoration, developing new skills and reconnecting to the land to care and protect it for generations to come.

Delivery

The Lost Peatlands Project performed well across all areas, exceeding a number of targets and achieving most others. The majority of **peatland restoration** was delivered alongside the full area of habitat management, despite initial delays to the commencement of the project.

School capital works overachieved on targets due in part to supplementary match funding which allowed for additional biodiversity improvements to be delivered alongside those initially planned. Whilst the change to the structure of the delivery of **pupil engagement and teacher training**, meant that targets were reached or overachieved, with plenty of positive feedback from teachers about the learning and value of the Lost Peatlands project.

Although **volunteer engagement and training** performed generally well, a few challenges meant that the number of volunteer task achievement outputs was below target. The project team were proactive in their work and diverted resources to help with the shortfall.

Community engagement achieved both target outcomes, whilst **health and wellbeing** overachieved engaging far more short- and long-term participants than originally planned. Flexibility was cited as a key driver of success in this area, supporting increased reach and accessibility for those most isolated and hard to reach.

Project management, governance and partnership working

Partnership working was highlighted as key to the success of the project, helping contribute to more positive project outcomes. Each partner was able to work to its strengths and **brought their own expertise and resources**. Furthermore, **the partnership increased the reach of the programme** helping **to spread Lost**

Peatlands to different audiences. New and existing relationships were created and strengthened, supporting opportunities for future collaboration.

Challenges included a **disconnect in communication between the design and delivery team.** This caused issues within the early stages of the peatland restoration project, including a lack of clarity on team roles and responsibilities. More open communication and consultation at an early stage would have been beneficial. However, this was mitigated by **a flexible approach to delivery**. The project team adapted job roles to help fill gaps and respond to the needs of the project. They **appreciated the support and flexibility of the Heritage Fund** and the project steering group.

Outcomes

A range of positive outcomes were achieved across the breadth of the Lost Peatlands project. **Overall peatland restoration outcomes were positive**, evidenced by a range of sources with outcomes and habitat conditions varying by site. Key lessons were learned, including the importance of monitoring infrastructures, the need to address evidence gaps, and ensuring effective control datasets. It was noted that **long-term data collection remains vital for refining hydrological estimates, tracking vegetation, and monitoring fauna.**

Across education outputs, **pupils have reportedly become more engaged in outdoor learning and environmental activities**, continuing their engagement outside of lessons to additional projects demonstrating a long-term commitment to change. Adaptations in delivery supported an increase in accessibility and inclusivity, whilst positive behavioural changes were witnessed in pupils engaging more in outdoor learning. Both **pupils and teachers consistently reported the joy of outdoor learning and improvements in their wellbeing**, with teachers citing **skill development** as key to feeling more confident and comfortable in applying their knowledge and integrating outdoor learning into the current curriculum.

There were positive improvements recorded to the **wellbeing of both pupils and wider community** participants, including increases in making and maintaining social connections and friendships, alongside **feeling more connected** to local communities. A key factor to this success was the diversity of ways in which participants became aware of the project, alongside the importance of established connections, partnerships and local collaborations to ensure that previously hard to reach communities were reached and positive headway and trust was built with these individuals, to remind them of the value of their land and natural heritage.

Legacy

The work carried out via Lost Peatlands is likely to have a long-term impact on the landscape, research sector, and people within South Wales.

Many **peatland habitats have been successfully restored to their natural state**, and it is considered that they should be **self-sufficient**. Lost Peatlands has **contributed towards best practice** in the field of peatlands restoration. This best practice has already been implemented on at least six other upland windfarm schemes during the lifetime of the project, and demand is expected to increase.

The project also contributed to the **wider research sector,** to inform and inspire future projects. Lost Peatlands **added to the evidence base**, revealing that methane emissions from furrows prior to restoration was far higher than expected. Lost Peatlands has also been credited with **driving interest in peatland restoration at Swansea University and within the Welsh Government**. The project has been recognised in **international and national conferences**, shaping discussions around the relationship between peatland restoration and climate change.

Lost Peatlands strived to impact and influence the local and wider communities, leaving behind a legacy which is hoped will cross through multiple generations. The outcomes for people and the community are less quantifiable, but interviews with key stakeholders across the project indicate positive outcomes including increased **connection to the landscape**, with hope of an **intergenerational shift** as young people become more engaged in their landscape. Partners stated that the **support networks within the health and wellbeing programme were strong**, and that the formation of groups should mean that the positive impact is carried forward for **health, wellbeing and volunteering**. Lastly, partners highlighted that **local skills which had been previously forgotten were being taught**, with the hope that these would then be passed on to the next generations.

1 Introduction

In 2021, ERS Ltd was commissioned to undertake a longitudinal evaluation of the Lost Peatlands of South Wales project, up to 2025. This final report will have a formative and summative focus, building on the previous mid-term 2023 report. It will look at how project delivery has progressed, how the partnership has functioned, recommendations for improvements, and project outcomes and impacts.

1.1 The Lost Peatlands of South Wales project (2021-2025)

The Lost Peatlands of South Wales, located in the Afan and Rhondda Valleys, is a £2.8 million pound project which broadly aimed to:

- Restore peatland habitat so that it can contribute to climate mitigation and resilience and improve local and national biodiversity;
- Raise awareness and engage the local community to improve health and wellbeing, increase knowledge and skills, and ensure the legacy of the project; and,
- Contribute to the evidence base of peatlands' contribution to our climate and inform and inspire future projects.

The National Lottery Heritage Fund (NLHF) was the primary funder of the project, contributing 66 per cent of the total funding. Match funding predominantly came from Vattenfall's wind farm Pen y Cymoedd (PyC), which provided 27 per cent, with other partners covering the remaining costs. The project was run as a partnership, led by Neath Port Talbot County Borough Council (NPTCBC) and supported by Natural Resources Wales (NRW), Coed Lleol/Small Woods, Swansea University, and Rhondda Cynon Taf Council (RCT). The development phase (2019-2021) had a budget of £434,751, with £260,100 funded by NLHF. The Delivery Phase was funded via a £1.56 million award from the Heritage Fund. This funding supported background surveys and assessments for peats and habitats, alongside community engagement to inform the delivery phase.

The Lost Peatlands of South Wales project spanned a total area of 6,700 hectares, with an aim that 491 hectares would be restored and actively managed as part of the project. Peatland restoration was expected to cover under 50 per cent of this area (256 hectares), of which 100 hectares is situated on NRW land and the remaining 156 hectares on the PyC wind farm (on NRW land), through their Habitat Management Plan (led by NRW). Additionally, six Community Wildlife Spaces were to be managed to serve as stepping stones, encouraging people to explore the wider landscape and local wildlife habitats.

1.2 Project aims

In total, there were nine project aims, categorised into four domains: Natural Heritage; Historical Heritage; Facilities; and People. Each target intersected with specific NLHF outcomes[1], outlined in Table 1.1.

[1] **HF1** – A wider range of people will be involved in heritage; **HF2** – Heritage will be in better condition; **HF3** – Heritage will be identified and better explained; **HF4** – People will have developed skills; **HF5** – People will have learnt about the heritage, leading to change in ideas and actions; **HF6** – People will have greater wellbeing; **HF8** – The local area will be a better place to live, work or visit.

Table 1.1: Project aims and NLHF outcomes

	Project aims, defined at the outset	NLHF outcomes
Natural Heritage – *Peatland restoration and monitoring*		
1	To restore and appropriately manage the Lost Peatland's upland habitats. We will improve their condition to increase biodiversity and ensure recovery to functioning ecosystems. This will help reduce the impacts of climate change, wildfires, and floods.	HF2, HF3, HF8
2	To survey and monitor habitats, species, and hydrology within the Lost Peatlands area. This will ensure that the natural heritage is better recorded and better understood. This will inform ongoing management, restoration, and best practice.	HF3, HF5
3	To undertake research to address evidence gaps in the science of afforested peatland restoration. This will inform ongoing restoration in the Lost Peatlands area and best practice throughout Wales and beyond.	HF3, HF5
Historical Heritage – *Lost Peatland stories*		
4	To research and capture historical interactions between the landscape and its people over time. We will then share the amazing stories that result.	HF1, HF3, HF5
Facilities – *Accessing the peatlands*		
5	To improve facilities, access, interpretation, and activity provision. This will encourage the exploration of the Lost Peatlands area. We will provide opportunities for communities and visitors to reconnect, learn about and benefit from the landscape's wealth of heritage and greenspace.	HF1, HF3, HF5, HF8
People – *Education and engagement*		
6	To improve local people's health and wellbeing. We will provide enjoyable health and wellbeing focused experiences, activities, and projects for all. They will be accessible through self and health provider referral (social green prescribing).	HF1, HF6
7	To provide learning opportunities, particularly using school grounds and the outdoor spaces. This will engage schools, communities, and professionals with the Lost Peatland's heritage. People can develop new skills and understanding that can potentially change behaviour.	HF1, HF4, HF5
8	Provide opportunities for volunteers and students to get involved in the project. They will help manage, monitor, and record the natural and historical heritage.	HF1, HF2, HF3, HF4, HF6, HF8
9	Through innovative marketing and interpretation, promote the Lost Peatlands project. This will raise awareness and engagement in the project. It will also promote the area as a destination worth visiting, exploring, and experiencing.	HF1, HF3

1.3 Rationale for the project

1.3.1 Rationale for the environment

The demand for the Lost Peatlands of South Wales project and its aims were evident. First and foremost, there was an environmental necessity. In 2022, the Sixth Assessment Report (AR6) from the Intergovernmental Panel on Climate Change (IPCC)[2] painted a stark picture of the impact of human-induced climate change and the pressing need to make massive and immediate cuts in greenhouse gas (GHG) emissions if global warming was to be limited to 1.5°C. In conjunction with global warming, biodiversity is also in decline; a major report published in 2019 by the RSPB[3] suggested that one in six species could soon disappear.

Peatlands play a vital role in carbon dioxide (CO_2) sequestration and biodiversity. In addition, they improve water quality and flood alleviation. Peatland habitats cover a large area[4] and their soils are exceptionally carbon-rich, making them the largest store of carbon of any habitat in the UK[5]. They provide a vital habitat for a variety of species (e.g., birds such as curlew, skylark, and nightjar), fauna, flora, and fungi. They also provide ecosystem services for humans, such as removing harmful pollutants from the air and water. Additionally, they can alleviate the risk of flooding by slowing the flow of water from upland areas to lowland human settlements.

Unfortunately, historical peatland management has meant that peatlands have gone from a carbon sink to an emitter[4]. Peatland degradation leads to the decomposition and mineralisation of peat and, consequently, to the release of the stored carbon in the form of CO_2[6]. So, instead of sequestering CO_2 from the atmosphere, peatlands are releasing it, further increasing GHG emissions. Only 22 per cent of peatlands in the UK remain in a near-natural condition, sequestering CO_2 at a rate of about 1,800 kt CO^2 per year[6]. The remaining 78 per cent is degraded, used for forest or agricultural purposes or extracted for fuel or horticulture, emitting a total of 23,000 kt CO^2 per year. In its degraded form, peatlands' ability to provide other ecosystem services is also negatively impacted.

In Wales, the story is similar. Peatlands cover four per cent of the country, which is approximately 82,562 hectares of peatland[7], of which 10 per cent is in near natural condition and 90 per cent is degraded to varying degrees[8], although none is extracted for fuel or horticulture. If these habitats are to become a sink and support the needed urgent action that the IPCC report suggests, it is paramount to return these habitats back to their natural state.

Before the value of peatlands was understood, peatland habitats were considered 'waste'. So instead of benefiting from their natural state, the Government decided through the Forestry Commission of Wales (now currently part of NRW) that the land be used *productively* for the creation of commercial timber[9]. In Afan forest, the first tree was planted in 1921. Post war, trees were used for pit prop mining. Since then, the trees have served the Welsh Economy and continue to do so through the selling of trees on the global market. However, evidence suggests that wood from afforested deep peat may not be the best use of this type of habitat[10].

[2] IPCC (2022) Sixth Assessment Report. https://www.ipcc.ch/assessment-report/ar6/
[3] RSPB (2019) State of Nature. https://www.rspb.org.uk/our-work/state-of-nature-report/
[4] Peatland habitats cover 3 million hectares: 12.2 per cent of the total UK land area.
[5] Thom, T. Doar, N. (2021). Quantifying Greenhouse Gas Emissions from UK habitats. Wildlife Trust.
[6] https://webgate.ec.europa.eu/life/publicWebsite/index.cfm?fuseaction=search.dspPage&n_proj_id=5686
[7] Natural Resources Wales announces new funding for peatland restoration | IUCN UK Peatland Programme
[8] Evans, C, et. al. (2017) Final report on project SP1210: Lowland peatland systems in England and Wales – evaluating greenhouse gas fluxes and carbon balances. Centre for Ecology and Hydrology.
[9] The history of forests and forestry in Wales up to the formation of the Forestry Commission - Bangor University
[10] Bonn, A, et. al. (2009) Ecosystem services of peat – Phase 1

Not only is there a need for peatland restoration itself, but there is also a need to expand the evidence base on the impact of restoration. The International Union for Conservation (IUCN) have commissioned a report to look into the impact of peatland restoration. However, the focus of this report was on deep peat rather than shallow peat, which is the habitat of the Lost Peatlands area. The need for research focusses on forest-to-bog restoration in the uplands, of which there are current evidence gaps in literature. The Lost Peatlands landscape supports upland, very largely degraded blanket bog, of depths varying from c50 cm to 4.5 metres, representing on average shallower peat than the existing case study examples of upland peatland restorations from Scotland and other parts of northern Britain. Doing the restoration allows evidence to be collected as well as generating examples of best practice for delivery, which can be used to support similar projects.

Recent studies have highlighted the increasing threat of peatland fires in the UK, which are exacerbating carbon emissions due to hotter and drier conditions caused by climate change[11]. These fires can release significant amounts of carbon into the atmosphere, further complicating efforts to mitigate climate change.

The IUCN UK Peatland Programme's recent report celebrates the restoration of 250,000 hectares of peatland over the past 30 years but emphasises that this is far short of the 2-million-hectare target needed by 2040 to meet climate and nature commitments. The report calls for increased funding, coordination, and efficiency to ramp up restoration efforts and ensure the health of restored peatlands[12].

1.3.2 Rationale for the community and wider society

The project operated within the Valleys of South Wales, which provides a home for several valley communities. The Afan Valley falls within the Neath Port Talbot local authority and the Rhondda Fawr Valley in Rhondda Cynon Taf local authority. Within the Afan Valley, communities are still distinct, small settlements with populations at a ward level ranging from 1,100 to 1,300. In the Rhondda Fawr Valley, urbanisation resulting in the joining of small settlements means that at the ward level the area supports larger populations ranging from 1,400 to 1,700.

The focus of the project was not just on restoration itself but on supporting these communities across the valleys. Both Neath Port Talbot and Rhondda Cynon Taf are considered some of the most deprived areas in Wales, experiencing low levels of income, high levels of unemployment, poor health, and poor education. According to the latest update of the Wales Index of Multiple Deprivation (WIMD) carried out in 2019[13], 71 per cent of postcodes in Neath Port Talbot and 68 per cent of postcodes in Rhondda Cynon Taf are in the top five most deprived regions.

When broken down at the Lower Super Output Area (LSOA) level, the 2019 WIMD suggested that more support was needed to address levels of deprivation.

Table 1.2 shows that over half of the LSOAs in the Valleys of South Wales were in the 10-20 per cent most deprived over all domains[14] in the country, with two being in the 10 per cent most deprived overall. The education domain was a particular source of deprivation. It featured in nine LSOAs amongst the 10-20 per cent most deprived. This was followed by health (seven LSOAs), and then income (six LSOAs).

[11] https://www.cam.ac.uk/research/news/uk-peatland-fires-are-supercharging-carbon-emissions-as-climate-change-causes-hotter-drier-summers
[12] https://www.iucn-uk-peatlandprogramme.org/news/new-report-celebrates-uk-peatland-restoration-climate-and-nature-targets-still-risk
[13] Welsh Government (2019) Welsh Index of Multiple Deprivation. National Statistic [latest data available]
[14] The overall WIMD is made up of eight domains (and their respective weighting): Income (22 per cent), Employment (22 per cent), Health (15 per cent), Education (14 per cent), Access to services (ten per cent), Housing (seven per cent), Community safety (five per cent) and Physical environment (five per cent).

Table 1.2: WIMD for wards in the Valleys of South Wales

Area	WIMD overall decile	WIMD overall rank[15]	Key issues (amongst 10-20 per cent most deprived or under)
Cymmer (Afan Valley)	20-30% most deprived	398	Health, Education
Glyncorrwg (Afan Valley)	10-20% most deprived	338	Income, Employment, Education, Physical Environment
Gwynfi (Afan Valley)	10-20% most deprived	210	Income, Employment, Health, Education
Maerdy 1 (Rhondda Valley)	10% most deprived	120	Income, Employment, Health, Education, Community Safety
Treherbert 1 (Rhondda Valley)	10-20% most deprived	487	Employment, Health, Physical Environment, Housing
Treherbert 2 (Rhondda Valley)	10% most deprived	114	Income, Employment, Health, Education, Physical Environment
Treherbert 3 (Rhondda Valley)	10-20% most deprived	248	Income, Employment, Health, Education, Housing
Treherbert 4 (Rhondda Valley)	10-20% most deprived	286	Income, Employment, Education, Physical Environment, Housing
Treorchy 1 (Rhondda Valley)	30-50% most deprived	869	Physical Environment
Treorchy 3 (Rhondda Valley)	20-30% most deprived	410	Employment, Health, Housing
Treorchy 4 (Rhondda Valley)	20-30% most deprived	560	Employment
Treorchy 5 (Rhondda Valley)	30-50% most deprived	860	Physical Environment

With the relative deprivation of education in the Valleys, a programme of activities that engaged and educated children, youth, and adults about their local habitat was needed. It was hoped this would enable people to understand why peatland restoration is important, what it could do for them and how they could get involved. Through this process, it was hoped they would learn and develop new skills that would empower them in their personal and professional life.

The project also aimed to address another key issue: Health. There is growing evidence that spending time in nature has positive impacts on health and wellbeing. To engage with nature requires that local people can overcome their perceptions of the local area. At the interim stage, members of the delivery partner team cited that local people are disconnected from the landscape. This theme did not seem as prevalent in the final stage of the evaluation.

[15] Out of 1,909 LSOAs in Wales.

Through the project, it was hoped the community would reconnect to the land, educate one another, improve their skills, understand its beauty, and improve their mental health through protecting and caring for the peatlands for years to come.

1.4 Policy

The UK is committed to several international agreements and conventions that recognise the importance of climate change, and specifically peatlands. Since the Paris Agreement, the UK has committed to a legally binding target of net zero by 2050, and a new interim target of reducing emissions by 78 per cent by 2035[16].

The overarching sustainability framework in Wales 'One Wales: One Plant sustainability framework'[17], states that the Welsh Government aims to:

> ***Enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.***
>
> UK's shared framework for sustainable development

In 2020, in line with the vision from the framework and UK net zero targets, the government formulated the five-year National Peatland Action programme[18] to restore 3,000 hectares of peatlands by 2025, which was achieved in 2024[19]. The programme focuses on addressing peatland erosion, drainage, sustainable management of blanket and lowland peats, and the restoration of afforested peatlands. It aims to safeguard peatlands in good condition and provide strategic leadership for future restoration efforts[20] The programme has secured further funding and plans to continue until 2030[21].

The Welsh Government has ambitious plans for woodland cover; a minimum planting rate of 2,000 ha each year from 2020, with the goal of increasing the rate to 4,000 ha as rapidly as possible. This policy could have potentially competed with the peatland target, meaning that within the project timeframe, restocking could have been preferred to peatlands restoration. However, the UK Forestry Standards (guidance on achieving sustainable forestry) discussed how deep peat soils can be vulnerable to woodland establishment and advised that careful consideration should be given for restocking, with an implication that restoration should be prioritised[22]. Therefore, the Welsh Government have adopted an integrated approach to land management, by carefully planning and coordinating to avoid conflicts between the two objectives so that both can contribute positively to climate change mitigation and biodiversity conservation.

Following the policy recommendations from the Biodiversity Deep Dive[23], increased delivery capacity of the National Peatland Action Programme will mean that by 2030, the programme will be able to deliver at a scale

[16] UK Government Press Release (2021) UK enshrines new target in law to slash emissions by 78% by 2035. Accessed on 11/03/2025 here: https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035
[17] Welsh Government (2009). One Wales: One Planet. The Sustainable Development Scheme of the Welsh Assembly Government.
[18] Welsh Government (2020) National Peatlands Action Programme. Accessed on 11/03/2025 here: https://www.gov.wales/welsh-government-launches-national-peatlands-action-programme-help-lock-carbon-and-reinvigorate
[19] Welsh Government (2024) Welsh Government beats peatland targets a year early, saving more than 8,000 tonnes of carbon every year. Accessed on 11/03/2025 here: Welsh Government beats peatland targets a year early, saving more than 8,000 tonnes of carbon every year | GOV.WALES
[20] Cyfoeth Naturiol, Cymru (2024) The National Peatland Action Programme. Accessed on 11/03/2025 here: Natural Resources Wales / The National Peatland Action Programme
[21] Cyfoeth Naturiol, Cymru (2024) The National Peatland Action Programme. Accessed on 24/03/2025 here: New Year and New Peatland Restoration Funding!
[22] The UK Forestry Standard (2017) The governments approach to sustainable forestry.
[23] Welsh Government (2022) Biodiversity Deep Dive. Accessed on 11/03/2025 here: https://www.gov.wales/biodiversity-deep-dive-recommendations-html

capable of reaching the net zero 2050 target of 45,000 ha, or 70 percent, of degraded peatlands restored. The Lost Peatlands of South Wales programme came at an important time to support these policy aims and the nation's trajectory towards net zero. In addition, there were pledges from some of the partners[24]. Rhondda Cynon Taf County Council pledged that *"By 2030, Rhondda Cynon Taf will be a Carbon Neutral Council and the whole County Borough will be as close as possible to Carbon Neutral*."

Alongside their commitment to timber production, NRW also pledged to reduce emissions on the estate they manage. As well as other specific pledges in the Welsh Public Sector, the one for land-use is relevant to this project: *"Deliver the National Peatland Action Programme to bring under restoration management extensive areas of peatland across Wales to reduce their greenhouse gas emissions.*"

1.5 Project design

The project was broken into six Programmes of Works (PW) which covered all activities. Below, the PW have been further split to explicitly show the diversity within each area of activity.

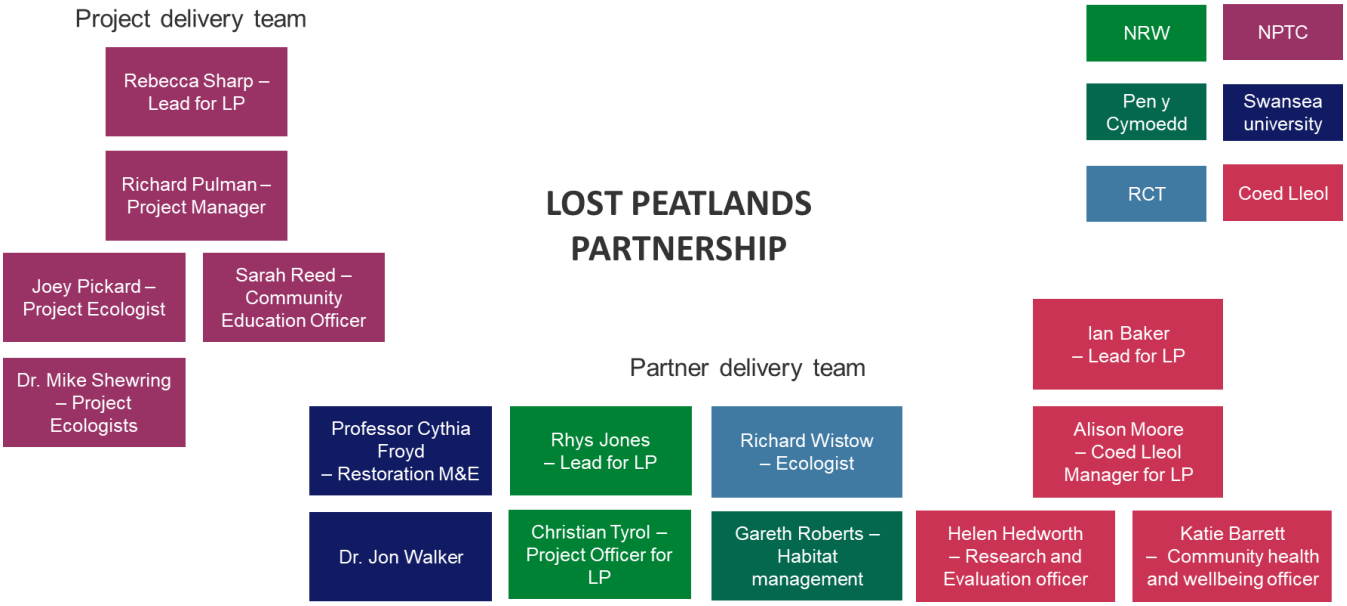
- **Programme 1** – Restoration of peatland
- **Programme 2A/B** – School pupil and teacher training and capital works at school sites
- **Programme 2C/D** – Volunteer training, practical skills, high-level training, knowledge exchange
- **Programme 3** – Access routes
- **Programme 4A** – Volunteer work (surveying etc.)
- **Programme 4A** – Engagement events (arts, crafts etc., guided walks)
- **Programme 4B/C** – Health and well-being (adults and family sessions)
- **Programme 4D** – Lost Peatlands Story (community activity)
- **Programme 5A/B/C** – Interpretation of activities (newsletters, leaflets, website, social media)
- **Programme 6** – Management and monitoring of programme (steering board meeting, stakeholder, etc.)

[24] Welsh Government (2022). Working together to reach Net Zero: All Wales Plan 2021-25.

1.6 Project delivery

The Lost Peatlands project was a unique partnership whose aim was to work collaboratively to develop and deliver a landscape scale project in the Lost Peatlands area. The organogram below (figure 1.1) shows the staff involved from each of the organisations.

Figure 1.1: Lost Peatlands Partnership Organogram



The partnership includes Neath Port Talbot Council (NPTC), Rhondda Cynon Taf Council RCTC), Natural Resources Wales (NRW), Swansea University, and Coed Lleol/Small Woods.

- **NPTC** were the project's lead partner, responsible for delivering most of the work (PW1, 2A/B/C/D, 4A and D), and coordination of the partnership and steering board (PW6). The core team is made up of a project manager, two ecologists, and a community and education (C&E) officer (leading the delivery of PW2A/B).
- **RCT** were the partner organisation who are supporting the ecological recording of species and contributing to raising awareness and engaging people from the local community.
- **NRW** manage all of the peatland sites, mainly contributing to the peatland restoration programme (PW1) and were specifically responsible for acquiring contracts to fell the trees currently on site, so that the project could coordinate the peatland restoration work which they also procured. NRW were also technically a joint partner in relation to the grant as they owned most of the land involved. In addition, they supported the access to sites for the delivery team and partner delivery teams, supported data collection and monitoring, enabling community outreach events and improving of access routes (PW3) for local people to engage with the sites.
- **Swansea University** were mainly responsible for the monitoring of the restoration programme (PW1) and for collecting evidence of a high standard to be shared amongst the national (National Peatland Action Programme) and international community to inform best practice.
- **Coed Lleol/Small Woods** were delivering the health and wellbeing programme, running sessions for young people and adults (PW4B/C).
- **Vattenfall** (the owners of Pen Y Cymoedd Wind Farm), although not a partner, are an important stakeholder and have contributed to project delivery through match funding that covered 154 ha of peatland restoration (150 ha target – match funding amount achieved) through their Habitat Management Plan, related to an ongoing planning condition for the wind farm.

1.7 Project evaluation

ERS was commissioned by NPTC in October 2021 to undertake an independent evaluation of the Lost Peatlands of South Wales project. The evaluation began in September 2021, finishing in February 2025 with this final report. The methodology for this evaluation was designed to reflect the experiences and fit the requirements of the Lost Peatlands of South Wales team, considering the project's delivery model, the different project aims, and local context.

1.7.1 Aims of the evaluation and this report

The aim of this final report is to assess the following:

- Effectiveness of project delivery.
- Implementation, operation, and the impact of the project.
- Project management, governance, and the partnership approach, including the effectiveness of restoration and management techniques, to what extent the evidence research gaps have been filled and best practice recommendations, and information sharing.
- Added value benefits, including how the project performed against the delivery of project aims, objectives and NLHF outcomes, reviewing what worked well, what didn't work well, lessons learned, how they were addressed, and wider benefits.
- Key lessons relevant to this and future projects.

1.7.2 Methodology

The evaluation approach was collaborative, transparent, and participatory, with project staff and partners actively involved. ERS has used a mixed method approach throughout the process which has included designing surveys, observing workshops, and conducting interviews with delivery partners.

To kick-off the evaluation, ERS met with the project manager and lead ecologists (involved in the development phase) for an inception meeting. The ERS team then reviewed the available documentation, reviewed the existing M&E Framework, and delivered a preliminary report to detail the actions and methodology of the evaluation that were to be undertaken. ERS then designed a suite of research tools to evaluate each of the PWs within the Lost Peatlands project, which have been in place across the project timeframe to 2025, with periodical refreshes and adjustments as the project and data collection needs have evolved. An Interim Report was written in 2023 and provided recommendations and learning for the remainder of the delivery period.

1.7.3 Research tools and methods

The methods used for the evaluation are outlined in more detail in Table 1.3 below.

Table 1.3: Research tools

Research tools	Detail
Surveys	▪ 9 e-surveys (hosted online with Survey Monkey) [interim & final] ▪ 1 Fungi ID e-quiz [interim]
Interviews	▪ 2 proforma for initial (2021) and follow-up interviews (2022 and 2024) with delivery team and partners [interim & final]

Workshop observations	▪ 2 in-person observations of workshops of pupils and participants
Focus groups	▪ 1 focus group session to understand impact and discuss project with participants post workshop [interim]
Outdoor-interactive feedback session	▪ 4 interactive feedback session with pupils to understand what they have learnt [interim]
Site visits	▪ 3 site visits to produce case studies (included in this report) and supplementary data throughout [final]

For the interim report, we observed an outdoor pupil event and hosted a series of interactive-outdoor workshops with pupils to evaluate the impact of the project for them. We also attended a professional training Fungi ID workshop, observed the impact on participants, and collected feedback from them through a focus group. For the final report, we interviewed the project team and delivery partners. We also conducted multiple site visits and collected feedback from volunteers, families, and community members taking part in the project.

To further aid in the understanding of project activities and role/(s) of key delivery partners in the final stage of the evaluation, consultations were carried out with one or two representatives from each of the delivery partner organisations.

Survey tools were designed in collaboration with feedback from the project manager, and relevant team members (e.g., community education officer for surveys for pupils and teachers). The survey tools were designed to assess progress against each of the corresponding NLHF outcomes, as shown in Table 1.4 below.

Table 1.4: Corresponding NLHF outcomes and research tools

Research tool	National Lottery Heritage Fund outcome assessed						
	1	2	3	4	5	6	7
Volunteer sign-up sheet	X						
Volunteer and Training e-survey (baseline)	X			X	X	X	X
Volunteer and Training e-survey (follow-up)				X	X	X	X
Participant e-survey	X		X		X	X	X
Online interpretation e-survey	X		X	X			
Teacher pupil evaluation form	X		X	X	X	X	
Teacher training e-survey	X		X	X	X	X	
Pupil booklet	X		X	X		X	
Pupil workshops and log sheet	X		X	X	X	X	

Research tool	National Lottery Heritage Fund outcome assessed						
	1	2	3	4	5	6	7
Rambler and Path Guardian e-survey	X					X	X

1.7.4 Response rates

Overall, the project has achieved positive response rates across most of the research tools.

Table 1.5: Response rates for research tools

Research tool	Number of volunteers / participants / pupils / teachers	Final responses	Response rate
Volunteer and Training baseline e-survey	40	33	83%
Volunteer and Training follow-up e-survey	34	21	62%
Participants e-survey	206	101	49%
Teacher pupil evaluation form	10	10	100%
Teacher training feedback	27	21	78%
Pupil booklet	147	120	82%
Pupil workshop	47	46	98%
Online interpretation e-survey	873	5	1%
Fungi e-quiz (after)	20	15	75%
Fungi e-quiz (before)	20	5	25%
Project Team and Partners Interviews (2021)	10	9	90%
Project Team and Partners Interviews (2022)	10	8	80%
Project Team and Partners Interviews (2024)	13	11	85%

2 Delivery progress

This section will outline the final outputs for each area of the Lost Peatlands Project, highlighting which areas have performed well and hit targets, and which areas have fallen short of targets. Final outputs were provided by the Lost Peatlands project team. Successes and challenges for the delivery of each area will also be outlined, supporting the analysis of outputs by providing a narrative explaining why aspects have performed well and why certain areas may have fallen short. Successes and challenges are mainly taken from project team and partner interviews carried out in 2024, alongside information previously collected as part of the evaluation. Teacher training feedback is also included as part of the analysis of this area.

2.1 Peatland restoration

2.1.1 Delivering peatland restoration

Peatland restoration involves an eight-step process, from planning to completion.

1. Lost Peatlands project team ecologists to undertake baseline surveys of site to record key species and safety aspects (carried out in the development phase).
2. Lost Peatlands project team ecologists to create plans for how the site is managed during restoration and after (carried out in the development phase).
3. Trees felled and sold as standard forest practice by NRW.
4. Peatland restoration contract released by NRW.
5. NRW to choose contractor, in line with internal procedure.
6. NRW to manage contract with support from Lost Peatlands ecologist.
7. Restoration work largely completed over winter.
8. Post works monitoring and awareness raising.

When asked about challenges for the overall project, project team and partners outlined a number of challenges for the peatland restoration aspect. External inflationary pressures increased the cost of delivering the peatland restoration. It was also flagged early on that one of the sites was at risk of landslip, meaning less was delivered on this site than originally planned – however this was discovered before the delivery phase so did not affect the 256 ha target in place.

One of the main drivers for time delays was linked to the sale of timber. One of the main buyers of forestry coupes went into liquidation shortly after the start of the project, leading to delays as another procurement exercise was required. Furthermore, fluctuations in market prices for fuel and timber, led to delays with felling operations not taking place until winter 22/23.

The difficulty with forestry was mentioned multiple times in interviews, with one interviewee stating that managing the multiple moving parts on the forestry estate was challenging, as it was difficult to organise the work effectively. These challenges were mainly around contractors not being able to deliver work, and with the felling of trees. A project team member suggested that in the future it would be easiest to only take on sites that are ready for restoration. In addition, another project team member stated that it could be beneficial only taking on contractors with a strong reputation, thus mitigating against the risks of contractors defaulting on work or delaying the project.

"There were delays in delivering restoration work - problems with contractors and felling trees, and contractors going bust (…) from their point of view, that will take precedence, but from our point of view trying to deliver HLF objectives. Compatibility – difficult at times." – Project Team

One of the main issues in relation to peatland restoration was the disconnect between the design and delivery phases of the project, leading to work being planned which could not be carried out. However, it was also noted that delivery became much smoother once this early challenge was overcome.

"The people involved in the development side of the project, were not involved in the delivery of the project. (…) So in the first years of the project there was a lot of "actually, we can't do that", I should have been involved in the development phase as there were lots of promises that were made that we weren't able to fill, for lots of reasons, regulatory, ecologically, resource wise." – Project Partner

Delivery capacity was another area that provided a constraint, as NRW experienced an unfortunate turnover of project staff while also facing a complete recruitment freeze. As such, the full funding for the project could not be claimed. This was negated by extra staff input from existing NRW staff for delivery. Furthermore, surplus funding enabled the higher costs of restoration to be covered.

Despite these challenges, the large majority of restoration was delivered at 220.01 Ha, alongside the full 491 Ha of habitat managed. The reasoning for this small shortfall reflects actual conditions on the ground, versus what remote mapping and standard surveys can predict. The nature of all the sites as upland mosaic habitats including blanket bog areas results in transitions areas from deep peat to shallower peat or mineral soils, and as such restoration only took place where peat of sufficient depth for the methods to be effective was found.

The project team noted that the project had to be adaptable and flexible in order to mitigate the challenges outlined above and to deliver on its targets. This was evident at Castell Nos, where, although project work was completed, the deliverables and timescales had to be tweaked in order to get it done. Another area of flexibility was around delivery periods, as project work was expanded into the spring period where it was originally only planned for winter, helping to mitigate the risk of not fulfilling targets. This was made possible by carrying out extensive Ecologist Clerk of Work checks for the presence of breeding birds, in which partnership ecologists carried out extensive surveys to ensure the biodiversity on the sites was protected. Furthermore, interviewees noted the iterative approach supported the project team to learn and develop through the project, leading to more successful delivery.

"The iterative approach with NRW to the restoration design have been very useful in terms of trials. As our contractors have learnt through that, the restoration has got better as we've worked through the project. Operators have become more skilled and we've been able to learn what works well in different areas as the project has gone on." – Project Team

Table 2.1: Peatland restoration and management achievement

Activities	Target	Achieved	Achievement rate
Peat Restoration at all HRA's	256.27	240	**94%**
Area of Habitat Managed	491	491	**100%**

The achievement of delivering this work in the face of these challenges was highlighted throughout the project team and partner interviews, as many interviewees highlighted the fantastic work being done with peatland restoration.

"From a peatland restoration point of view, once we've been able to get on the ground it's been extraordinary. We've been able to deliver things which no one else in the world has been able to in the methods that we're doing." – Project Partner

As part of the peatland restoration aspect of Lost Peatlands, there is also ongoing monitoring and evaluation of the sites where work has been carried out. This monitoring and evaluation is crucial to understanding the success and impact of the project, which will be discussed in more detail later. However, the monitoring featured heavily in discussions with project team and partners, with a number of challenges and lessons learnt highlighted during these discussions.

Delays to capital works caused some issues with the monitoring of the project. Although the project work has been completed, the project team highlighted that it would have been more ideal to be able to monitor for longer following this capital work. A longer monitoring period would have helped to capture more data on the restoration. It was also highlighted that due to the nature of the project, some of the longer-term impacts will not be revealed until far later, with project team members stating the full impact will not be apparent until years down the line. This both highlights the importance of longer-term (post-project) monitoring, whilst also suggesting the total impact of the project will not be fully appreciated at this current time.

Additional budget has been diverted towards the monitoring of the project which will help to mitigate the effect of project delays on monitoring. This was highlighted by the project team as a real benefit, as it will cover up to December which is when a large amount of the activity it was planned to monitor will be happening. This extra time and budget will be especially beneficial for organic carbon monitoring.

"You get the autumn storms and then after that is where you get the organic carbon being transported off site, so that extra time for monitoring added value. We wouldn't have been able to capture this really important period otherwise." – Project Partner

2.2 Access routes

The project aimed to improve access to the Lost Peatlands landscape, encouraging exploration through various routes, including circular and long-distance paths. A range of walk lengths and difficulties were offered, including one fully accessible route for wheelchair users.

To inspire local communities and visitors, several methods were employed to promote access, including: guided hikes; digital maps; way marker posts; interpretation panels; the digital app (Lost Peatlands Explorer); and the path maintenance volunteering group. Nine walks covering 76.5 km were open to the public as permissive routes, located at all Community Wild Space (CWS) and Habitat Restoration Areas (HRA) sites. The routes covered diverse habitats and historic landscapes, offering views of valleys, lakes, Swansea Bay, the Bristol Channel, and the Bannau Brycheiniog.

The project successfully increased outdoor access and knowledge, receiving positive feedback, especially for the mobile app. The formation of the path maintenance group was a key outcome, despite challenges with stakeholder contributions and timing of permissions.

2.3 School capital works

School capital works refer to a variety of grounds improvements such as the installation of bug hotels and bird boxes, meadow management, tree maintenance and pond maintenance, amongst other improvements. These capital works took place across seven different schools, with the aim of either increasing or retaining habitat, or for education purposes.

The school capital work aspect of the programme performed well across the duration of the programme, with the final figures for this at 42 school ground improvements, 16 improvements higher than the target for this

area. This is an increase of over 150 per cent from the figures near the start of 2023, where the ground improvements were at 16. The output figures for school capital works can be seen in Table 2.2.

Table 2.2: School capital work achievement

Activities	Target	Achieved	Achievement rate
School Grounds Improvements	26 school grounds improvements	42	**162%**

A particular success in this area was realised through the availability of additional match funding from Welsh Governments Local Places for Nature Grant, administered by the biodiversity team of NPT council. This resulted in new outdoor classroom areas being delivered for Glyncorrwg Primary School, with features incorporated to improve biodiversity. This helps explain the strong overperformance in this area. The improvement transformed an area of the school that had deteriorated during the pandemic and was no longer fit for purpose. The additional funds enabled NPT project primary schools to receive a bug hunting box, and improvements to Croeserw Primary School were also undertaken through the installation of a willow weaved structure to host small outdoor learning sessions.

2.4 Pupil engagement and teacher training

The project performed well for pupil engagement and teacher training, greatly exceeding targets for School outdoor learning programmes and teacher training. The project also hit its target for train the trainer, with seven teachers trained. This was reflected in the interviews with project team and partners, where the project team expressed happiness in delivering more than intended for this area of the programme.

Table 2.3: School pupil, teacher training and capital work achievement

Activities	Target	Achieved	Achievement rate*
School outdoor learning programmes	School pupils (63 lessons across 7 primary schools)	91	**144%**
Train the teacher	7 teachers (across 7 primary schools)	7	**100%**
Teacher training	28 teachers (across 7 primary schools)	78	**254%**

The delivery of this area was adapted by the project team in order to make it more suitable than what had originally been planned, as the project team stated there was not sufficient time allocated to it before the project started. This reflected changes to the Welsh Curriculum which occurred after the project's inception. The main difference being the delivery of more frequent sessions over a shorter time period, to reduce the gap between sessions; this was a change from the half a day session delivered once a term which did not fit with what schools were delivering. This meant that rather than following the same students throughout the course of the programme, the focus was on one off engagement of pupils, increasing the reach of the programme. The project team noted that this added value to the project, changing the programme for the better as it adapted to the needs of the participants and fitted more readily into the school environment. Another project team member noted that the success was supported by having "someone in place who understands the curriculum and has done this before".

Alongside project team and partner interviews, feedback was collected from teachers on the delivery of this aspect of the programme, the results of which are analysed below.

When asked what worked particularly well within delivery of sessions, teachers (n=20) provided free-text responses which showed that they found the sessions highly effective due to their practical, hands-on approach. The interactive format encouraged idea-sharing, discussions on curriculum links, and the ability to adapt activities to each individual school setting. Enthusiastic instructors and well-organised sessions contributed to a positive learning environment. Team building and well-being exercises were also highlighted as beneficial for fostering collaboration amongst staff and inspiring similar activities for pupils. The combination of practical experiences, resource handouts, and a supportive atmosphere, made the sessions both engaging and educational.

"The outdoor activities allowed me to experience the task from a child's perspective which really enhanced my understanding and boosted my confidence." – Teacher from session

When asked about any improvements to be made, teachers (n=20) provided free-text responses which indicated that they were overwhelmingly satisfied with the sessions, with many stating that no improvements were needed. A few suggested providing examples or photos showing how schools with more concrete environments could adapt outdoor learning activities. Some also wished for more time to explore additional activities, indicating high engagement and interest. One teacher humorously noted avoiding muddy areas, whilst another expressed a desire for more sessions and opportunities for all staff to participate. Overall, the feedback reflected a well-planned, enjoyable, and impactful learning experience.

Teachers were asked if they would recommend the session to others and provided free-text responses (n=20) which showed that they unanimously recommended the session, praising the engaging, informative, and practical approach. They highlighted how the training not only supported curriculum areas like literacy and numeracy but also promoted mental health, well-being, and environmental awareness. Many found the sessions transformative, inspiring them to rethink outdoor learning and to adapt activities for their classes. They commended the knowledgeable and enthusiastic instructors and emphasised the training's relevance in today's educational landscape.

"The session was one of the best and most useful professional development experiences I have ever attended. I would encourage others to get involved." – Teacher from session

Figure 2.1, overleaf, shows the teachers' overall thoughts on the session. 95 per cent of teachers strongly agreed that the session was engaging, with over two thirds (71 per cent) strongly agreeing it was a good fit for their curriculum. Just under two thirds (62 per cent) strongly agreed that the session was relevant to their role. This is primarily due to the small size of schools, resulting in teaching and non-teaching staff attending the session as required training on an insert day. Although relevance to role was the least strongly agreed with, not one respondent disagreed with this or any other of these statements, showing the positive impact the session had on teachers.

Figure 2.1: Stacked bar chart showing teachers' agreement with the statements "The session was…" (n=21)

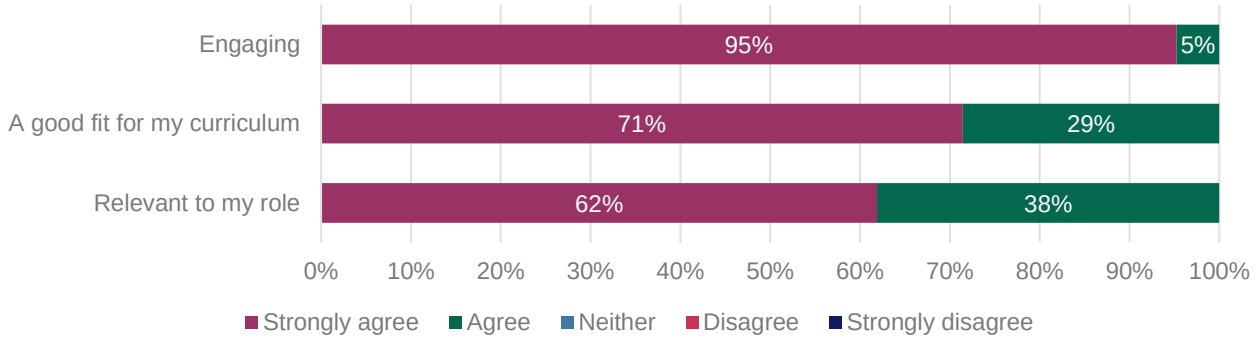
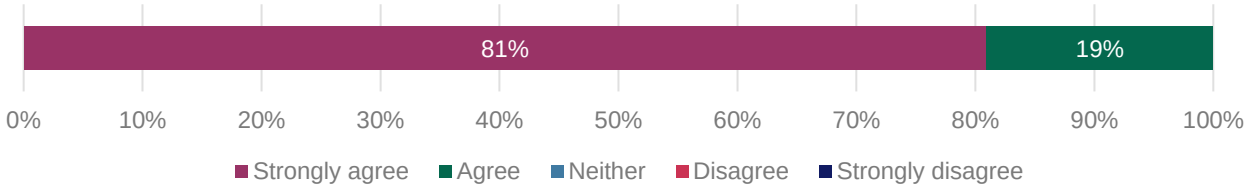


Figure 2.2 below shows how useful teachers found the session, with 81 per cent strongly agreeing with the statement, and 19 per cent agreeing. The absence of any disagreement shows that, wholly, the session was found useful by teachers who responded.

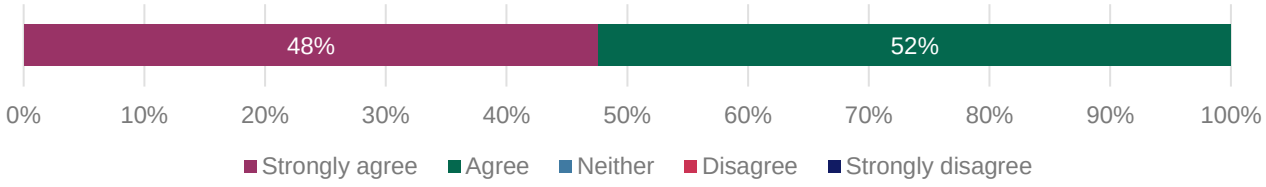
Figure 2.2: Stacked bar chart showing teachers' agreement with the statement "I found the session useful" (n=21)



When asked what they found the most useful about the session, teachers (n=21) provided free-text responses and reported that they found the sessions most useful for their practical, hands-on approach, offering ready-to-use outdoor learning activities. Many appreciated learning simple, low-preparation games and discovering how readily available resources could be used for teaching. The sessions boosted confidence in delivering outdoor learning and integrating it into the curriculum. Teachers valued the creative ideas linked to well-being, curriculum development, and learner engagement. The balance of theory, practical tasks, and contextual explanations, such as the environmental importance of peatbogs, was particularly beneficial. Overall, the sessions inspired teachers with new, adaptable strategies to enrich their teaching practices.

Figure 2.3 below displays to what extent that teachers agree they learnt about the Lost Peatlands of South Wales project, with 48 per cent strongly agreeing and 52 per cent agreeing. This demonstrates that all teachers who responded learnt about the project, on some level.

Figure 2.3: Stacked bar chart showing teachers' agreement with the statement "I learnt about the Lost Peatlands of South Wales Project" (n=21)



Teachers (n=20) responded to a question asking what they had learnt about the Lost Peatlands of South Wales project, providing free-text responses. They reported to have gained a deeper understanding of the project, including its environmental significance and restoration efforts. Many were surprised by the historical

presence of peatlands in the local area and the negative impact of tree planting on these ecosystems. They learned about the project's role in reducing carbon footprints, restoring habitats for wildlife like water voles, and engaging schools and communities through educational activities. Teachers also appreciated learning about the project's scale, progress, and environmental benefits, expressing enthusiasm for future involvement and continued collaboration with the initiative.

Figure 2.4 below shows that only 15 per cent of teachers who attended the session had attended a similar session, on a similar subject, previously, with 85 per cent of teachers reporting that they had not.

Figure 2.4: Stacked bar chart showing the proportion of teachers who report that they have previously attended a session on a similar topic (n=20)

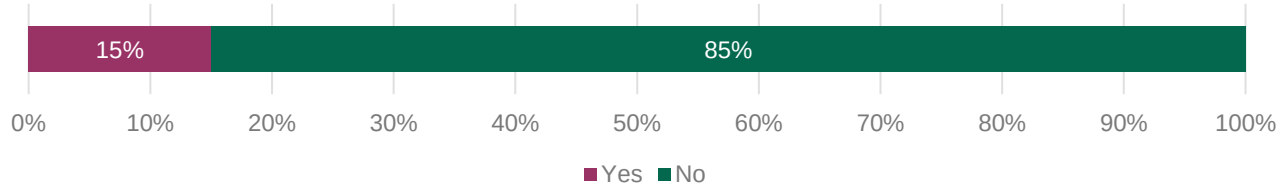
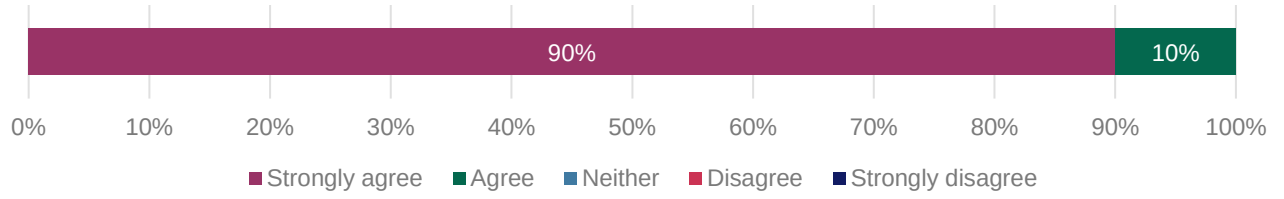


Figure 2.5 below shows whether teachers believed that sessions were inclusive and whether all children were able to engage equally. Only one teacher agreed, rather than strongly agreeing, which indicates that no teachers responding had issues with their students being able to engage with the session.

Figure 2.5: Stacked bar chart showing teachers' agreement with the statement "All children were included and able to engage" (n=10)



Further, general survey comments from teachers (n=11) revealed that the delivery of the session was generally well-received, with teachers praising the engaging and interactive approach that delivery staff used to connect with the pupils. The ability of staff to make the most out of local grounds and to tailor the sessions to the students' interests was highlighted as a strength. The sessions were seen as enjoyable and educational, with staff members fostering a strong rapport with the students that encouraged participation and enthusiasm. Some teachers noted that the activities were well-structured, fun, and informative, though there were occasional mentions of a minority of pupils who didn't fully enjoy the outdoor setting.

2.5 Volunteer engagement and training

Volunteer engagement and training performed generally well across the course of the project, with the majority of targets being hit. In fact, the only areas of the project which came in below target were habitat condition monitoring training, introduction to nature training and university academic study. Knowledge exchange event participants massively exceeded expectations with 257 more participants than expected. Path guardian walk and health walk leader training both also came in significantly over their respective targets. Achievement against targets is represented in Table 2.5, overleaf.

Table 2.4: Volunteer and participant training

Activities	Target	Achieved	Achievement rate
Volunteer training - habitat condition monitoring training	40 volunteers (across 6 sites and online)	32	**80%**
Introduction to Nature training	132 participants (across 6 sites)	117	**89%**
Introduction to wildlife recording	33 participants (across 6 sites)	34	**103%**
Practical techniques (dry stone walling & outdoor carpentry)	20 participants (across 6 sites)	35	**175%**
Higher level training (Species identification and monitoring, Peatland restoration techniques and peatland upland management, Professional training course)	271 participants trained	294	**271%**
Agored accreditation	50 participants trained	91	**182%**
Knowledge exchange event	45 attendees	302	**671%**
Path Guardian Scheme training	7 participants trained	25	**357%**
Health Walk Leader training	20 participants trained	60	**300%**
University academic study	180 skilled volunteer days 180 students engaged/taught in lectures.	131	**73%**

The education of university students (BSc; MSc; PhD) proved instrumental in gaining base knowledge on ecology and hydrology topics relevant to peatland restoration. The shortfall in this area is explained by lower levels of enrolment than expected, however of those engaged, an impressive 21 student projects were carried out.

When asked for feedback on the programme, partners stated that more support with transporting students to and from sites would have been beneficial, although not essential. This was available for getting the public out to remote sites away from public transport, as it was not appropriate to ask participants to drive their own vehicles on forestry roads. The ‘Bog Bus’ (multi-people vehicle) was rented for the second half of the project and allowed the offer of ‘Bog Tours’ where local community groups and project participants/stakeholders were offered easy access to the uplands on guided tours of several project sites. However, the university oversaw transporting students so the ‘Bog Bus’ was not utilised but may have significantly helped, along with support coordinating the logistics of travel.

Despite strong performance across the volunteer and participant training targets, the programme did not perform as well across volunteer task achievement, with three outputs falling well below their respective targets. In fact, the only targets which were hit within this area were in relation to sphagnum planting and path guardians, coming in 8 and 28 days over the target. Both conifer control and habitat management both

performed relatively well, only falling marginally shy of targets. The size of the shortfall for breeding bird survey days, bat monitoring days, and habitat condition monitoring days, suggest challenges on the delivery side of this project.

Table 2.5: Volunteer tasks achievement

Activities	Target	Achieved	Achievement rate
Sphagnum Planting	30 unskilled volunteer days	38	**127%**
Conifer Control	30 unskilled volunteer days	28	**93%**
Breeding Bird Survey	180 skilled volunteer days	26	**14%**
Habitat Management / INNS	110 unskilled days	106	**96%**
Bat Monitoring	72 skilled days	3	**4%**
Habitat Condition Monitoring HRA / CWS	120 skilled days	21	**18%**
Path Guardians	60 skilled days	88	**147%**

Project team and partner interviews revealed that although professional volunteer hours exceeded expectations, the skilled volunteer aspect of the programme has not turned out as expected. This is down to difficulty in completing insurance and risk assessments for groups, and a lack of engagement from prospective volunteer groups. This affected a number of areas, such as ecological surveys, and carrying out path maintenance. As a result, the project team had to divert resource to this area in an attempt to make up this shortfall. This goes towards explaining the shortfall across a number of outputs in this area of the project.

2.6 Community engagement & Health and Wellbeing

The community engagement aspect of the Lost Peatlands Programme has performed well across all targets, achieving 100 per cent of the target for celebration events, and just over the target, of 530 participants engaged for community engagement events. A wide range of community events were carried out as part of this; these included guided walks, Wildblitz family fun days, arts and craft events, and Bog Days. All types of events hit their individual targets - other than for guided walks, which came in 42 shy of the target of 286. Wildblitz and Bog Days made up the difference, both coming in just above their respective targets.

Table 2.6: Community engagement events achievement

Activities	Target	Achieved	Achievement rate
Community engagement events	530 participants across all events	531	**100%**
Project celebration events	110 short-term participants & 1 skilled volunteer day	110 & 1	**100%**

Coed Lleol/Small Woods worked in partnership with Neath Port Talbot County Borough Council to deliver the health and wellbeing aspect of the programme. This area of the programme exceeded targets, with actual output numbers coming in far higher than the targets. In fact, the number of actual participants for drop-in sessions was over double the target, with an overperformance of 252 participants. In addition, the number of participants for six-week programmes also came in comfortably above the target.

Table 2.7: Health and well-being programme achievement

Activities	Target	Achieved	Achievement rate
Drop-in Sessions	192 short-term participants	444	**231%**
6 Week Programmes	128 long-term participants	174	**136%**

Project team and partner interviews helped to explain what caused this large overperformance. One interviewee reflected on the success of the community engagement and health and wellbeing aspects of the project, stating that they were pleased with the levels of engagement in this aspect of the programme.

When reflecting on outputs and targets, partners stated that some of the output targets for health and wellbeing were fairly conservative. As output targets were set during a COVID lockdown, uncertainty around how many participants would be willing to engage led to conservative estimates on targets, perhaps explaining the overperformance on some of the delivery outlined in Table 2.7. They went on to explain how lower targets allowed the project to be more flexible and potentially more successful as a result. This meant smaller sessions could be run for those with more complex needs, allowing for a more people-centred approach.

"We were less tied by targets, often on projects with high target figures, you focus on just getting the people in if that's the target. But here, e.g., we've run quieter sessions for people who are autistic or visually impaired so need extra support – and we can offer that support more flexibly. It's way more person-centred." – Project Partner

In addition, partners stated that the flexibility in targets enabled them to provide support to specific groups in need, which are not represented in the output figures. Sessions for new participants were made as accessible as possible to reduce social anxiety, particularly in the face of rising anxiety post COVID lockdowns. However, even these sessions were not suitable for some new participants with high levels of anxiety. The lower targets allowed the project team to have shorter, more informal sessions where necessary, without the worry of having to tick these individuals off as participants. This also suggests the output numbers are an underestimate of the projects' reach.

"Running sessions for new participants, we make these really accessible and I do a lot of work on managing anxiety with groups. So we can overcome this but we have to really focus on it. Flexible targets have helped with this, as we can just offer someone five minutes for a cup of tea, and normally we couldn't tick them off as a participant but we don't have to worry about that so much now." – Project Partner

Further to that, partners stated the benefit of delivering in an outdoor environment in order to increase access. Delivering sessions outdoors has multiple benefits such as less sensory stimulation, providing a calming environment, and the fact it is easy to 'escape' offering opportunities for people to calm down. This has been successful in attracting participants for whom indoor sessions are not suitable.

Another aspect highlighted as a success of the project was being able to deliver in collaboration with other organisations. In fact, project team members stated that this had allowed them to deliver more than expected,

by bringing organisations such as Women's Aid to sessions in order to break down barriers to access of these organisations.

Additionally, ERS researchers were able to take part in multiple project observations in the Rhonda valley in 2024 to support research and evaluation findings. The first event centred on educating families regarding peatbogs. Comments from attendees showed the event to be a success, with families wanting to attend again, to learn more about peatbogs, and appreciating the benefits for children of interacting with nature.

A couple of attendees mentioned that marketing around the event could have been improved as it was by chance and via their own networks that they knew of it happening. Appreciative of the difficulties around resource, they suggested some cost-effective methods of trying to expand reach.

"Reach, you've got to be in the know to come here (my wife knows one of the organisers), so they need to do more to engage with the local community and need to engage with parents as they're the ones with the deciding vote to come" – Father with family at a community event

"Event's been great, just the reach that's the problem. We didn't know about this event, and we are local. Within the resources I assume it's expensive and difficult to get out there… maybe posters put up, some local written leaflets but just cheaper ways to engage with the local community" – Mother and son at community event

There were also a number of challenges to delivery of the health and wellbeing aspect of Lost Peatlands. The project team stated that the weather, transport to the sites, and providing individuals with weather-appropriate clothing posed some of the biggest barriers to those wanting to get involved. Although a budget was allocated for clothing, an underspend was reported, highlighting the importance of focusing on actual needs as a lesson. As such, the six-week programme was not as accessible as the project team had hoped it would be. In addition, it was highlighted that site selection could have been improved, as the practicality of making some sites work has acted as a barrier to engagement. Project team staff stated progressing to peer-to-peer support was far more successful. Clothing issues were mitigated with support from YMCA to help get participants equipped - an aspect which was highlighted as a success by the project team.

Similar issues were highlighted in relation to general community engagement. Site access issues and the lack of facilities on sites meant some areas were unsuitable for certain groups, with specific issues relating to parking and toilets. In addition, the health and safety of taking groups onto the peatland was a challenge, as uneven ground increased the risk of falls. This issue was also highlighted in relation to school access, with only one site suitable for this.

During interviews with the project team, suggestions were provided on how to tackle the challenges above and improve project delivery in general. A key area identified was in the selection of sites, with project team members stating coproduction in this area would help mitigate the issues outlined above, with community members nominating sites. Further to that, participants claimed that rather than routes being made more accessible, they would prefer information on the accessibility levels of existing routes so that they can make their own decisions. Other improvements include the creation of woodland shelters, an area that project team members stated has been widely requested by the community. Lastly, the project team stated concerns around the timing at which the funding was ending, stating that this coincided with when people are usually most vulnerable.

"Health and wellbeing funding almost always comes to an end in December – but this is the time people struggle the most. So, we need to facilitate how we run things in January when people are feeling really blue." – Project Team

2.7 Summary

The Lost Peatlands project performed generally well across all areas, exceeding a number of targets whilst hitting most others.

The large majority of **Peatland restoration** was delivered, alongside the full area of habitat managed. The reason for this shortfall was due to differences in the actual conditions on the ground, compared to what remote mapping and standard surveys can predict. As is expected with largescale habitat restoration projects, the project faced a number of obstacles. Economic pressures such as rising costs increased the cost of delivery, alongside causing delays for the commencement of the project. Furthermore, challenges near the start of the project surrounding communication between the project design and delivery team led to difficulty in the early delivery.

Adaptable and flexible delivery from the project team was crucial for mitigating these challenges, with the tweaking of timescales and deliverables, as well as increasing the delivery period to include spring supporting the achievement of outcomes. Furthermore, the iterative approach taken by the project team supported learning and development, leading to more successful delivery.

The delays to capital works created further issues for the monitoring of the project, as less evidence was able to be collected. However, additional budget towards monitoring helped to mitigate this impact, covering a period when important activity is expected to occur. Further long-term monitoring would also be beneficial to realise the full impact of the project.

School capital works overachieved on targets, far more school ground improvements than planned. The success in this area was partly due to additional match funding being realised, allowing for additional biodiversity improvements to be delivered alongside what was initially planned.

Pupil engagement and teacher training was another area of success, either hitting or overachieving on all targets. Changes to the structure of this area supported this overachievement, increasing the frequency of the sessions alongside switching from targeting the same pupils across multiple years, to one-off engagement with pupils. The strength of teacher training was evidenced by the feedback provided, as teachers praised the engagement and relevance of sessions, with all teachers expressing agreement that they learnt about the Lost Peatlands project.

Volunteer engagement and training performed generally well across the course of the project, with the majority of targets being hit for volunteer and participant training, and numerous outputs exceeding their target. Despite this, a number of volunteer task achievement outputs fell below target. A number of challenges were cited in this area, such as difficulty completing insurance and risk assessments, and a lack of engagement from prospective volunteer groups. The project team diverted resources to help make up the shortfall.

Lastly, **Community engagement and Health and wellbeing** both performed well. Community engagement hit both targets, delivering a wide range of engaging events for the community. Health and wellbeing overachieved on both targets, engaging far more short and long-term participants than originally planned. The overperformance here is partly explained by the low targets that were set due to covid uncertainty.

However, the flexibility this provided was a key driver of success in this area, as informal sessions increased accessibility for those most isolated. Furthermore, delivering in collaboration increased access to sometimes hard to reach organisations. Challenges in this area included difficulty in providing access to sites, lack of facilities on sites, and general health and safety issues for taking groups onto peatland.

3 Project management, governance, and partnership working

The following section will explore the successes and challenges of the management and governance of the Lost Peatlands project as well as the partnership approach. Information within this section is mainly derived from project team and partner interviews.

3.1 Management and governance

3.1.1 Internal communication

Both challenges and successes in relation to communication were consistently mentioned throughout discussions with the project team and partners. The main challenge highlighted in relation to communication was a disconnect in communication in the early stages of the project. Multiple interviewees stated that there was a disconnect between those developing the project and those delivering it for the peatland restoration aspect of the project. As a result, there was disagreement around a number of deliverables which led to slower progress to begin with. As such, an adaptive management approach was taken to the peatland restoration aspect of the project, which, it was felt, could have been minimised with more early-stage consultation.

"Communication within NRW – consultation between the individuals developing the project and those that it was passed onto – a lack of internal consultation between them. The team that have taken it on and delivered the work have done brilliantly." – Project Team

Another area mentioned was a lack of early communication as to what each role on the project entailed, meaning a degree of adaptability was required in order to fulfil roles. It was also noted that this could have been a result of capacity issues rather than communication. Other challenges included a disconnect in communication in relation to app design, leading to delays around trail design and management, and a lack of communication as to why certain permissions were rejected. It was noted that in order to promote strong communication, it was important to have and maintain a dedicated point of contact.

On the other hand, the openness and speed of communication were both highlighted as a positive during project team and partner interviews. This was beneficial for the proper functioning of the project, increasing smoothness and clarity so that the project could run efficiently. Further to that, flexible communication between partners has supported beneficial outcomes such as the increase in knowledge and engagement for participants. Partners highlighted the fact that they were able to quickly communicate with ecologists in order to find out information on plants and species, providing increased information and interaction with participants.

"We know that there's been a lot going on behind the scenes, but everyone has always been really open with us and we could always talk to them." – Project Partner

"If someone on the project finds something weird, I'll just send a pic to the ecologist and they'll reply, and I can tell the participant. It's lovely!" – Project Partner

3.1.2 Flexibility

Interviewees highlighted adaptability and flexibility as key to the success of the project, with interviewees stating that staff had done a good job adapting to roles that they were not used to or perhaps which they weren't initially expected to fill. Furthermore, flexibility from the Heritage Fund has been beneficial to the delivery of the project, with the project team and partners stating the ability to easily communicate with the funding officer in order to adapt has supported them in achieving the best possible outcomes.

"The core staff have done a good job of adapting to job roles that maybe weren't in the job description. It's been quite hectic; the roles were defined with specialisms, but we all work well as a team and have managed to deliver the project. That extends out to the partnership, the core team has just got on with it and pushed it through." – Project Team

3.1.3 Processes and Internal Governance

Partners mentioned that the processes and governance of the project by NRW could have been improved. Internal governance and long processes within the organisation were difficult to get around, leading to delays and reducing efficiency. However, it was acknowledged that these processes are bound to be lengthy within large organisations.

3.1.4 Steering group

Feedback from partners on the functioning of the steering group was generally positive. Once again difficulty with communication and consultation within the first two years was mentioned, however apart from this period the feedback was more positive, with partners stating that over the course of the project the steering group had grown closer and learnt to work together better. Alongside this, the honesty, flexibility and adaptability of the steering group was commended in relation to supporting the delivery of the project.

3.1.5 Project team support

Feedback from partners on the project team was overwhelmingly positive, with all partners agreeing that the project team could not have provided any more in terms of support. In addition, it was stated that everything that was needed in order to deliver the work was provided by the project team, and their positivity and pragmatism to deliver the project was commended.

"A glowing report on the way the guys have handled the last four or five years. (…) They have just persevered and compromised and been pragmatic and been positive." – Project Partner

"We had most of the things we needed to deliver the work we wanted to deliver." – Project Partner

3.2 Partnership approach

A wide array of benefits to the partnership approach were mentioned throughout project team and partner interviews. These benefits included streamlining of processes, increased reach of the project, knowledge sharing and increased access to information, the ability to play to one another's strengths, increased adaptability, and the building and strengthening of relationships. These are explored in more detail in the section below.

3.2.1 Increased efficiency and resources

On a basic level, working in partnership allowed the project to be delivered more efficiently as different partners brought their own strengths and increased resources, which allowed for more adaptability while delivering Lost Peatlands. This was highlighted in interviews as it was stated that partnership working "allowed us to do more with less", matching up different areas of expertise and effectively mitigating against constraints of different partners. In fact, one of the main strengths highlighted throughout interviews was the ability to share knowledge and increase access to information throughout the partnership.

"Access to information is a strength, you get insight into how they work and the information and resources that they have. The university partnership has led to a lot more research being done than we would have expected to." – Project Team

3.2.2 Streamlined processes

The streamlining of processes supported the efficient running of the project, mainly due to the reductions in permissions that were required for project delivery. This was mentioned both in relation to health and safety, and access to deliver work on land. In terms of access to land, project teams and partners highlighted a significant reduction in the amount of time it took in order to start work and engage with the land.

"Say we wanted to take 30 students to a site, normally working all that health and safety side and access and everything would be so hard. But this was all baked into the partnership on Lost Peatlands. I'm worried because we want to continue working on these sites as there's so much to be gained, and I'm not sure how this would work without Lost Peatlands. How do I get my permissions for future students?" – Project Partner

"Partnership work has been really beneficial – it's a lot easier to get things done if you are a partner. Permissions to work on land were easier being a partner with NRW, this meant we could get on and engage with the land within 10 days rather than 6 months to a year." – Project Partner

3.2.3 Increased reach

The next area which was consistently mentioned by the project team and partners is the increased reach that was allowed by the partnership. This increased reach was achieved through a variety of channels. On a basic level, posting content on each partners' channels greatly increased the reach of the project by tapping into different audiences. This was further supported by the Heritage Fund, as partners stated the national presence of the Heritage Fund helped to provide a national profile for the project. Lastly, some partners stated that by partnering with other organisations they were able to reach groups who had previously lacked trust in their organisation.

"Working in partnership is absolutely core for us to reach new groups. Initially we needed a lot of work – it's a council project and everyone bashes the council, and they are responsible for everything bad in the world! So, we had to really prove that we really were there for people and really wanted to be there for them. Now it works really well because the objectives are good things and people trust us now." – Project Partner

"Outreach is further, you can each get content out onto your platforms which just means outreach is further" – Project Partner

"It also needed the profile of the Heritage Fund putting money into it, giving it a national profile and showing that there's an external interest in this." – Project Partner

3.2.4 Relationship building

Perhaps the most obvious benefit of working in partnership was the ability to create new and strengthen existing relationships amongst partners. The positivity surrounding the partnership approach is demonstrated by the enthusiasm of some partners to maintain the relationship. In fact, various partners stated their interest in continuing to work together, and some stated an interest in involvement in a round two of Lost Peatlands. Further to that, some partners have already extended their working relationship with a new project, leading to more monitoring and advanced research on other sites

"I think as a team - everyone communicates well. As a team, we function brilliantly. I hope to carry on doing so. Really supporting environment." – Project Partner

"For us it's been an incredible partnership and building towards more in future." – Project Partner

3.2.5 Challenges

Several challenges were also highlighted, however these either reflect general challenges which would be presented when working in a partnership, or external challenges faced by organisations which subsequently impacted partners. For example, financial circumstances amongst partners were highlighted as a limiting factor, as this “restricts how much involvement and time they can commit to projects”. This was echoed in another interview, where the interviewee stated: “You can’t control what each organisation does, if they’re affected by their budget you can’t help that”. They went on to stress that budget cuts were an issue that all organisations had struggled with.

3.3 Summary

Effective project management and governance was crucial to ensure the smooth delivery of Lost Peatlands, especially as it is a project delivered in partnership with a number of organisations. A variety of successes and challenges were highlighted in relation to the management and governance.

A disconnect in communication between the design and delivery team for peatland restoration caused issues within the early stages of the project. These challenges were overcome by taking an adaptive management approach, however effective communication could have reduced the burden from this. A lack of or disconnect in communication was also mentioned in relation to other project challenges. On the other hand, open, fast and flexible communication between partners was highlighted as a large positive, improving the functioning of the project whilst contributing towards project outcomes.

Another positive was the flexible nature of delivery, with the project team adapting to job roles to help fill gaps, flexibility provided by the Heritage Fund to help the project team adapt, and flexibility from the steering group to support delivery. In addition, support from the project team was commended, with partners stating they were provided with everything they needed to complete the work. The processes and internal governance of the project was highlighted as being lengthy at times, however it was acknowledged that this was to be expected when working with large organisations.

A wide range of benefits to the partnership approach were highlighted. The partnership brought increased efficiency as each partner was able to work to its strengths and brought their own expertise and resources. The streamlining of processes supported efficiency within the project, as permissions required for delivery were reduced. Furthermore, the partnership increased the reach of the programme, as each partner was able to promote the project on their own channels, helping to spread Lost Peatlands to different audiences. Lastly the partnership supported relationship building between partners, as new and existing relationships were created and strengthened, supporting opportunities for future collaboration.

Several challenges were also highlighted, however these either reflect general challenges which would be presented when working in a partnership, or external challenges faced by organisations which subsequently impacted partners. These challenges include limited finances amongst partners, as well as budget cuts, both of which reduce capacity.

4 Outcomes

The following section provides a breakdown of the outcomes achieved as part of the Lost Peatlands project. The analysis of outcomes is broken down by each area of the project. Data for this section comes from a variety of sources, including qual and quant data collected as part of the evaluation, alongside data collected and provided by the project team and partners. Data sources are outlined as and when necessary. Overall, a wide range of outcomes were observed across the Lost Peatlands project, including environmental, social and heritage.

4.1 Peatland restoration and monitoring

As it was detailed earlier in Section 2.1, one of the key areas of the peatland restoration delivery was the concurrent monitoring of the restoration work. This was the primary method of outcome data collection and culminated in a final report prepared by project ecologists. The ecologist report was summarised and provided by the Lost Peatlands Project Manager to be included within this section. In addition, project outcomes were discussed in project team and partner interviews, in which the peatland restoration was heavily mentioned.

4.1.1 Ecological Outcomes

This report details work undertaken by the Lost Peatlands Project to restore and manage habitats and to assess the efficacy of such works, which took place from September 2019 – April 2025. The peatland restoration methodologies used focussed on a mix of methods designed to, in the short term:

1. Raise and stabilise water table levels within the peat
2. Encourage the spread of mire specialist species within the peatland area
3. Not negatively impact protected species on sites where they are present.

In summary, these works consisted of mechanical restoration interventions (Ground smoothing and Cross tracking) alongside side timber and/or peat dam installation and Sphagnum plug planting across the habitat restoration areas of Castell Nos, Cregan and part of Cwm Saerbren. Additionally, further peatland sites within the Pen y Cymoedd Wind Farm were restored as part of the Habitat Management Plan for the wind farm site, funded through match funding.

Alongside the work undertaken in line with the overall restoration objectives, this report details additional ecological and habitat condition monitoring to quantify the wider effects of the habitat restoration on the landscape including on bats, birds, carbon exports and a suite of additional value monitoring undertaken by Swansea University looking at greenhouse gas fluxes, catchment modelling, heavy metal contamination, invertebrates and the physical properties of the peat itself. The project structure with Swansea University staff and students working alongside core ecological staff for the project proved key for the delivery of core monitoring which would otherwise not have been possible, with work delivered as added value to the project being highly valuable and essential to understanding the restoration responses.

The report also details work undertaken to manage non statutory designated sites and habitats in Neath Port Talbot and Rhondda Cynon Taf as part of the Lost Peatlands Project Community Wild Spaces.
In summary, water table depth has risen significantly at two of the three upland peat restoration areas; Castell Nos and Cwm Saerbren. The data from the final site, Cregan, is positive but will become clearer in future analyses as further data is collected. Equipment was damaged during restoration works and needed to be replaced mid-project, therefore, to undertake a full analysis additional time is required for adequate data collection.

The need for an effective control dataset for comparison was a key learning outcome for the project, as well as the need to establish more effective protection protocols for monitoring infrastructure during works.

Evidence gaps were also noted outside of the programmed monitoring works which would enhance the overall effort e.g. Swansea University's additional monitoring indicates compression effects from cross-tracking which could also affect the water table dynamics and has been programmed for future investigation. For vegetation, Castell Nos shows strong positive trends, with mire specialists expanding across much of the site. Cregan HRA is currently at a transitional stage. This is expected as a result of the restoration methods utilised and timing of restoration in the project work programme. However, positive indicators (Sphagnum, Drosera) are emerging. Cwm Saerbren shows positive signs of vegetation response in the works areas. The remaining and majority of the site was note able to be restored at present due to external constraints, however the site has proved valuable as a modified/unrestored control state to compare against. The Project identified a need for a 'good condition' reference peatland habitat on publicly accessible land in South Wales, as this would facilitate and improve the effectiveness of analysis of peatland restoration success. This has been noted as an area for enhancement in the future. Collocated monitoring effort from Swansea University will continue to highlight changing greenhouse gas dynamics for the sites as the vegetation recovery continues.

The main protected species focus was water vole. Water voles are expanding at Castell Nos, likely due to improved habitat conditions. Borrow pits and ditch blocking (increased open water) appear to have enhanced habitat suitability and areas of suspected presence were successfully avoided during works. The work completed in the Lost Peatlands Project area for water vole was among the first of its kind in the UK and has proved valuable for the project and has effectively developed best practice for peatland restoration.

Wider bat and bird species assemblages vary by site, reflecting habitat composition. In the short term, signs appear positive with some evidence of more species using the sites after restoration works. A no-intervention control would improve post-restoration comparisons by filtering out the influence of other factors, but patterns will become clear in the medium to long term with a continuing monitoring programme.

No major changes in fluvial carbon export were noted during the restoration periods when comparing total organic carbon levels from restoration areas to both an afforested and long term unafforested reference condition. The results are positive, however, the relative levels of particulate carbon export as a percentage of the total export were higher from restored areas compared to reference areas. A recommendation is therefore to place more in channel measures could be taken to capture physically larger aspects of peat export during works, this would reduce the overall loss of carbon from the sites.

Community Wild Space (CWS) monitoring objectives were site specific and were focussed on generally around improving the diversity of vegetation on site by removing scrub, Invasive Non-Native Species (INNS), bracken or by introducing grazing. The grazing introduction at Glyncorrwg was unfortunately not able to start during the delivery phase of the project. However, all infrastructure is in place for this to begin imminently. The benefits of that management will become clear over the post-delivery period. Changes to how and where the vegetation removal took place on other CWSs limited the efficacy of the monitoring programmed, as much of the works completed on these sites was undertaken by volunteers, and access issues resulted in the management focus being outside of the locations covered by quadrats. This has been identified as a key lesson for development of future monitoring programmes. However, effective assessment of the works was still possible from surveys completed where quadrats and works did overlap, records of areas worked by staff and volunteers and repeat walkover surveys to monitor works areas in line with the Phase 1 surveys completed in the development phase. In areas where vegetation management was undertaken the pressures of INNS and scrub for Blaenrhondda, Cymmer and Glyncorrwg were effectively lessened, the pressure of bracken for Cwmparc was lessened with no effect on breeding birds, and the cut and collect for grassland diversity at Gwynfi was effective. Continual effort to ensure these pressures do not return will be needed for the works to be effective in the long term, and further monitoring will provide evidence for long term trends in species diversity.

Long-term data collection under the post-delivery phase agreement will be essential to refine hydrological estimates, track vegetation succession, and assess faunal population changes.

4.1.2 Project team and partner interviews

The success of the peatland restoration was also consistently highlighted throughout the project team and partner interviews, with a variety of key benefits cited, such as increased biodiversity, increased vegetation, improved carbon storage and the sighting of water voles. Further to that, the scale of the restoration was mentioned, with one partner stating that Lost Peatlands greatly increased the scale of restoration possible.

"We've had some huge areas of excellent habitat restoration that would not have happened without Lost Peatlands. There's no way these areas would have been restored. We would only have had peatland restoration on the Pen Y Cymoedd site." – Project Partner

Other project team members went on to state the importance of the habitat management aspect of the project, highlighting the increased benefits of pairing peatland restoration with open habitat management plans.

"Not only have we restored the peatland, we've influenced the management of (the) wider environment in those areas to maximise the benefit of the peatland restoration. While we've only actively restored the hectarage we committed to delivering what we're actually benefitting from is three to four times that much in terms of habitat maintenance." – Project Team

During project team and partner interviews, the beneficial relationship between peatland restoration and other project areas was also highlighted. When asked to expand on how the peatland restoration helped the project achieve its outcomes, a project partner stated:

"Trying to get the community and young children to care about something which on the face of it is quite dull is challenging. So, for us to be able to provide restored areas that people can visit, see and connect with, has been vital to help the efforts of the other side of the project in communicating with the local people." – Project Partner

Furthermore, the importance of delivering restoration work in this specific area was highlighted, as the restoration has been delivered in the local context of South Wales, an area with relatively high levels of deprivation, and which has historically suffered following an unjust transition away from coal.

4.1.3 Peatland Monitoring (Swansea University)

The research into the peatland restoration carried out by Swansea University staff and students (primarily MSc level) also had a number of benefits, as outlined by interviews with the project team and partners. Lost Peatlands was credited with driving a growing interest in peatlands and peatland research within the university. The Project team stated that the growing interest from students was at first overwhelming, however as demand to carry out peatland research grew, students would engage with supervisors from different departments. In fact, one of the first Lost Peatlands students from the development phase went on to work on peatland restoration ecology.

The growing interest and demand for peatland research has contributed towards a change in curriculum at the university to include more on this subject area. Not only that, but project team interviewees revealed that since the start of Lost Peatlands there has been a shift towards more practical restoration projects for both peatland and other areas. This shift in the curriculum to include peatland restoration has positively contributed to raising awareness of the importance of this topic. As highlighted by a project partner, when speaking on the inclusion within field courses and undergraduate teaching:

"So this project has really raised awareness and by adding that into my field course, all these students know about peatlands. It just wasn't part of our focus before. And now some of the undergraduate teaching looks at peatlands too, not just forests and coastal areas." – Project Partner

Furthermore, involvement of international students in peatland research for the first time supports the increased awareness on a much wider scale.

Interviews with the project team and partners revealed that the financial and health and safety support provided by the Lost Peatlands project was crucial in making it possible for students to be involved.

4.2 Education of school pupils

"Its been heartening to hear the feedback from the community and the schools, and the bog song, its fantastic to hear the kids have so much fun singing that and hopefully it will be embedded in the new curriculum in Wales for years to come." – Project Partner

Teachers were surveyed and also collected data to establish the efficacy and outcomes of school sessions.

Qualitative free-text survey comments from teachers (n=11) showed that the lasting outcomes of the session were notably positive, with pupils being reported as becoming more engaged in outdoor learning and displaying increased interest in environmental activities. Many expressed a desire to continue exploring nature, whether through school gardens or local projects, and developed a greater awareness of biodiversity and ecological issues. Teachers also reported that the pupils were more confident and eager to apply their learning outdoors. The impact extended beyond the sessions themselves, with pupils actively involved in school projects, such as caring for gardens and studying local environmental issues, demonstrating a long-term commitment to sustainability and environmental stewardship.

Wider qualitative feedback comments and observation notes from in-session surveys reveal a consistent theme that students enjoyed engaging with environmental topics like peatbogs, wildlife, and conservation. However, challenges related to time management, instruction clarity, and class size have varied.

In 2021/22, students showed excitement about exploring new skills and knowledge, though time constraints were a recurring issue. In 2022/23, the focus shifted slightly to addressing specific learning difficulties, such as language barriers and numeracy challenges, whilst some students struggled with outdoor activities. In 2023/24, larger class sizes and logistical issues hindered the full engagement of all pupils, though the hands-on approach remained popular. Throughout all years, there was a clear interest in learning about biodiversity, peatbogs, and environmental conservation, with feedback suggesting the need for better planning to accommodate different student needs and provide sufficient time for exploration. Particularly:

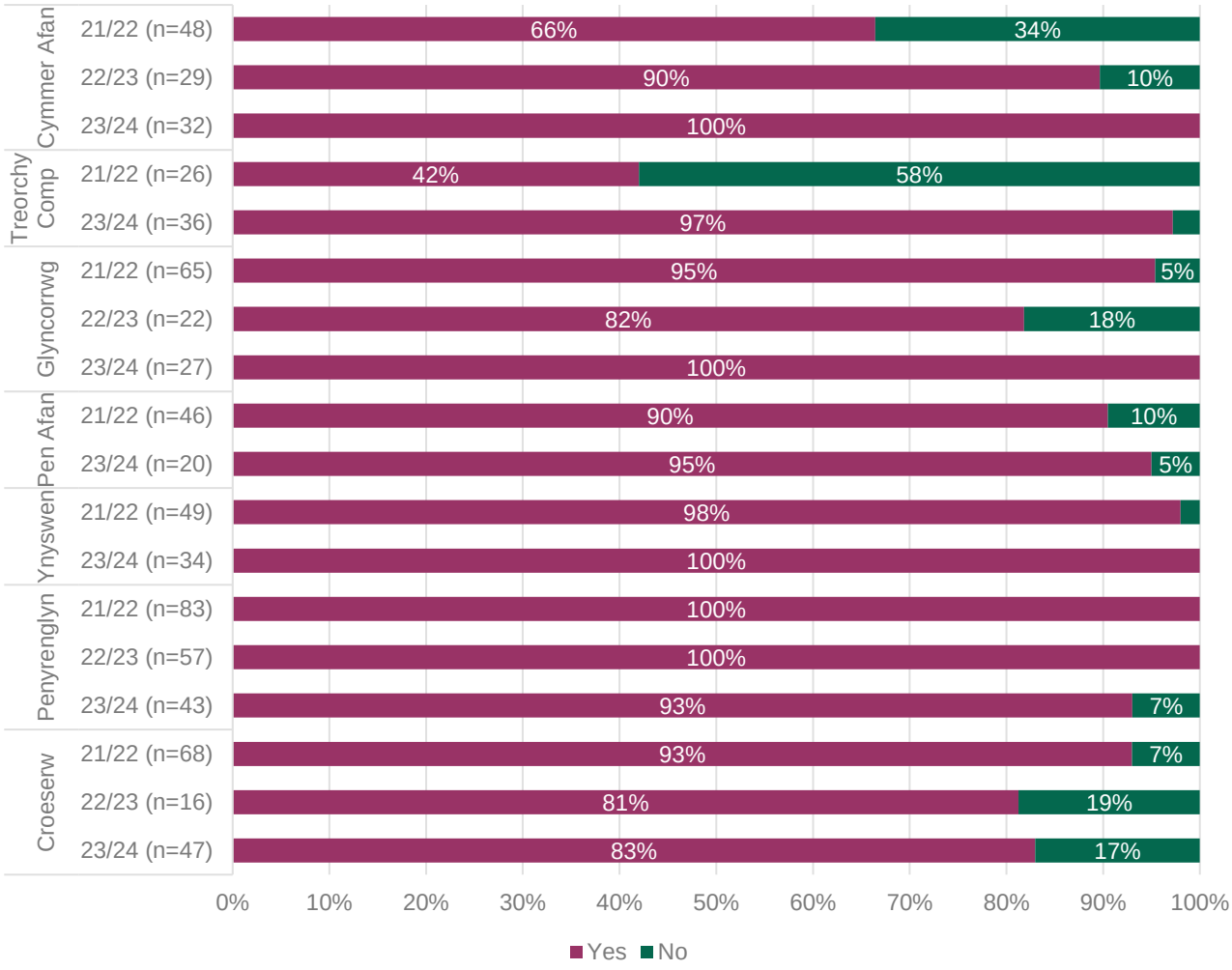
- **In 2021/22**… Students expressed enthusiasm for the hands-on activities like bug hunting, learning about insects and understanding peatbogs. However, they noted that more time was needed to fully engage with all the activities. Some students faced challenges with instructions and suitable footwear, but overall, they gained new knowledge about various species, habitats, and environmental conservation. Many students learned about the importance of peatbogs, the role of trees, and the significance of wildlife in their local areas. The session also sparked an interest in constructing bug boxes and creating natural perfumes.
- **In 2022/23**… Sessions faced some difficulties in engagement, with a few students resisting outdoor activities. Some pupils expressed frustration with certain tasks, such as the orienteering trail and perimeter math challenges. Delivery staff made accommodations once they discovered there was a student with limited English ability, but going forwards aimed to learn more about the class and any accessibility needs in advance. However, there were positive outcomes, including students creating bog models and learning about peatbogs, climate change, and biodiversity The sessions highlighted some areas for improvement, such as simplifying tasks for students with varied learning needs and ensuring better clarity in instructions. Teachers also suggested more interactive activities, such as peatbog-themed games.
- **In 2023/24**… The sessions were more tailored to hands-on learning with activities like willow weaving, wildlife photography, and a focus on conservation. However, logistical challenges arose when larger

class sizes were accommodated, which led to rushed sessions and less time for students to fully explore all activities. Despite this, pupils enjoyed the sessions, with some showing enthusiasm for new experiences such as using cameras and working as a team. While most students had positive feedback, there were a few who struggled with particular activities, such as willow weaving and pewter casting, but overcame these difficulties with adult support.

4.2.1 Wide range of pupils

As seen below in Figure 4.1, for the most part, pupils agreed that they were able to participate in sessions. In the case of *Treorchy Comp*, where just 42 per cent of pupils reported that they had been able to involve themselves in all activities in 2021/22 sessions, this then improved to 97 per cent by 2023/24. The primary reason for this significant increase is due to timetable conflicts in earlier years, resulting in the team working with a class with special learning needs, off a formal timetable, resulting in more tailored sessions for pupils. This highlights a strength of Lost Peatland sessions in responding to feedback and being proactive around maximising engagement with pupils to make sessions more inclusive and available.

Figure 4.1: Stacked bar charts showing change in pupils' responses to the statement "Were you able to complete the session and activities", split by school



Feedback provided from 2021/22 in-session surveys (n=8) suggests that the main barrier to accessibility was limited time, as many students wished for longer sessions to engage with all the activities and tools provided. Several comments highlighted the desire for more structured guidance, such as demonstrations of activities before starting, and more time to complete tasks. Some students encountered issues with unclear

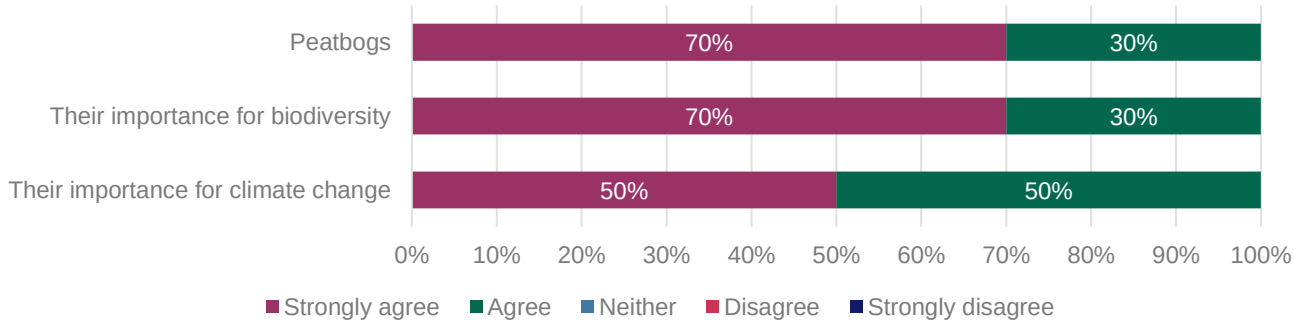
instructions, particularly when building the bug box, which led to errors and delays. There were also practical challenges, such as inappropriate footwear preventing full participation and a need for more adult support or tools, like a hammer, to resolve issues during the activities.

Despite these challenges, students worked together with teachers and facilitators to overcome obstacles, with some students successfully persevering to complete their projects, like the bird box. The same question was not asked within the in-session surveys for 2022/23 or 2023/24.

4.2.2 Peatlands will be identified and better explained

Figure 4.2 below shows that 70 per cent of teachers strongly agree that their students now understand both peatbogs and their importance for biodiversity, with the remaining 30 per cent agreeing. Meanwhile, 50 per cent of teachers strongly agree that their students now understand the importance of peatbogs for climate change, with the remaining 50 per cent agreeing.

Figure 4.2: Teachers' agreement with the statements "After the session, my students now understand…" (n=10)



4.2.2.1 Peatbogs

In the 2021/22 sessions… Pupils learned that peatbogs play a crucial role in the environment. Many responses focused on their ability to absorb carbon dioxide, with multiple mentions of how they store large amounts of carbon, which helps fight climate change. Pupils also learned that peatbogs serve as important habitats for various animals, including invertebrates and water voles. Additionally, they gained an understanding of how peatbogs are formed very slowly, taking hundreds or even thousands of years to develop. Several pupils commented on the wet, squishy, and deep nature of peatbogs, emphasising how the peat is both an essential carbon sink and a unique habitat for wildlife.

In the 2022/23 sessions… Pupils continued to develop their understanding of peatbogs, with a notable focus on their environmental benefits. The role of peatbogs in trapping carbon dioxide and preventing flooding was highlighted across many responses, with a clear emphasis on their importance in climate change mitigation. Students also learned that peatbogs are very deep and slow growing, with some pupils noting that every millimetre of peat represents a year of growth. Many responses mentioned the wet and squishy nature of peatbogs, and several pupils observed the diversity of animals that live there, such as water voles and insects. The idea that peatbogs take thousands of years to develop was also reiterated, showing a growing appreciation of their long-term significance.

In the 2023/24 sessions… Pupils provided more detailed and consistent insights into peatbogs. Many mentioned that peatbogs are deep, mossy, and squishy underfoot, highlighting the tactile experience of being in these environments. A strong emphasis on their environmental importance persisted, with frequent references to peatbogs trapping carbon dioxide, helping to reduce the impacts of climate change. Some students reflected on how peatbogs can hold a lot of water and serve as crucial habitats for animals, including

water voles. The idea that peatbogs take an incredibly long time to form was clearly understood, emphasising the importance of protecting these ecosystems for future generations.

In summary… Across all three years, pupils consistently recognised the importance of peatbogs in trapping carbon dioxide and their role in mitigating climate change. The tactile experience of peatbogs being wet and squishy underfoot was a common theme, especially in the 2023/24 sessions. The understanding of peatbogs as habitats for wildlife, particularly water voles, evolved over the years, with students increasingly acknowledging the role of peatbogs in supporting biodiversity. Whilst the basic concept of peatbogs being slow-growing and deep remained consistent, responses from 2023/24 showed a more sophisticated understanding of their long-term environmental value. The idea that peatbogs help to slow down rainfall and prevent flooding emerged strongly in 2023/24, suggesting that pupils had a more comprehensive understanding of how peatbogs contribute to water management. Overall, responses show an increasing depth of understanding and awareness of the vital ecological functions of peatbogs.

4.2.2.2 Biodiversity

In the 2021/22 sessions… Pupils primarily learned about the importance of peatbogs as habitats for various species, especially birds and invertebrates. They highlighted the role of peatbogs in providing shelter for these animals and emphasised how peatbogs help the environment by storing carbon. While there were occasional references to biodiversity, many of the responses focused on basic ecological facts like the wet and mossy nature of peatbogs, their carbon storage capacity, and the presence of animals like water voles. However, the understanding of biodiversity seemed less specific, with many pupils noting the general presence of animals and plants without delving deeply into the specifics of species diversity.

In the 2022/23 sessions… The focus on biodiversity expanded, with many pupils recognising the interdependence of animals and plants within peatbog ecosystems. The idea that peatbogs are essential habitats for many creatures, such as the water vole, was frequently mentioned. Responses emphasised that peatbogs not only provide shelter but also contribute to maintaining biodiversity by supporting various species. The concept that peatbogs are valuable for preserving animal habitats and supporting a variety of life was more prominent in these responses. Students also demonstrated an awareness of the broader ecological role of peatlands in biodiversity.

By the 2023/24 sessions… The understanding of biodiversity had become more detailed and nuanced. Students began to show a deeper appreciation for the diversity within peatbogs, mentioning the specific relationships between plants, animals, and the peatbog environment. The repeated mention of animals like water voles, alongside plants, highlighted a growing awareness of the interconnectedness of species in these habitats. Pupils also acknowledged the importance of maintaining biodiversity, recognising the role of peatbogs in supporting different species, from various moss types to animals. Responses reflected a more sophisticated understanding that peatbogs increase biodiversity and that a wide variety of species co-exist within these environments.

In summary… The responses across the three years demonstrate a gradual shift from basic recognition of peatbogs as habitats to a more comprehensive understanding of their role in supporting biodiversity. Initially, students focused on the basic environmental benefits of peatbogs, like carbon storage and water retention. But, over time, their awareness expanded to recognise peatbogs as rich ecosystems that house a wide variety of species, with a clear understanding of how these habitats contribute to biodiversity. By the 2023/24 sessions, pupils showed a concrete understanding of peatbogs' function as biodiverse environments, showing the importance of protecting these habitats to sustain the diverse plant and animal life they support.

4.2.2.3 Climate change

In 2021/22… Student responses acknowledged that climate change is a major problem for the planet, often attributing it to the burning of fossil fuels, greenhouse gases, and carbon dioxide emissions. They recognised that this issue leads to global warming, which results in melting icebergs, rising sea levels, and increased flooding. However, their understanding of the role of peatbogs in mitigating climate change was somewhat limited. Some students noted that peatbogs store carbon dioxide, but the responses lacked detailed explanations of how peatbogs help prevent climate change.

In 2022/23… Students demonstrated a deeper understanding of both climate change and the role of peatbogs in addressing it. They recognised that climate change is caused by the release of carbon dioxide into the atmosphere, leading to global warming, more extreme weather, and rising sea levels. Peatbogs were increasingly recognised for their ability to store carbon dioxide and trap it for years, preventing it from entering the atmosphere. Many students made the connection between peatbogs and their role in climate change mitigation, noting that peatbogs help stop floods and extreme weather events by absorbing carbon and locking it away.

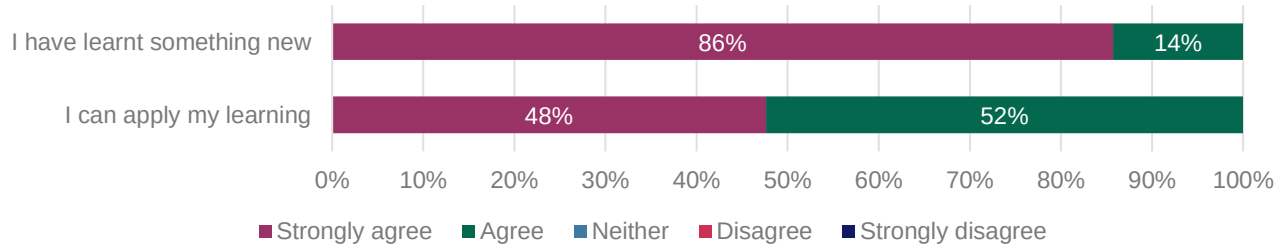
In 2023/24… Responses further developed this understanding by reinforcing the idea that peatbogs play a crucial role in reducing the effects of climate change. Students clearly articulated that peatbogs help mitigate global warming by storing carbon dioxide and preventing it from being released into the atmosphere. There was also an understanding of the broader environmental impacts of climate change, such as rising sea levels, wildfires, and extreme weather patterns. Several students mentioned that peatbogs store carbon more effectively than forests and are essential in maintaining environmental balance.

In summary… The comparison of these years shows a clear progression in students' understanding of climate change and the role of peatbogs in combating it. In 2021/22, students grasped the basic connection between carbon dioxide emissions and climate change but had a limited understanding of the environmental benefits of peatbogs. By 2022/23, they began to understand how peatbogs specifically capture and store carbon dioxide, which helps prevent climate change and reduce extreme weather events. By 2023/24, students had developed a more comprehensive understanding of peatbogs' importance as carbon sinks, recognising them as key players in the global effort to reduce greenhouse gases, mitigate flooding, and counteract the broader effects of climate change.

4.2.3 Skill development

Figure 4.3 below shows that 86 per cent of teachers strongly agreed that they had learnt something new as a result of sessions, with the remaining 14 per cent agreeing. Meanwhile, 48 per cent of teachers strongly agreed that they could apply their learning from the sessions to the classroom, with the other 52 per cent agreeing, which shows that sessions were wholly well-received by teachers in these regards.

Figure 4.3: Teachers' agreement with the statements "As a result of the sessions…" (n=21)



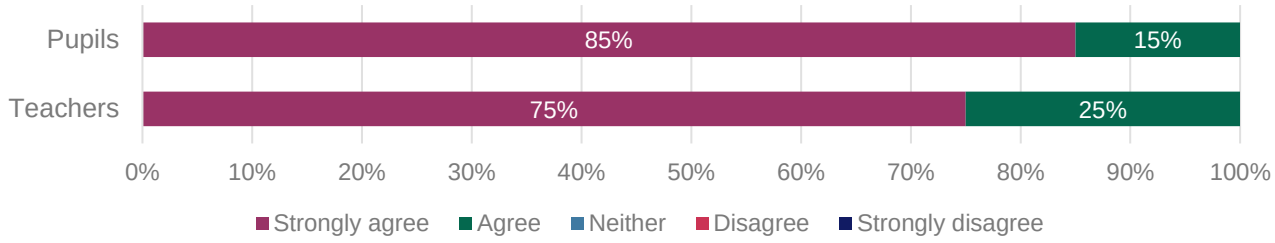
Teachers (n=21) provided free-text responses to a question asking what had been learnt from the sessions. Responses highlighted that teachers gained valuable insights into integrating outdoor learning into the

curriculum. Key themes included practical activities for literacy, numeracy, and well-being, along with nature-based learning about plants, trees, and peatlands' role in carbon absorption. Teachers appreciated learning adaptable, age-appropriate activities such as rope trails, sensory tasks, and environmental exploration. They also recognised the broader benefits of outdoor learning for children's well-being and engagement. The sessions were described as well-organised, informative, and inspiring, offering numerous ideas for enriching teaching practices across different areas of learning and experience.

Teachers (n=21) also provided free-text responses to a further question asking what pieces of learning they will be able to apply to the classroom, and how they will be able to do it. They expressed a strong commitment to applying outdoor learning strategies in their classrooms. Common themes included integrating numeracy, literacy, and team-building activities into outdoor settings, reinforcing the above, as well as fostering well-being through safe spaces and nurture groups, and encouraging environmental stewardship. Many planned to adapt activities to fit their specific school environments, even in urban settings. There was a clear intent to make outdoor learning a regular practice, with some aiming for weekly outdoor sessions. Several teachers highlighted how the training shifted their perspective, inspiring them to rethink traditional indoor lessons and to embrace outdoor learning as a central part of the curriculum.

Figure 4.4 shows that 85 per cent of teachers strongly agreed that application of learning holds important value for students, with the other 15 per cent agreeing, whilst 75 per cent of teachers strongly agreed that application of learning holds important value for themselves, and the remaining 25 per cent agreed.

Figure 4.4: Teachers' agreement with the statements "Application of learning is important because it holds value for…" (n=20)



When asked to justify their responses to the above statements, teachers (n=13) strongly agreed that applying what they learned is valuable for pupils, emphasising **environmental awareness**, **local pride**, and fostering a **connection with nature**. They recognised the importance of teaching students how to care for their surroundings, seeing it as essential for **creating future environmental stewards**. Many noted that children are increasingly disconnected from the outdoors due to technology, highlighting the need to restore that connection through engaging activities. Teachers also saw value in promoting **knowledge**, **curiosity**, and **sustainable habits** from a young age, ensuring that pupils appreciate and protect the future environment.

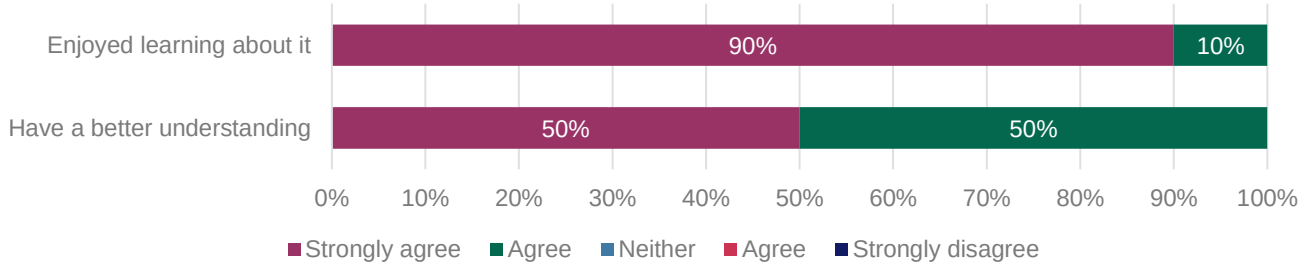
Further, teachers (n=14) overwhelmingly agreed on the importance of applying what they learned for themselves as educators. Very similarly, they highlighted fostering **environmental awareness**, **well-being**, and a **connection to nature** as key reasons. Echoing the previously discussed themes, teachers reported that they felt a responsibility to be **role models**, using their knowledge to **inspire curiosity** and **environmental stewardship** in their students. Building **ecological literacy** was seen as paramount, through identifying plants and understanding habitats. Teachers also recognised that applying their training ensures future generations benefit, by promoting sustainable practices and a deeper appreciation of the natural world.

Teachers were asked what new skills their pupils had gained through participating in the session and provided free-text responses (n=10) which highlighted a broad range of new skills for pupils, emphasising both practical and environmental learning. Key skills included **teamwork**, **communication**, and **listening**, often developed through collaborative outdoor tasks. Pupils gained technical abilities such as using cameras, compasses, thermometers, and probing sticks for environmental measurements. They also engaged in

ecological and scientific activities like studying wind farms, carbon capture, and peatbog restoration. Wildlife observation, insect classification, and building habitats for birds and insects fostered awareness of the environment. Creative and scientific inquiry skills were also enhanced through observational art and conducting tests. Overall, the session effectively combined environmental education with personal and social skill development, deepening pupils' understanding of their local ecosystem.

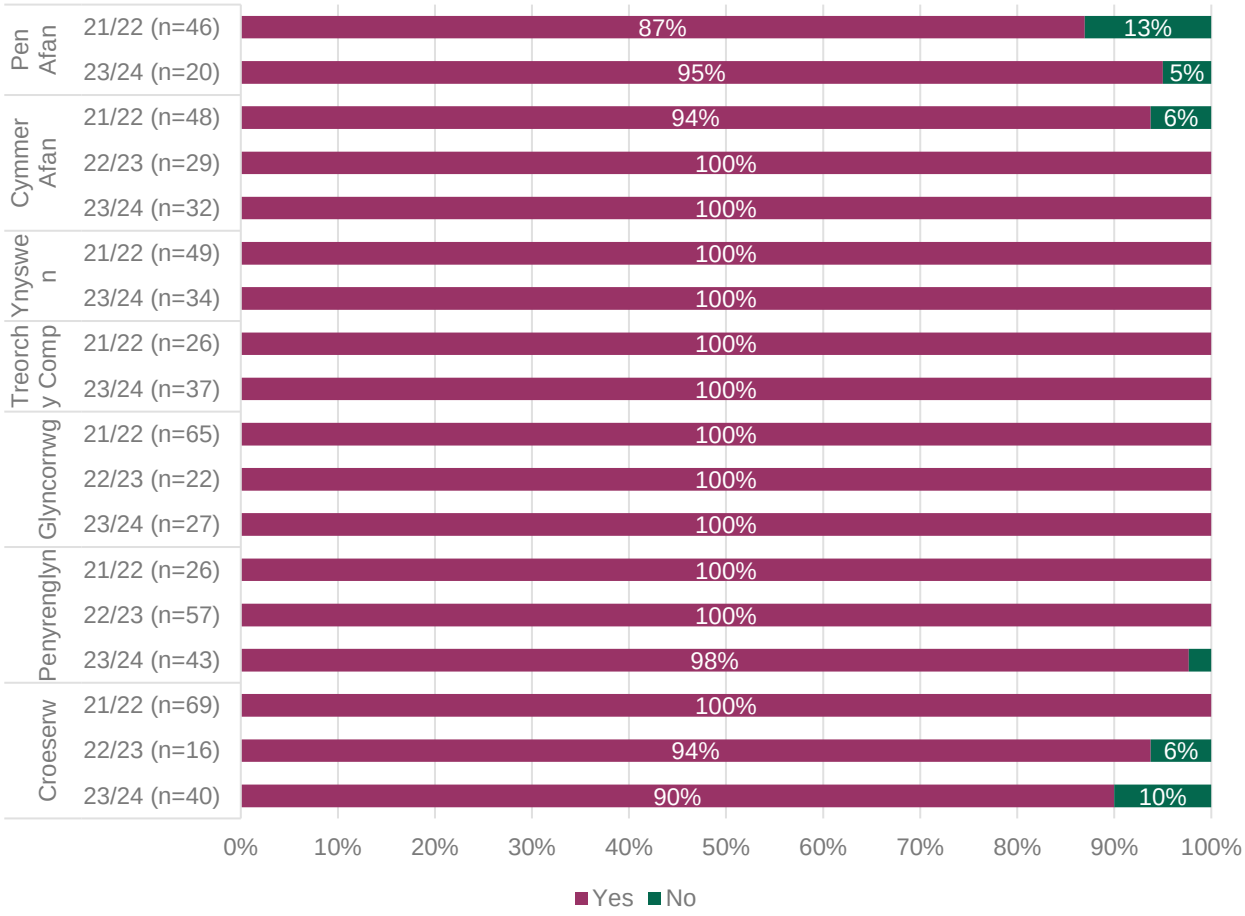
Figure 4.5 below shows that 90 per cent of teachers strongly agreed that their pupils enjoyed learning about their local area and its history, with the remaining ten per cent agreeing. 50 per cent of teachers strongly agreed that their pupils actually now have a better understanding of their local area and its history, with the remaining 50 per cent agreeing. The absence of any disagreement to these questions shows that sessions were both informative and enjoyable in teaching pupils about the local history of their area.

Figure 4.5: Teachers' agreement to statements about pupils' experience with their local area and its history (n=10)



As shown overleaf in Figure 4.6, pupil feedback overwhelmingly displays that something new was learnt by almost every individual at each session. In the cases of *Pen Afan* and *Cymmer Afan*, slight improvements may indicate that pupils already knew all that *Lost Peatland* sessions had to teach. Overall, sessions seem appropriately designed to facilitate new knowledge acquisition across all pupils from all schools. When considering that *Treorchy Comp* includes older pupils, and 100 per cent of pupils reported that they had learnt something new in both 2021/22 and 2023/24 sessions, this highlights that *Lost Peatland* session content allows those of all ages to learn something new.

Figure 4.6: Stacked bar charts showing change in pupils' responses to the statement "Did you learn something new in today's session", split by school



4.2.4 Behavioural change

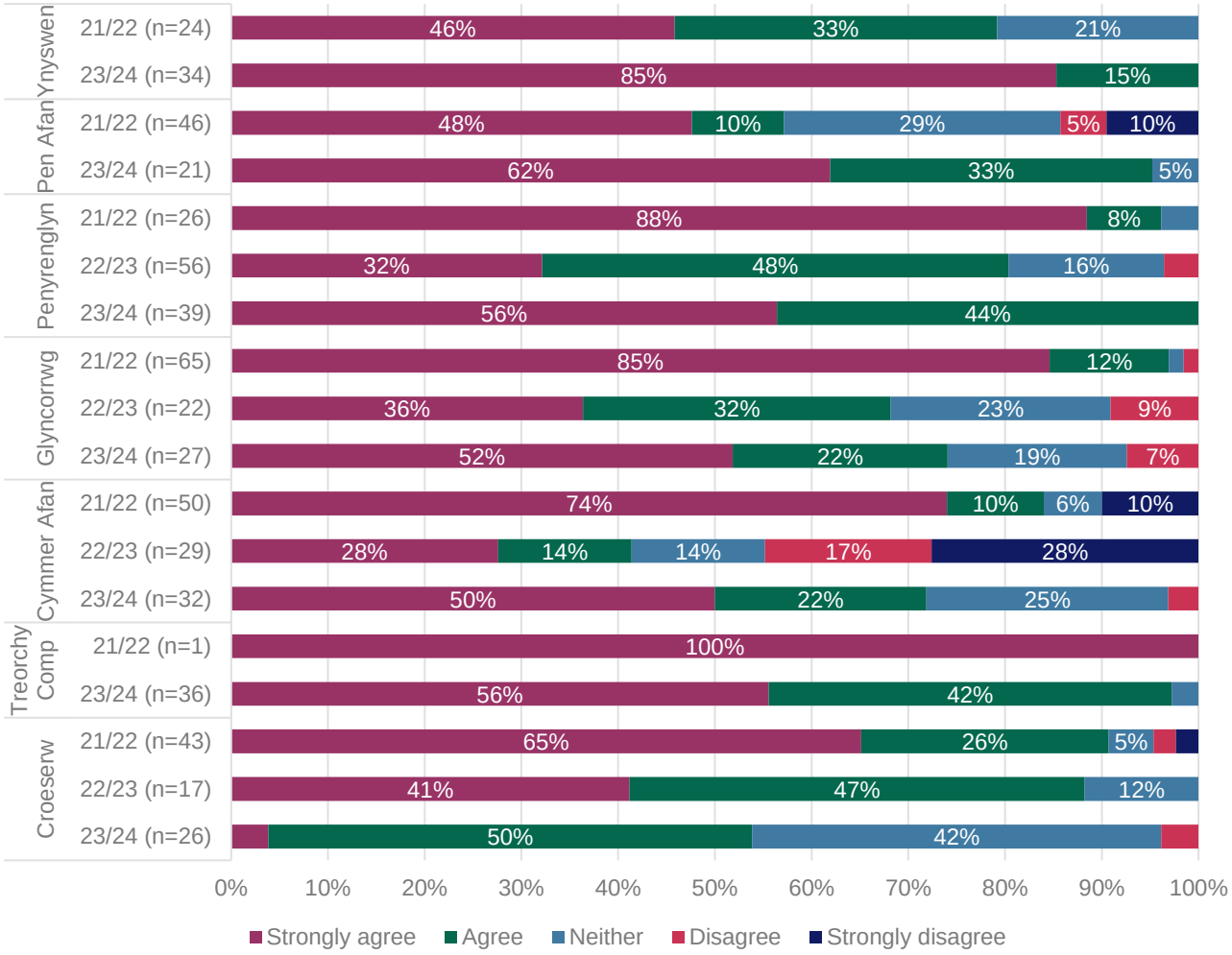
Teachers were asked about pupils' changes in behaviour since participating in the session and provided free-text responses (n=10) which indicated a noticeable positive shift in pupils' behaviour following the outdoor sessions. Many students have shown an increased interest in spending time outdoors and have become more engaged with environmental activities. They have expressed a desire to explore the community garden more and are actively involved in projects like caring for the moss garden and planning future plantings. Additionally, the sessions have sparked a greater interest in biodiversity, with pupils reflecting on topics such as the local peatlands restoration project and the environmental significance of their local ecosystem. As a result, teachers noted that students are becoming more environmentally conscious and are eager to apply what they've learned by developing outdoor activities at school, demonstrating a long-lasting behavioural change towards nature and environmental stewardship.

As displayed overleaf in Figure 4.7 just two schools (*Ynyswen* and *Pen Afan*) saw an increase in the proportion of pupils who either 'agreed' or 'strongly agreed' across the span of the sessions. The other schools saw a fluctuation and eventual decline in agreement levels across the sessions. Although the goal of peatbog education sessions was not to *increase* individuals' positive attitudes over time, and it is difficult to capture a change in such attitudes through survey responses. It is noted by staff that students may feel their actions are impactful when involved in activities, however when discussing wider issues such as climate change within sessions they may feel less so influential. Survey responses are captured at one point in each year of delivery and do not reflect the context of such attitudes and responses, or the constant shifting. Nonetheless, taking results on an individual basis reveals some impressive levels of agreement from pupils

both across schools and across years of delivery, highlighting the ability of sessions to make pupils feel as though they are able to make a difference to the natural environment.

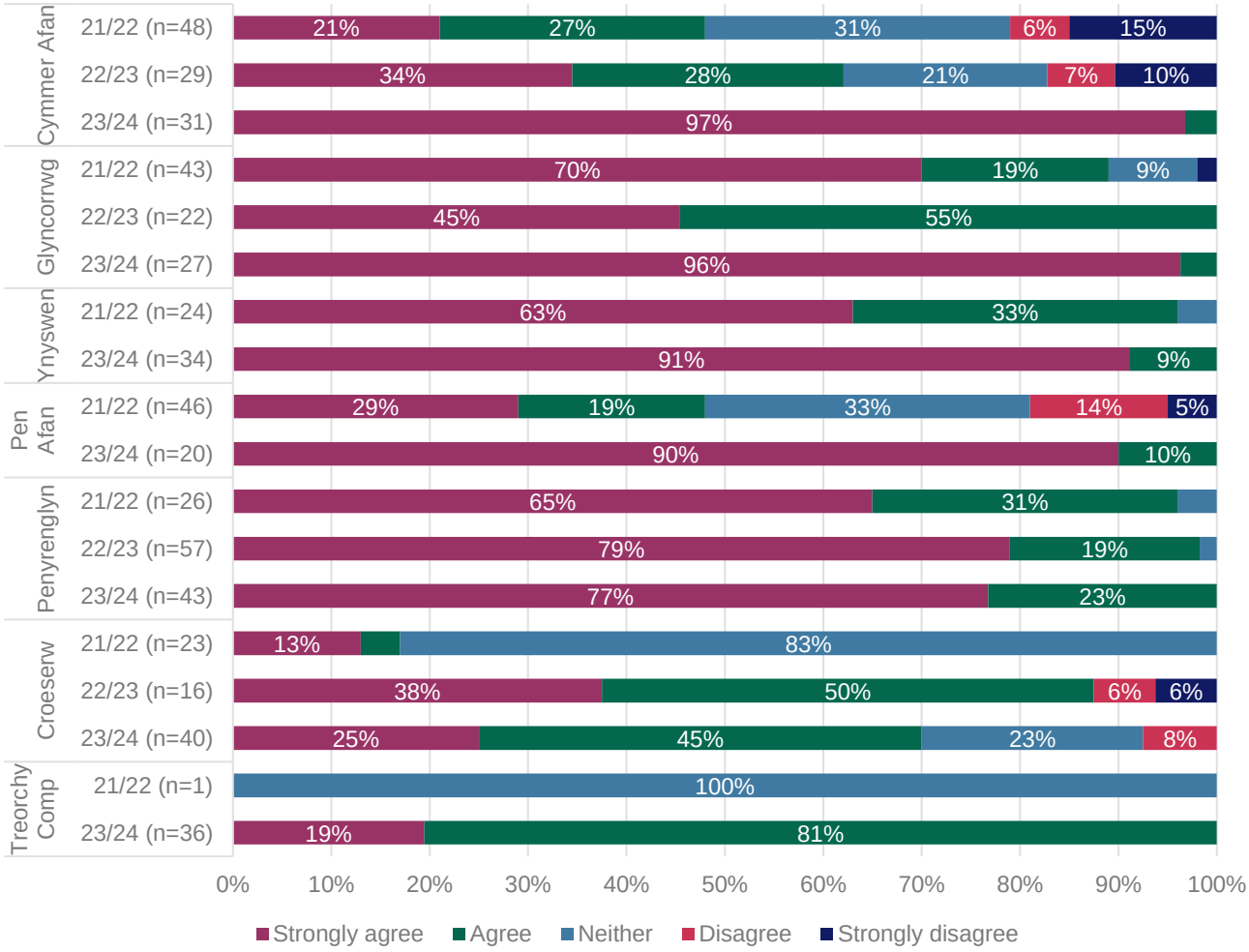
As well, it must be considered that it is relatively typical that, upon increasing knowledge around an environmental topic and understanding the scale and scope of the issue, there can at first be a “dip” in individuals’ consideration of how they might affect this positively compared to when less is known and therefore solutions may appear more straightforward.

Figure 4.7: Stacked bar charts showing change in pupils’ agreement with the statement “I feel I can make a difference to the natural environment”, split by school



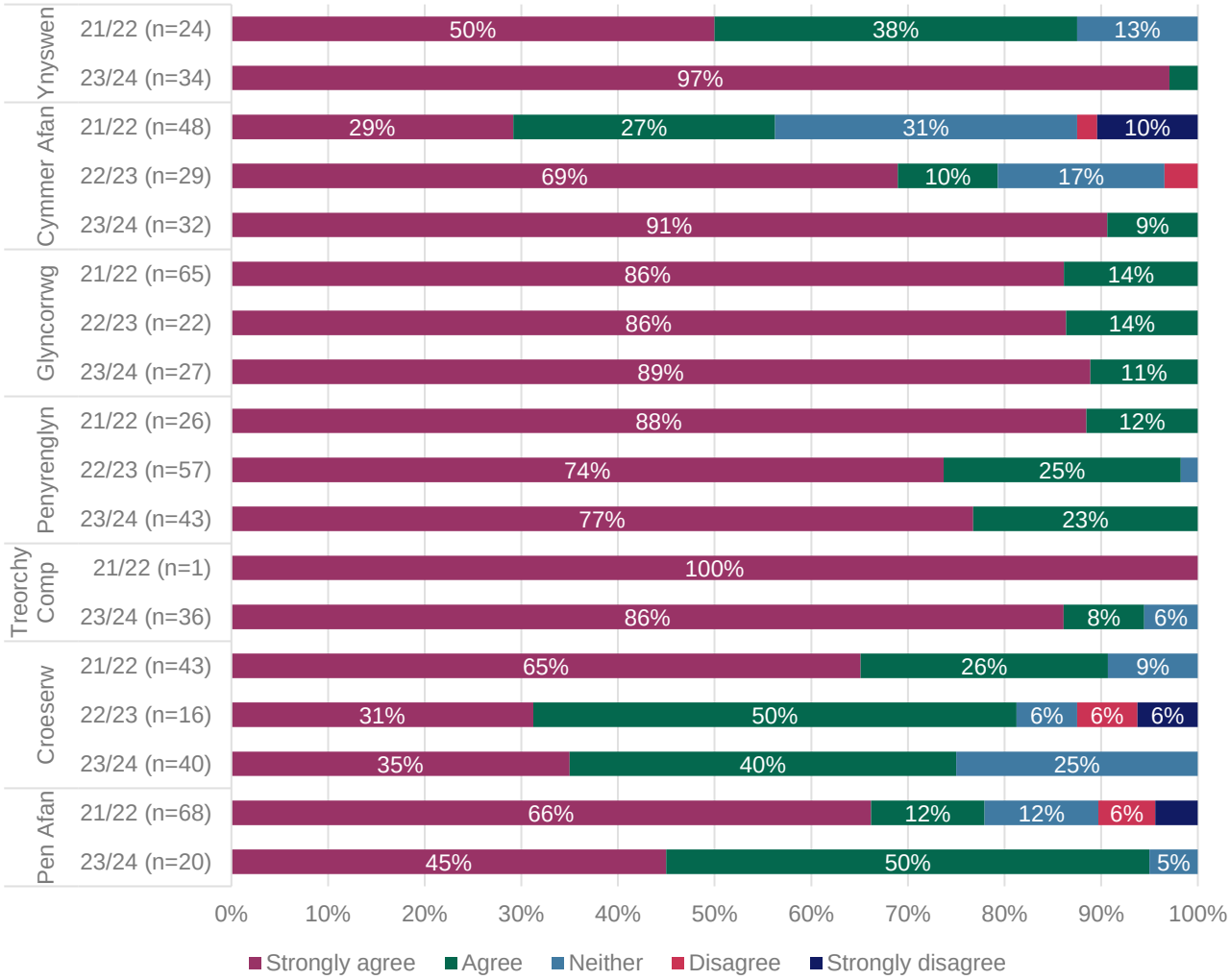
As shown overleaf in Figure 4.8, the proportion of pupils who either ‘agree’ or strongly agree’ that they have enjoyed learning about peatbogs through the sessions, has either been relatively high or increased gradually across the delivery of year-on-year sessions. In the instance of *Croeserw*, only a combined 17 per cent ‘agreed’ or ‘strongly agreed’ that they enjoyed learning about peatbogs during the sessions delivered in 2021/22. During 2022/23 sessions this had risen to 88 per cent and mostly held up into 2023/24 at 70 per cent. These findings praise *Lost Peatland* sessions for engaging their learners and leading to enjoyment around peatbog education, further highlighting the transformative power of sessions to interest pupils from schools who were previously not in agreement.

Figure 4.8: Stacked bar charts showing change in pupils' agreement with the statement "I enjoyed learning about peatbogs", split by school



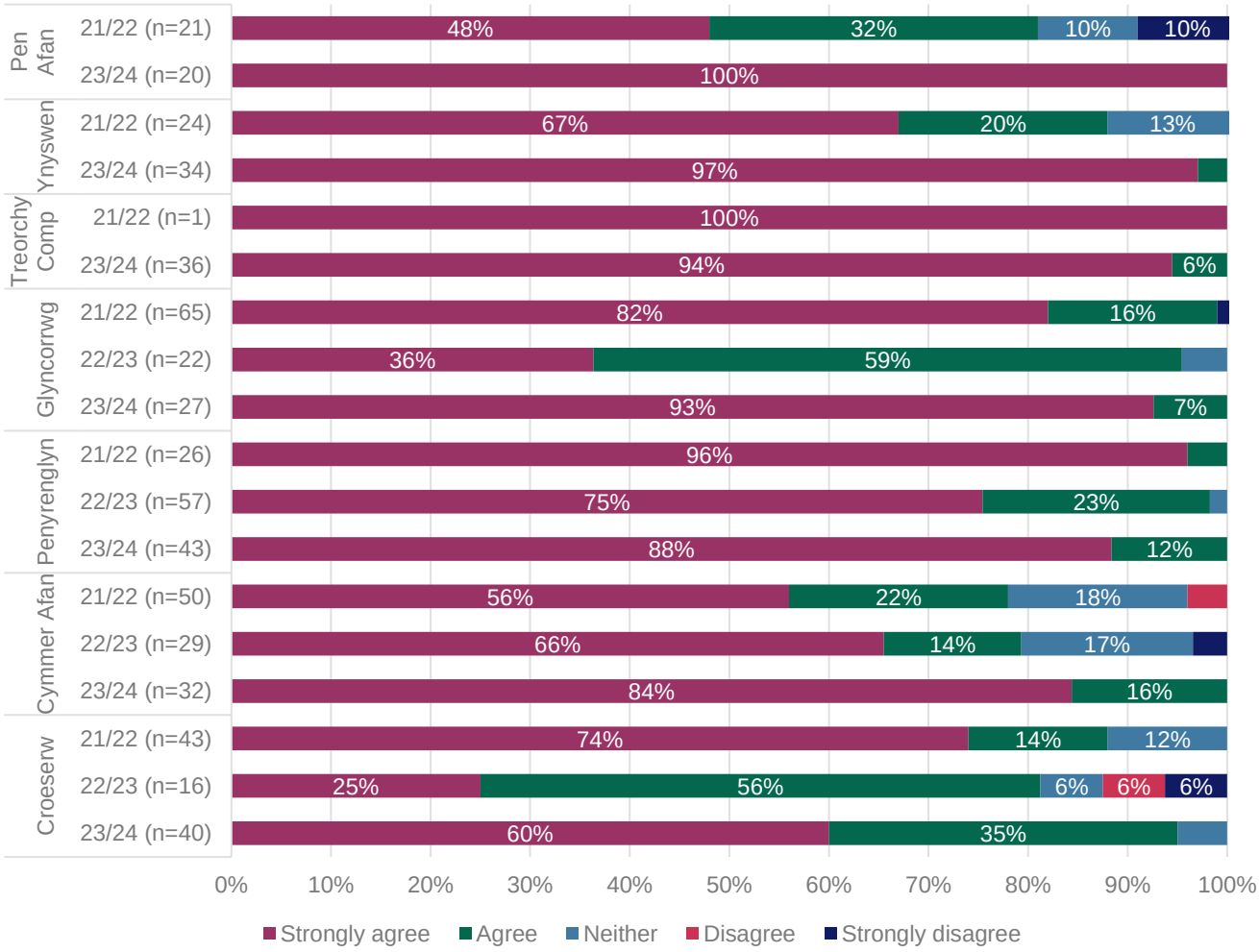
As displayed in Figure 4.9 overleaf, only three schools (*Glyncorwg*, *Cymmer Afan* and *Ynyswen*) saw increases in the proportion of pupils who either 'agree' or 'strongly agree' that peatbogs play an important role in preventing climate change. Otherwise, schools generally saw a decline in agreement across delivery years. Particularly, at *Croeserw*, the percentage of those 'strongly agreeing' shifted from 65, to 31 to 35 per cent between the three years of delivery. Across the board, though, agreement levels are relatively high, however do not support that there have been improvements in attitudes over time, for the most part. Figures suggest that the impact of sessions on attitudes towards peatbogs, and their role in climate change, is strong, but fluctuates considerably between years of delivery. Although, only *Ynyswen* reflects the same group of students across the three years of delivery, which may explain the fluctuations in agreement levels.

Figure 4.9: Stacked bar charts showing change in pupils' agreement with the statement "Peatbogs are important to prevent climate change", split by school



As seen overleaf in Figure 4.10, pupils majorly either 'agreed' or 'strongly agreed' that peatbogs are important and understood this in terms of their supporting role to wildlife. In the case of *Cymmer Afan*, the proportion of pupils either 'agreeing' or 'strongly agreeing' rose from 78 per cent, to 80 per cent to 100 per cent over the three years. With *Pen Afan*, the percentage of those 'strongly agreeing' increased from 48 per cent to 100 per cent between 2021/22 and 2023/24, while the percentage of those 'strongly disagreeing' in the 2021/22 session (10 per cent; two pupils) fell to zero per cent in 2023/24 sessions. These figures highlight the ability of *Lost Peatlands* sessions to improve attitudes and beliefs around peatbogs and help pupils to associate the benefits with wildlife.

Figure 4.10: Stacked bar charts showing change in pupils' agreement with the statement "Peatbogs are important because they support wildlife", split by school

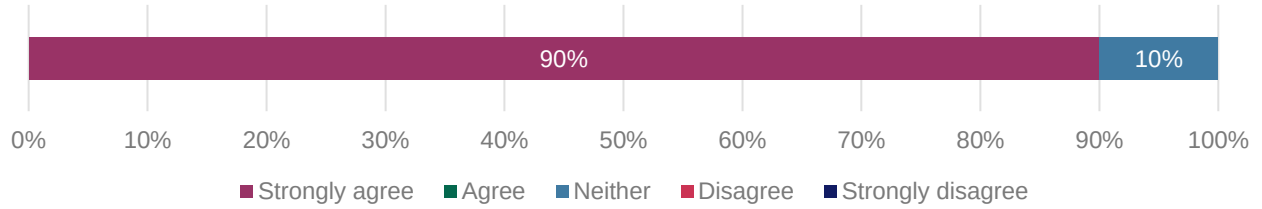


4.2.5 Pupils will have greater well-being

Teachers were asked about the impacts and benefits on their pupils of being outdoors for the session, providing free-text responses (n=10) which indicated that the outdoor sessions had a generally positive impact on pupils and with most expressing enthusiasm and enjoyment. The children appeared to appreciate the opportunity to engage in activities outside, which boosted their well-being and happiness. Many reported feeling more confident and were excited about the hands-on learning experiences provided during these sessions. Teachers noted that the sessions were engaging, with some highlighting the strong rapport pupils had with the instructor, making them look forward to future visits. Whilst there was a small minority of pupils who did not enjoy being outdoors, the overall feedback was overwhelmingly positive, with many parents commenting on the positive effects the outdoor activities had on their children's enjoyment and mood.

Figure 4.11 overleaf shows that 90 per cent of teachers strongly agreed that their pupils enjoyed being outside as part of the session, whilst one teacher (ten per cent) reported that they neither agreed nor disagreed with the statement.

Figure 4.11: Teachers' agreement with the statement "The pupils enjoyed being outside" (n=10)



Enjoyment

In 2021/22… Students found the sessions overall engaging and fun, with the most enjoyable aspects revolving around hands-on activities. Many students enjoyed bug catching, with some highlighting insect hunting and exploring nature as their favourite parts. Activities like making perfume, building bird boxes, and learning about water voles also stood out as highlights. Other enjoyable moments included using tools safely, such as drilling and making cheerio necklaces, as well as engaging with the natural world by learning about minibeasts and moss. The chance to participate in creative and outdoor activities was a significant positive for students, fostering a sense of excitement and enjoyment, although a few students noted discomfort during physical activities, like sitting on concrete or walking.

In 2022/23… Students expressed a variety of emotions in response to the sessions, with happiness being a common theme. The most enjoyable aspects were related to hands-on learning, particularly involving peatbogs, animals, and nature. Many students loved interacting with nature, whether by touching and exploring peat, jumping in muddy puddles, or learning about the wildlife in the area. Activities like planting sphagnum moss and observing tadpoles were also notable highlights. However, weather conditions, such as being cold and wet, led to some discomfort, and a few students found certain sessions either boring or tiring. Despite this, the overall positive sentiment was driven by the chance to be outdoors, enjoy nature, and learn in an interactive way.

In 2023/24… The sessions were described as fun, exciting, and engaging, with a strong emphasis on learning new things and working together. Highlights included learning about peatbogs, wind turbines, and minibeasts, with hands-on activities like pewter casting and teamwork exercises being particularly popular. The chance to work outdoors, whether by making pewter casts of bats, exploring peatbogs, or interacting with the environment, was a key positive. Many students noted how the sessions allowed them to express their feelings and be active. Despite the cold and windy weather at times, the sessions overall were seen as enjoyable, with students appreciating the opportunity to learn outdoors and gain practical knowledge about the natural world.

In summary… Across the three years, students consistently highlighted the joy of outdoor learning and the hands-on, interactive activities. Nature exploration, particularly activities like bug catching, learning about animals, and observing plants and minibeasts, stood out as the most enjoyable aspects in all years. The creative tasks, such as making perfume (2021/22) and pewter casting (2023/24), were also frequently mentioned as favourites. However, weather conditions - especially cold, wet, and muddy environments - were a common theme in all three years, with some students mentioning discomfort or boredom. Whilst there was a bit of variation in the enthusiasm levels between years of delivery, with 2021/22 and 2022/23 reflecting some mixed feelings from fun to boring, 2023/24 saw a notable increase in engagement, excitement, and team-based activities. Overall, the outdoor, hands-on nature of the sessions remained a highlight, promoting a love for learning about the environment while providing opportunities to explore, create, and work together.

Outdoor learning

In 2021/22… Students generally expressed positive feelings about learning outdoors, with enthusiasm being a dominant theme. Many responses described students as feeling relaxed, happy, and even "on top of the

world" when they were outside. There was a strong appreciation for the fun and engaging aspects of outdoor learning, as students enjoyed activities like exploring nature and discovering new things. The outdoors provided a refreshing break from the classroom, with several students noting that they felt calm and relaxed during the sessions.

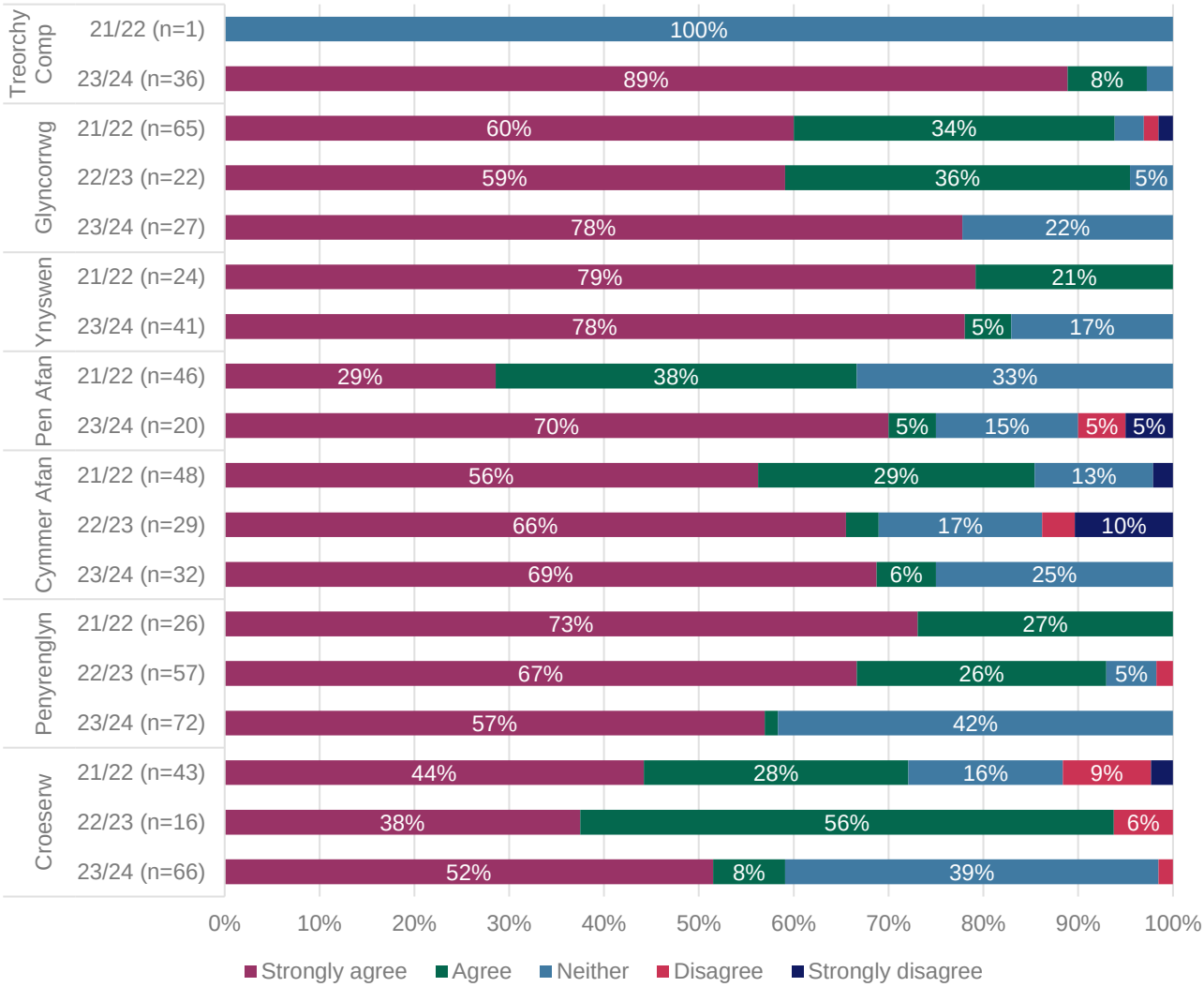
In 2022/23… Responses reflected a mix of positive and negative experiences, with some students expressing enjoyment in being outside but also acknowledging the challenges presented by the weather. Students mentioned that being outdoors allowed them to see "cool things", like the Lost Peatlands and wildlife, and it provided opportunities for exploration and learning. However, there were several mentions of feeling cold or uncomfortable, particularly during the winter months, which made some students less enthusiastic about the experience. Despite this, many students still felt happy and refreshed, and there was a clear appreciation for hands-on learning and nature exploration. Some students found the sessions engaging, but others seemed less enthusiastic, with a few expressing preferences for indoor learning or finding the experience tiring.

In 2023/24… Responses were overwhelmingly positive, with many students highlighting how much they enjoyed outdoor learning. Students commonly noted that being outside made them feel happy and energised, with terms like fun, exciting, and interesting appearing frequently. Learning about nature and minibeasts seemed to be a highlight for many, and there was an appreciation for the hands-on learning experiences. However, just like in the previous years, weather conditions played a role in shaping their experiences. Cold, windy, and wet weather did occasionally dampen their enthusiasm, and some students mentioned that they found it boring or uncomfortable when conditions weren't ideal. Nonetheless, the overall mood was positive, with students excited about the opportunities to explore and learn outdoors.

In summary… Across the three years, outdoor learning has been a positive and enjoyable experience for most students, though weather and physical discomfort were recurring themes. In 2021/22, students consistently expressed feelings of being relaxed, calm, and happy, with a strong emphasis on fun and enjoyment. The weather did not seem to detract from their experiences, and the outdoor activities were largely seen as an exciting change from traditional classroom learning. In 2022/23, responses were mixed, with some students still finding outdoor learning fun and refreshing, but others expressing discomfort due to the cold and weather conditions. Despite this, there was still a notable appreciation for the opportunity to explore nature, with many students enjoying the chance to see and learn about the peatlands and other natural elements. By 2023/24, the overall mood was once again positive, with students finding outdoor learning to be fun, exciting, and energising, though the cold weather and physical discomforts remained a factor. Across all years, learning about nature and being able to explore the outdoors was seen as a rewarding experience, and many students appreciated the fresh air and the hands-on nature of the sessions. However, the weather continued to impact their overall enjoyment, with cold or wet conditions leading some students to feel less enthusiastic or engaged. Overall, whilst the core enjoyment of learning outdoors has remained a consistent theme, the level of comfort and enthusiasm has varied depending on weather conditions and personal preferences.

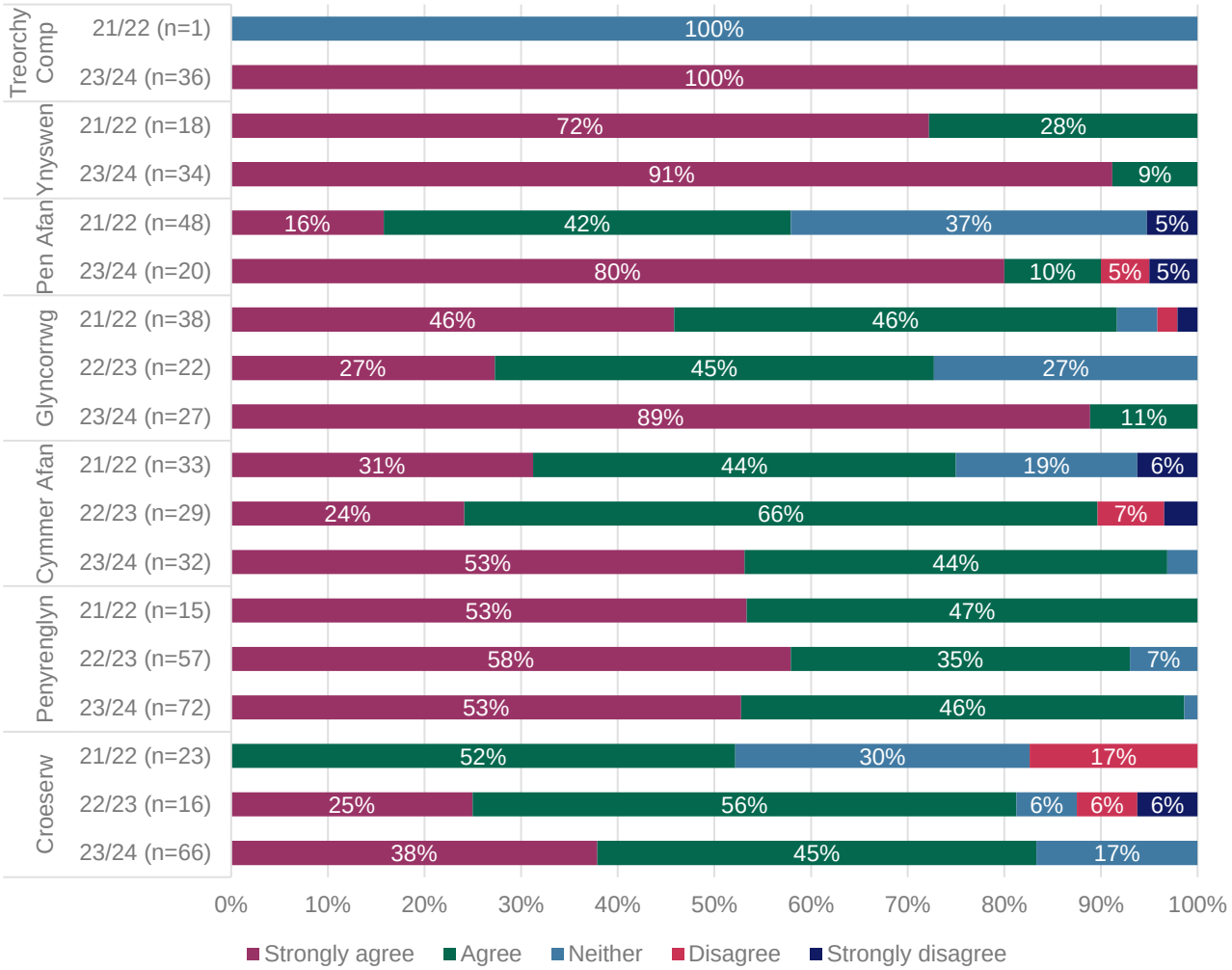
As shown in Figure 4.12 overleaf, pupils mostly appeared to enjoy spending time outdoors as part of the session, with slight increases in agreement levels being seen in the case of most schools. This could suggest that over the years, *Lost Peatland* sessions have become more successful in using their educational activities as a vessel to promote being outside to increase personal wellbeing.

Figure 4.12: Stacked bar charts showing change in pupils' agreement with the statement "I enjoyed being outdoors in today's session", split by school



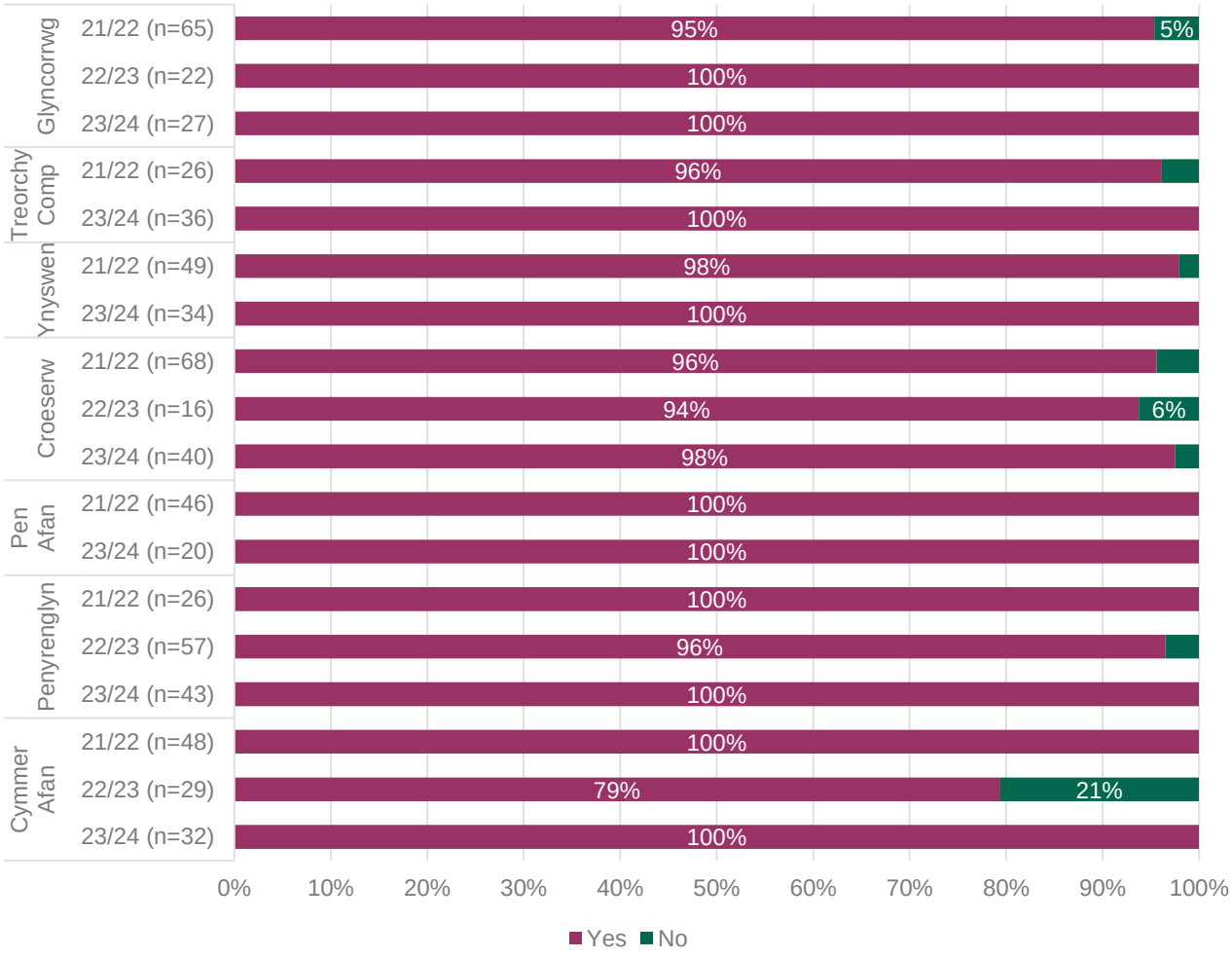
As seen overleaf in Figure 4.13, pupils from all schools mostly seemed to have enjoyed learning about their local area and its history. Particularly, in the case of *Croeserw*, the proportion of pupils either 'agreeing' or 'strongly agreeing' rose from 52 per cent, to 81 per cent to 83 per cent across the three years. This suggests a consistent, or improving, trend in pupil enjoyment relating to learning about local history in *Lost Peatlands* sessions.

Figure 4.13: Stacked bar charts showing change in pupils' agreement with the statement "I enjoyed learning about my local area and its history", split by school



As shown overleaf in Figure 4.14 almost all pupils seemed to enjoy all sessions, with slight year-on-year increases seen in the case of almost all schools. In the case of *Cymmer Afan*, whereby enjoyment ratings dipped from 100 per cent down to 79 per cent from 2021/22 to 2022/23, these recovered back to 100 per cent in 2023/24. This shows that, on top of all other positive outcomes, pupils thoroughly enjoyed *Lost Peatlands* sessions, meaning that the project has succeeded in being able to provide pupils with an impactful and knowledgeable event, which is also *enjoyable*.

Figure 4.14: Stacked bar charts showing change in pupils' responses to the statement "Did you enjoy today's session", split by school



4.3 Health & wellbeing

Coed Lleol/Small Woods, in collaboration with Neath Port Talbot Council, aimed to achieve the Lost Peatlands project's health and wellbeing objectives with support from the National Lottery Heritage Fund. By working closely with local residents and support agencies, they provided outdoor activities designed to promote healthy lifestyles and positive wellbeing. The project has also sought to encourage local communities to explore and utilise the six community wild areas located in Glyncorrwg, Blaenrhondda, Cwmparc, Hendre Mynydd, Cymmer, and Gwynfi. Coed Lleol/Small Woods collected health and wellbeing data throughout the project's lifetime. Below are highlights from the Lost Peatlands Community Engagement, 2021-2024 Evaluative Final Report, published January 2025.

Participants could engage in both outdoor and indoor activities celebrating the local area's natural resources. These included:

- Cooking over an open fire;
- Learning bushcraft skills;
- Making spoons and soap dishes;
- Crafting with green wood and willow;
- Participating in guided walks and foraging.

Family groups were provided with activities to connect adults and children to nature through games and learning opportunities. There was also a 6-week mindfulness in nature photography course, in partnership with Welcome to our Woods, aimed at developing photography skills and exploring the project area. Additionally, participants could attend accredited courses.

Across the entirety of the project, of 40 responding participants attending the 4-6-week programme:

- 95 per cent agreed or strongly agreed that the sessions had been enjoyable;
- 95 per cent agreed or strongly agreed that the sessions had taught them new knowledge;
- 94 per cent agreed or strongly agreed that the sessions had made them feel happy;
- 92 per cent agreed or strongly agreed that the sessions had taught them new skills;
- 87 per cent agreed or strongly agreed that the sessions had motivated them to get more involved in environmental activities and programmes in the future; and
- 86 per cent agreed or strongly agreed that the sessions had helped them feel more connected to local greenspaces/nature;

"I appreciate nature more, I take more exercise, I feel part of a friendly group of lovely people. When doing an event, I forget all my stresses and relax and have fun." – Participant

"It helped me to go out. Learning skills and being with people boosted my confidence and made me feel better about myself." – Participant

Between half and three quarters of participants agreed or strongly agreed that the sessions had helped them to make new friends, feel more connected to the local community, improve and make local greenspace more accessible, and increase their physical activity compared to before.

Of the 42 participants who attended one-off events:

- 97 per cent agreed or strongly agreed that the sessions had been enjoyable;
- 97 per cent agreed or strongly agreed that the sessions had taught them new skills and knowledge;
- 95 per cent agreed or strongly agreed that the sessions had made them feel happy (contributed to their overall wellbeing);
- 87 per cent agreed or strongly agreed that the sessions had helped them feel more connected to local greenspaces/nature;
- 87 per cent agreed or strongly agreed that the sessions had motivated them to get more involved in environmental activities and programmes in the future; and
- 86 per cent agreed or strongly agreed that the sessions had helped them to make new friends.

Notably, 55 per cent of adults (n=22) showed a statistically significant increase (three points) in their Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) scores after participation in the programme. Plus, 20 per cent of participants (n=21) showed an increase in physical health after completing the programme, and 46 per cent self-reported increased physical activity levels (n=24).

"It has made me aware of different locations nearby that I can access for walks, and other things, and also made me appreciate the benefits of being outside and connecting with nature. I have also acquired new skills, which I learned about on the sessions, which I will put into practice and will give me more opportunity to enjoy my outdoor surroundings in other ways." – Participant

Across all years, 14 children completed evaluation forms for the health and wellbeing programme (in most cases, the adult completed the form on the child's behalf). Particularly, 100 per cent said that they enjoyed the family sessions, learnt new skills and knowledge, and gained confidence. Over a third (64 per cent) said that they had made friends.

"My children have learnt to interact with nature and their surroundings. They are now able to play outdoors and actually request this, rather than computer games!!!" – Participant

"He's Autistic and it's been nice to see him getting involved with the activities." – Participant

"She takes more interest in the plants and flowers that grow around the local area." – Participant

When asked what could be improved, the majority of respondents did not answer the question or stated no improvements could be made. Those who did respond offered the following suggestions:

- Better advertising of programmes;
- More programmes, with longer options and evening/weekend options;
- Transport or venues closer to home;
- A permanent structure/venue;
- Improved toilet facilities.

The mean score across the programme for adults who participated in the 4-6 programme (n=33) and those who attended one-off sessions (n=29) was 4.8 stars out of 5. All children who completed an evaluation form (n=18) gave the project 5 stars out of 5.

Outcome data from Coed Lleol's Community Engagement, 2021-2024 Evaluative Final Report is supported by project team and partner interview data, in which many benefits from the project were detailed. The benefits highlighted were closely related to the five ways to wellbeing, such as improved confidence, social connection and physical health. For confidence, partners detailed how older generations within the local community had reduced time spent outdoors following the planting of forests, as the area became darker and less accessible. However, with the support provided in sessions they were able to rebuild their confidence and reconnect them with the outdoors.

"In terms of the wellbeing outcomes – it's the 5 ways to wellbeing! You build people's confidence and help them manage those anxieties, and then you open them up to their communities. Friendships have also been huge." – Project Partner

In terms of wellbeing, partners highlighted the success of the project in increasing confidence and social connections. In fact, thanks to the work done within health and wellbeing, groups had been created for individuals to go out and work which did not exist prior to Lost Peatlands. This provides vital connections and friendships for those engaging in the project. Partners also highlighted some of the work in relation to supporting those most vulnerable within the community:

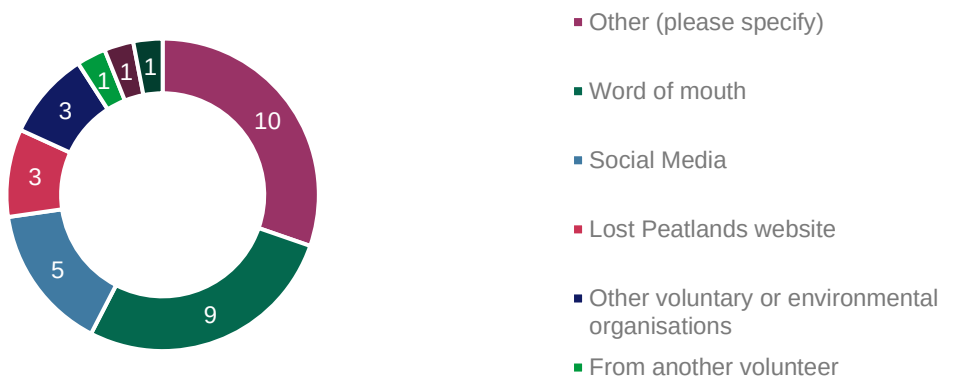
"There is only so much we can address in a session – so we improve their wellbeing and their belief in themselves. For other people, it's just about survival and we are making their life more bearable, so it's about bringing those moments of joy when people come to our sessions." – Project Partner

4.4 Volunteer training

Volunteers for the Lost Peatlands of South Wales project completed two surveys. The first was the baseline survey which contained predominantly fixed-choice and rating scale questions, collecting quantitative data. The second was the endline survey and designed as a follow-up to the initial survey, with some small additional free-text response questions, to collect qualitative data. The surveys asked about volunteers' prior experience, initial motivations, skill levels, engagement and outcomes, lending themselves to comparative analysis. Both surveys were completed between 2022 and 2024, given that volunteers were involved at different points and for varied amounts of time, with the baseline survey receiving 33 responses and the endline survey receiving 21 responses. However, as there was no requirement to provide an answer for each question, the number of responses for each individual question varies, which has limited the capacity for data

analysis. Figure 4.15 below illustrates the varied methods for which volunteers became aware of the opportunity to volunteer with the project.

Figure 4.15: Pie chart showing how volunteers initially became aware of the Lost Peatlands project (n=33)



Specified responses under the 'Other' category included hearing through *SEWBREC* (the South East Wales Biodiversity Records Centre), through the workplace of *Rhondda Cynon Taf Council* and through attending *Swansea University* as a Zoology student.

Figure 4.16 below shows that prior to volunteering, only 45 per cent of volunteers had taken part in formal training related to the environment and/or peatlands. Compared to after volunteering, 81 per cent of volunteers reported that they had taken advantage of the training made available, indicating an increase of 36 per cent.

Figure 4.16: Bar chart showing whether volunteers had taken part in training before and after volunteering

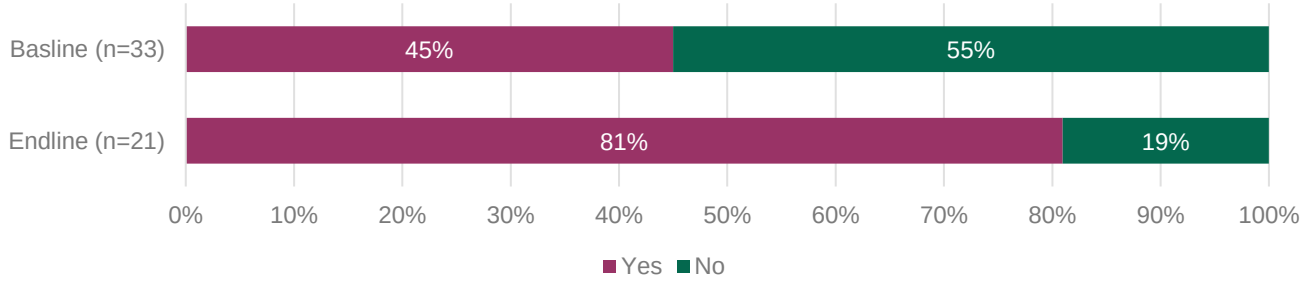


Figure 4.17 overleaf displays volunteers ratings of a range of relevant skills before having taken part in volunteering with the project. Clearly, dry-stone walling was where the highest proportion of volunteers reported being unskilled (55 per cent), followed by outdoor carpentry and planting sphagum (both at 48 per cent). Although 15 per cent of volunteers reported holding a high or 'expert' level of skill in removing trees and non-native species, 21 per cent of volunteers reported having no skill at this, followed by 18 per cent with no skill in surveying habitats and 12 per cent having no skill in species identification.

Figure 4.17: Bar chart showing volunteers' baseline ratings of their skills (n=33)

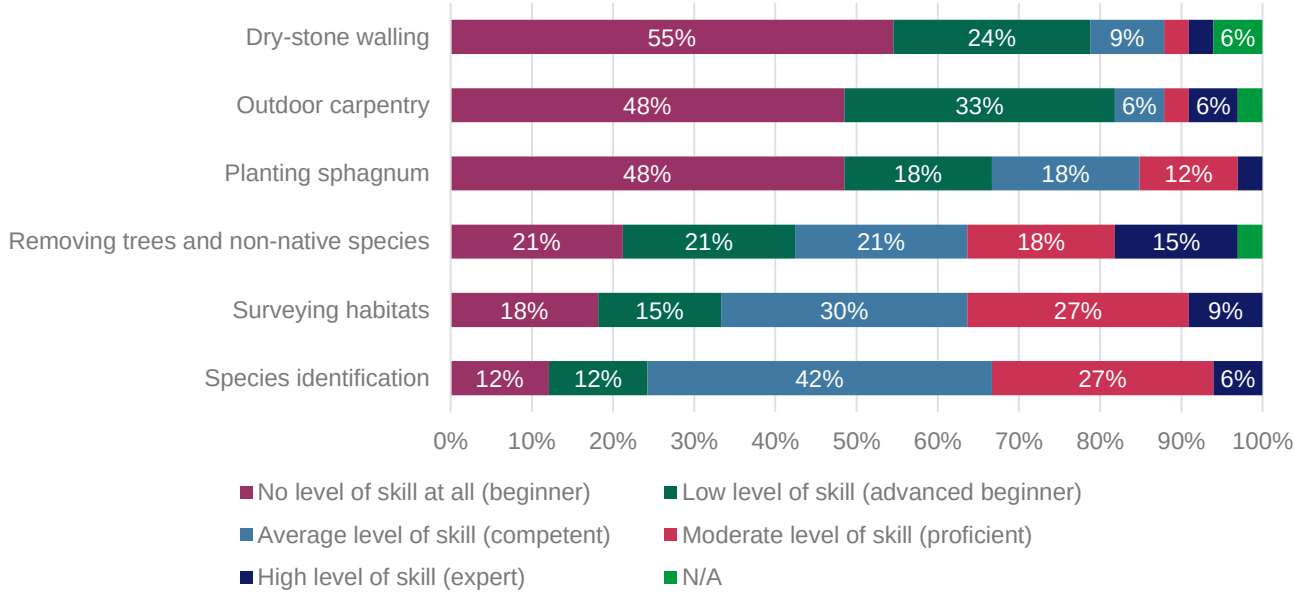


Figure 4.18 below shows which types of training that volunteers participated in and can be compared with the previous figure which outlines volunteers' self-reported baseline skill levels. Twelve volunteers noted that they had taken part in *Professional Training Courses*, which include species identification and monitoring, as well as professional progression activities. Five volunteers reported that they had taken part in *Habitat and Wildlife Surveying* training, such as for vegetation, bats, birds and water voles. Four volunteers noted that they had taken part in training around *Practical Techniques*, including for outdoor carpentry, dry stone walling and habitat management. Most of the skills covered by these sessions were the ones which volunteers (shown above in Figure 4.17) reported being the most unskilled at, showing that volunteers were not proactive in trying to gain new skills.

Figure 4.18: Bar chart showing which type of Lost Peatlands training which volunteers had taken part in (n=17)

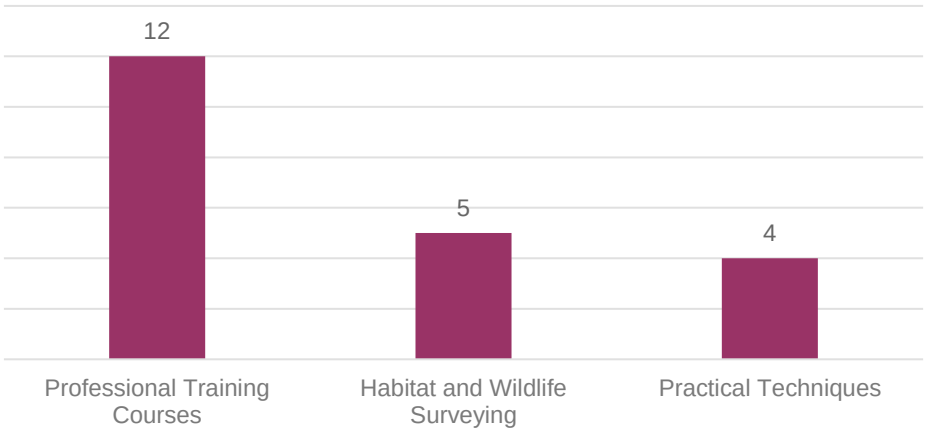


Figure 4.19 overleaf illustrates how volunteers saw training to have provided them with the relevant skills needed for success in their volunteer role, with only two (14 per cent) volunteers reporting that training had not, and the remaining 12 (86 per cent) reporting that training was in fact effective.

Figure 4.19: Bar chart showing proportion of volunteers who believe that the training equipped them with the relevant skills needed for volunteering (n=14)

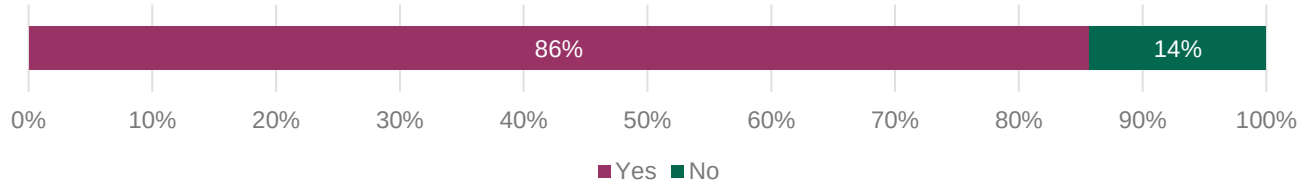


Figure 4.20 below illustrates the extent to which volunteers were satisfied, in general, with training, with 36 and 57 per cent of volunteers reporting that they were either 'extremely' or 'very' satisfied with training, respectively. However, one volunteer (seven per cent) reported that they were very dissatisfied with training, but did not elaborate with an explanation for their critical response.

Figure 4.20: Bar chart showing volunteers' satisfaction with training (n=14)

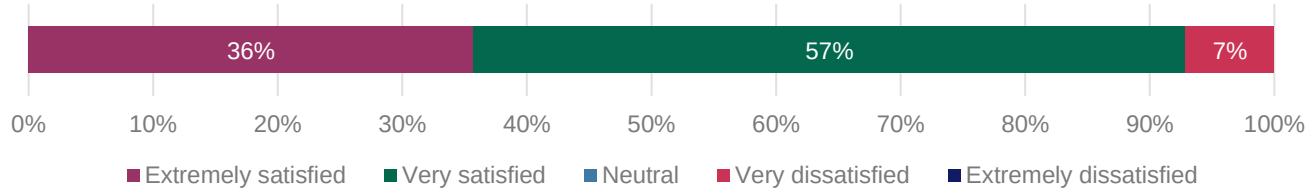


Figure 4.21 below does not show considerable change in participants' ratings of their connectedness with nature, but this may be due to volunteers either forgetting what their original, baseline, response was, or due to the variation in response rates to this question between pre- and post- surveys.

Figure 4.21: Bar chart showing volunteers' connectedness with nature both before and after volunteering

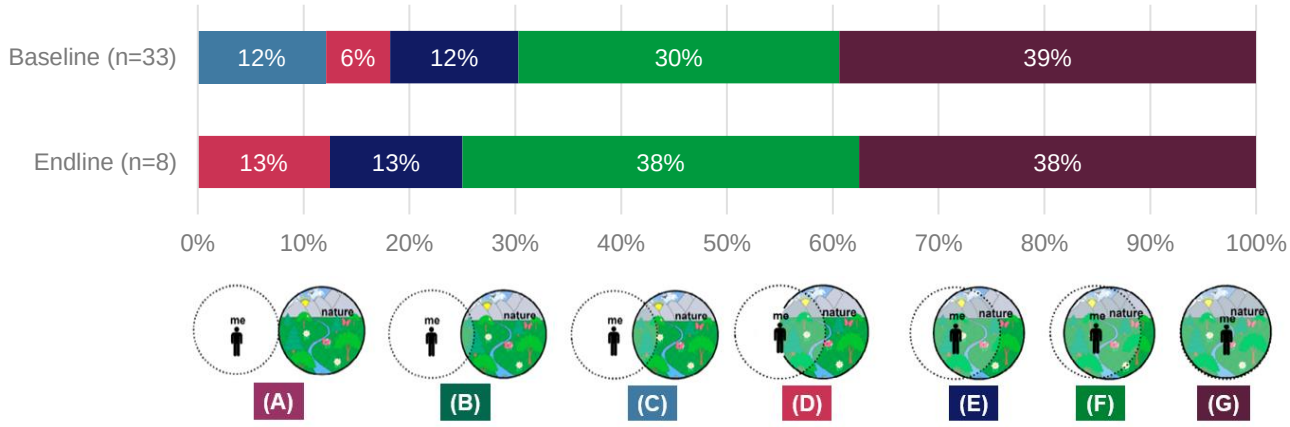


Figure 4.22 overleaf illustrates comparisons of volunteers' likelihood ratings for engaging in environment and peatland related activities, for before and after having taken part in volunteering activities.

Figure 4.22: Stacked bar chart showing comparisons between baseline and endline for volunteers' likelihood to engage in related activities

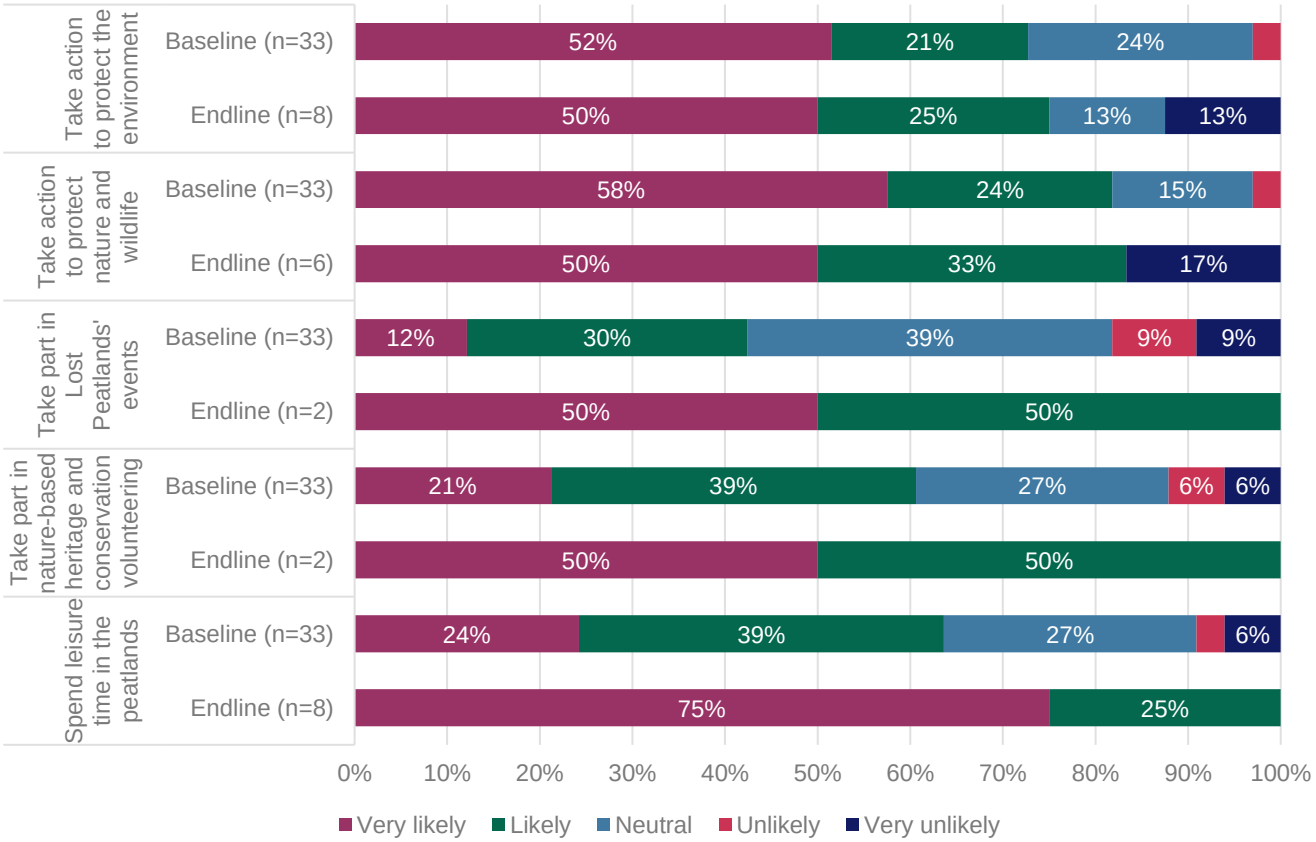
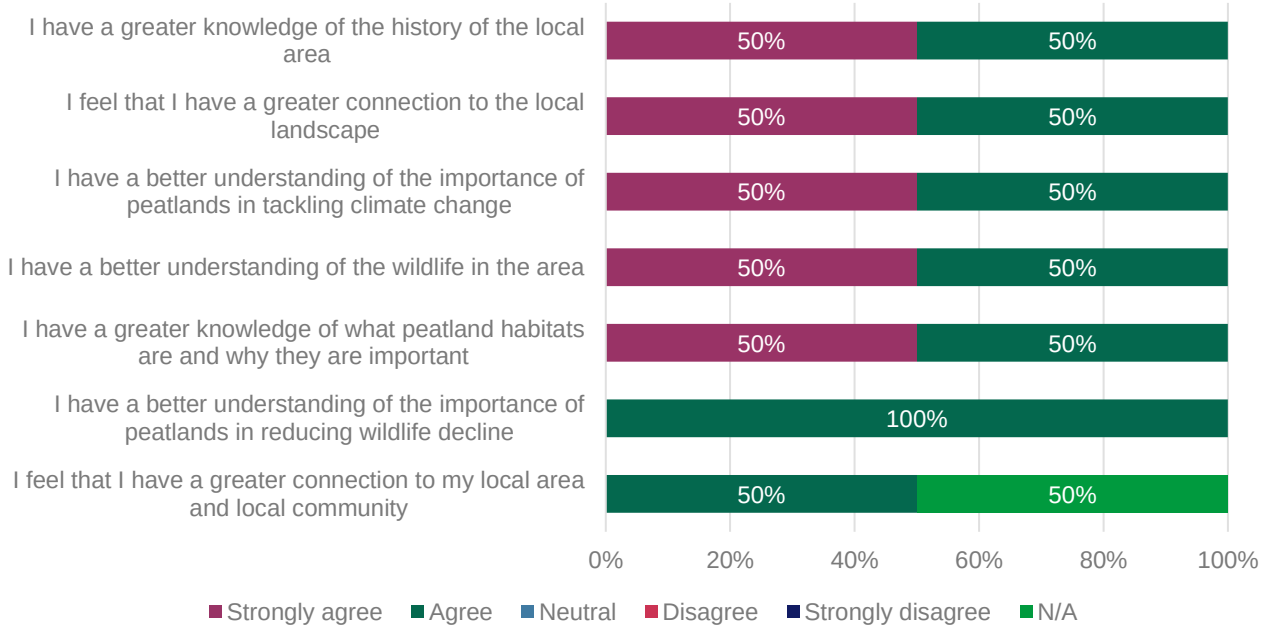


Figure 4.23 overleaf shows that volunteers either agree (50 per cent) or strongly agree (50 per cent) that volunteering has improved their knowledge of the local area and of wildlife, helped develop a greater connection to the landscape, generated a greater understanding of the peatlands' importance and their role in climate change. Similarly, volunteers (100 per cent) agree that they have bettered their understanding of the peatlands' role in reducing wildlife decline and 50 per cent agree that they feel a greater connection to their local area and community. Although only two volunteers responded to this set of questions on the survey, they radiate considerable positive outcomes of the volunteering experience.

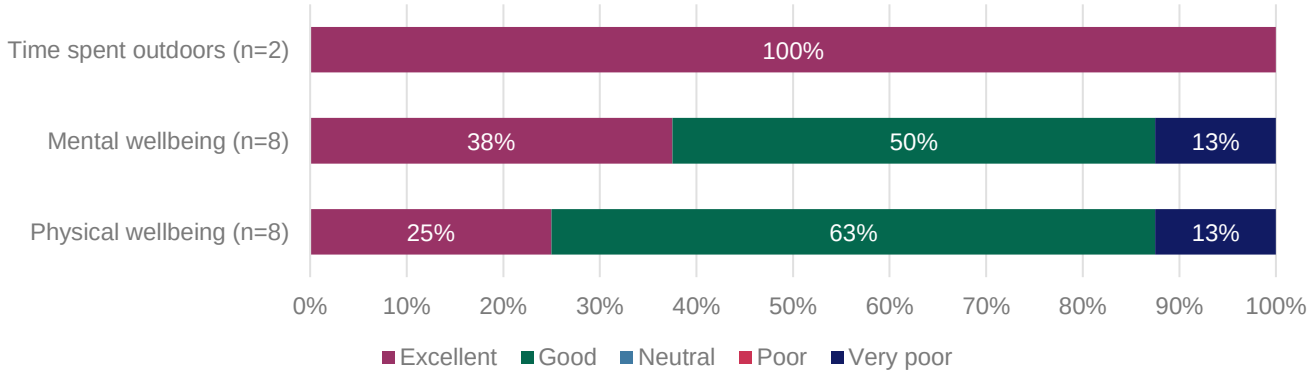
Figure 4.23: Stacked bar chart showing endline responses of volunteer outcomes (n=2)



A small proportion of volunteers (n=6) from the Lost Peatlands of South Wales project responded to the survey question, but their answers highlight a strong commitment to conservation and environmental stewardship. Many expressed a desire to continue volunteering, whether by seeking new opportunities, integrating conservation work into their studies, or contributing to local ecological efforts. Responses included conducting fungi and wildlife surveys, sharing wildlife data with the community through platforms like *iRecord*, and supporting local nature partnerships. The project appears to have inspired sustained engagement with peatland restoration and conservation, even among those who have moved away or shifted focus due to career or educational pursuits.

Figure 4.24 below shows that of all volunteers who responded, 100 per cent rate their time spent outdoors, as a result of volunteering, as excellent. Alongside this, 38 per cent and 50 per cent rate their mental wellbeing as either excellent or good, respectively, and 25 per cent and 63 per cent rate their physical wellbeing as either excellent or good, respectively.

Figure 4.24: Stacked bar chart showing volunteers' endline ratings of wellbeing factors



One event attended by ERS researchers was a volunteering session, where the path maintenance group were installing a bench they had designed and built themselves during the past ten-weeks. Welcome to Our Woods and Down to Earth are based in Treorchy, where Lost Peatlands has been working closely with both

organisations on volunteer engagement. There were three staff members present (two from Welcome to Our Woods and one from Lost Peatlands) and seven volunteers. Researchers spoke with all staff members and six out of seven volunteers.

Welcome to Our Woods runs wellbeing and nature connection activities and also gives its participants the opportunities to become volunteers. Down to Earth is an organisation which primarily focuses on building with sustainable materials. The organisations work together to provide sustainable materials and construction skills development to Welcome to Our Woods volunteers. Lost Peatlands joined forces with Welcome to Our Woods in 2023 to establish the project's Path Maintenance Group. The group has provided an opportunity for Welcome to Our Woods volunteers to get involved in conservation activities with the project. Some volunteers were already volunteering with Welcome to Our Woods, for example they had come through the Welcome to Our Woods woodland therapy groups and then became volunteers with the same groups. Other volunteers had participated in therapy groups with Welcome to Our Woods and were volunteering for the first time with Lost Peatlands. Other volunteers had heard about Welcome to Our Woods but had not taken part in any of this organisation's activities but had instead gone straight to the Lost Peatlands Path Maintenance Group as this group offered activities that more closely aligned with their skills and interests.

The Path Maintenance Group gets together every Tuesday. Group numbers on outings vary from anything from 5-16 members. The group was responsible for all parts of creating the bench, from sourcing the wood to designing it to installing it. Doing this was also part of an Agored qualification for some members of the group.

Volunteers were responsible for loading the bench onto the trailer and driving up to the mountain. All volunteers were encouraged to take responsibility for different activities that played to their strengths. Some volunteers were very confident with the use of tools and led on the installation of the bench, having remembered how to do this from the last installation (6 months previously). Project staff reported that some volunteers feel less confident in this aspect of the group, but that these members would instead take on other responsibilities, such as overseeing the group's tea and coffee. Staff members reported that making sure everyone has some responsibility is a good way to build up confidence, leading to members then taking responsibility for larger activities. However, all volunteers were given a sense that they have value and that all their roles and abilities were making important contributions to the group's overall objectives. For example, one member of the Path Maintenance Group would always bring a bin bag with him and would take it upon himself to do some litter picking every time the group went onto the peatlands to do a specific bit of path maintenance work. We observed staff members and other volunteers praising this volunteer and actively encouraging them, by seeking out areas in which they could litter pick. Volunteers also supported each other on many other occasions.

"I don't know where I'd be without coming here. It's made such a difference to my life." – Path Maintenance Group Volunteer (Participant)

Most Path Maintenance Group members reported that through taking part in the group, they had visited upland areas that they would never otherwise known existed. Six members said that being outside in nature, in such a beautiful area, had made important positive differences to their mental health. They also stated that they have been given the chance to develop and use new skills, as well as make tangible differences to their local area.

M's story

M had recently moved to the area and began to struggle with his mental health, feeling anxiety and lots of isolation as he didn't know anyone in the local area. He enjoyed walking through the local forests and mountain areas with his dogs, but his life was becoming very insular. It was when he visited his GP that he found out about the Welcome to Our Woods programme. The woodland therapy group had been suggested to him, but he wasn't sure about it. It was when he was walking with his dogs and saw a poster advertising the building of the roundhouse (a partnership endeavour between Down to Earth, Welcome to our Woods and Lost Peatlands) that he decided that he could be interested in getting involved. So he started taking part in the building of the roundhouse and really enjoyed learning new skills and meeting new, likeminded people in the local area. This broke down some of the trepidation he had felt with joining the woodland therapy group, which he then decided to join. This supported him to continue to learn skills, meet new people, feel calmer and more confident. M then started volunteering for the woodland therapy group, and then later for the Lost Peatlands Path Maintenance Group (once the project team and partners set up the link last year).

Through being involved in Lost Peatlands, he feels even more connected to his local community, and loves that he is contributing to helping both people and the landscape in the valleys that he now loves. He credits his whole involvement with Welcome to Our Woods, including volunteering with Lost Peatlands, and attending the local church, with completely changing his life. He said that he does not know where he would be without having taken part (but was unable to separate his involvement with Welcome to Our Woods from volunteering with Lost Peatlands, other than saying that volunteering with the Lost Peatlands group was an excellent next step.) Recently he led on designing and using his skills to make a game for children in the local area to play at a community Halloween event. He said he could not have seen himself taking the lead and doing this kind of thing without his Welcome to Our Woods to Lost Peatlands journey. M did say that he would have had no idea how important peatlands are for the environment (carbon sequestration) etc. without Lost Peatlands' involvement.

"It's like we have our own Amazon jungle here!" – Path Maintenance Group Volunteer (Participant)

D's story

D started taking part in the Welcome to Our Woods therapy group after really struggling with both his mental and physical health. A wellbeing link person at the GP service gave him a list of different organisations he could engage with for green and social prescribing. As he already had a degree related to natural heritage conservation, he was attracted to the activities being offered by Welcome to Our Woods. He started taking part in the therapy group, and found that working on skills, speaking to other people who also cared about nature and the environment, made a huge difference to his mental health. When he completed the woodland therapy group, he started to volunteer for the group and found that helping others

and ‘feeling useful’ started to rebuild his confidence. He then started volunteering with the Lost Peatlands path maintenance group which he attends twice a week.

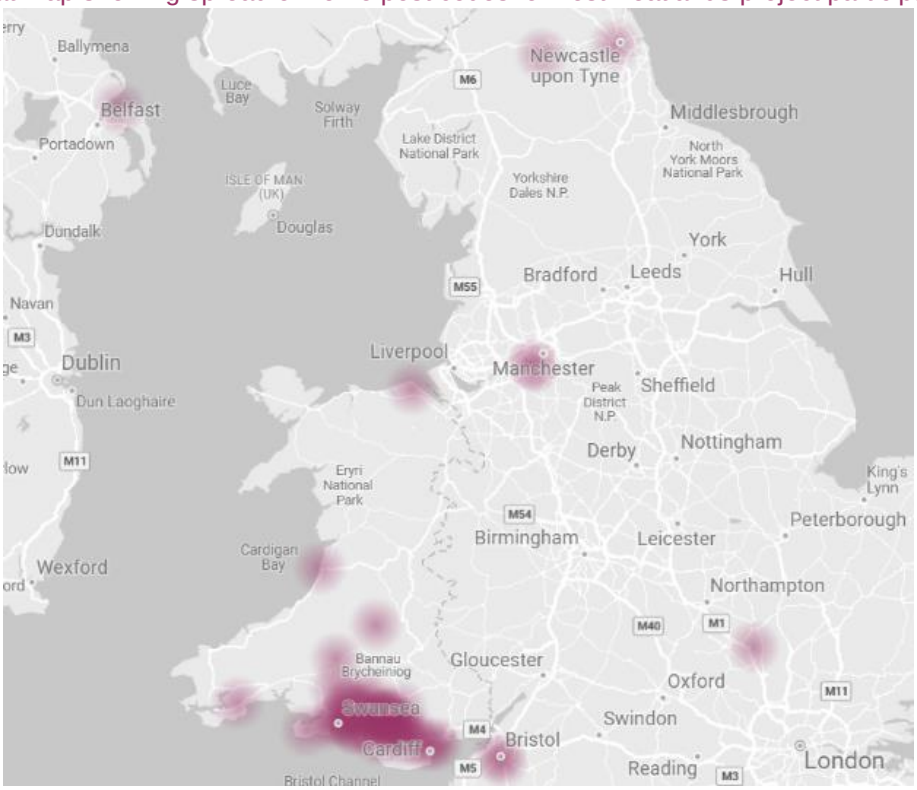
Through some of the Lost Peatlands path maintenance group, D has developed skills and built confidence and says that this partly led him to do a college course in conservation for three days a week. He said what made the biggest difference for him was seeing that he could be useful as a person, that he did have the skills and value to help other people and make a difference to the area where he lives. He said that the project had also given him more purpose and direction; he had always been interested in nature, heritage and conservation but this was the first time that he could see where this interest could lead for him.

4.5 Participants’ engagement and training

Project participants completed a survey after having taken part. The survey aimed to gather participant insights and measure outcomes of the sessions on individuals and received 101 responses. Note that it was not mandatory to provide a response for each question, so response rates vary per question presented.

As can be seen below in Figure 4.25, project participants predominantly resided in and around the Swansea and Cardiff areas, with a few others from surrounding areas in Wales, and in Bristol. Aside from this, smaller numbers of participants reported home post codes in Belfast, Newcastle-upon-Tyne, Manchester, Liverpool and Milton Keynes. This demonstrates that although project participation can take place online, the Lost Peatlands project has attracted many participants from further afield than Wales.

Figure 4.25: Heat map showing spread of home post codes for Lost Peatlands project participants (n=80)



Figures 4.26, 4.27, 4.28 and 4.29 below represent that the average participant was a white female who is employed full-time, however, ages of participants varied, mainly between 25-64.

Figure 4.26: Bar chart showing participants' age (n=80)

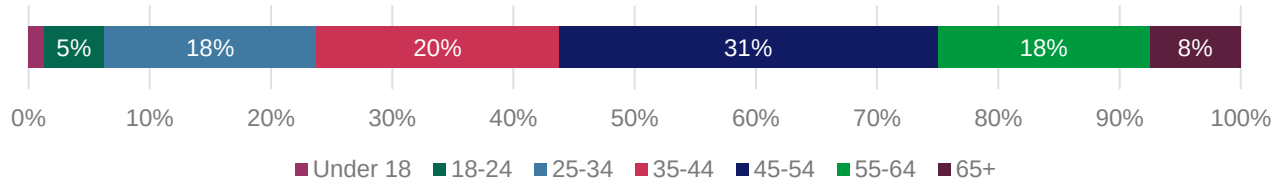


Figure 4.27: Bar chart showing participants' gender (n=80)

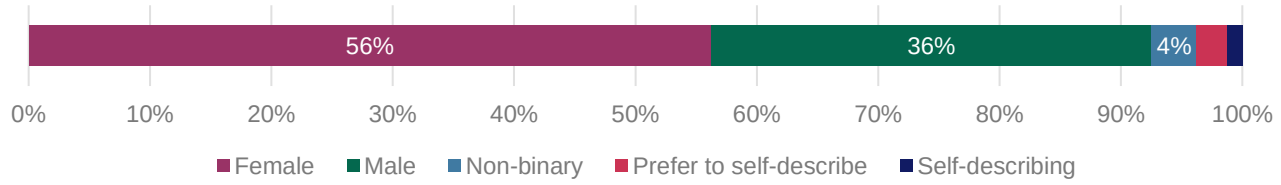


Figure 4.28: Bar chart showing participants' ethnicity (n=80)

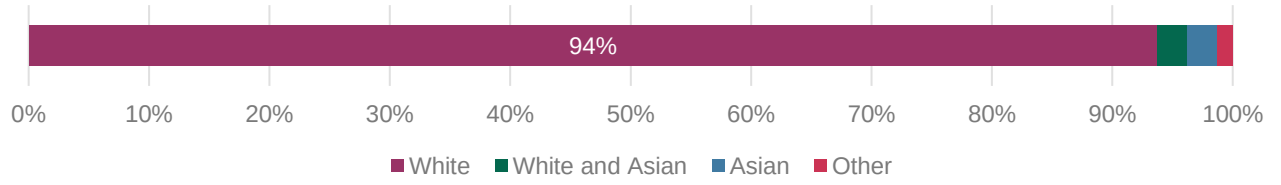


Figure 4.29: Bar char showing participants' employment status (n=80)

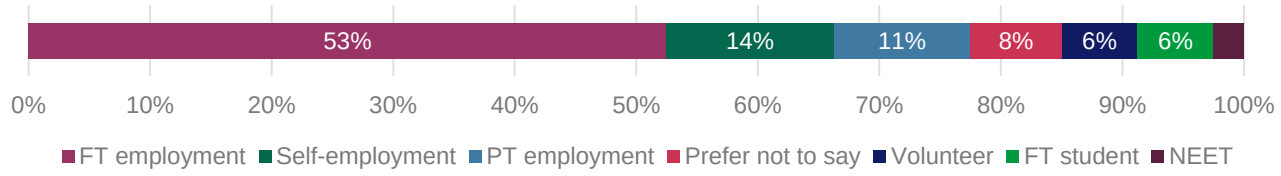


Figure 4.30 below shows that 65 per cent of participants had previously been involved in conservation work, alongside 49 per cent who had previously visited the peatland environment.

Figure 4.30: Bar chart showing participants' prior relationship to conservation work and the environment (n=101)

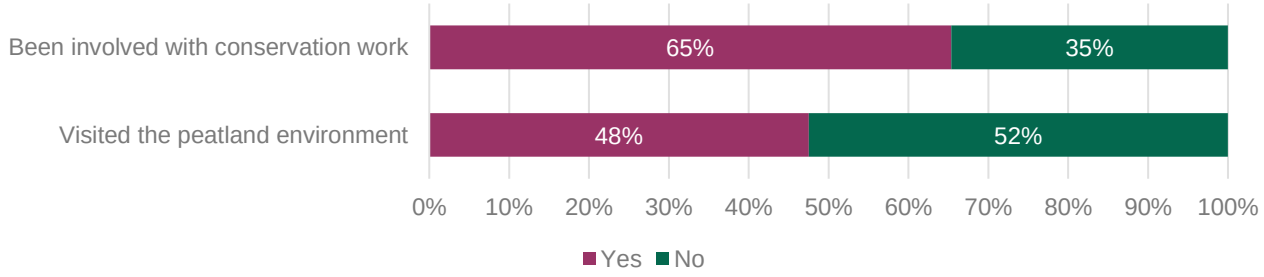


Figure 4.31 overleaf indicates how participants became aware of the opportunity to participate in the project, with knowledge exchange events (50 per cent), guided walks and storytelling (41 per cent) and arts and crafts (20 per cent) being the most popular. Ten per cent of participants indicated 'none of the above', whilst no participants reported having heard of the event through the heritage mobile app, social media or banners,

posters and leaflets. Participants responding '*Other*' (30 per cent; n=31) completed a free-text question box, which revealed a diverse range of ways to have heard about the opportunities for getting involved in the environmental and educational activities.

Participants (n=81) responded to a free-text question asking how they initially became engaged with the project. Analysis of responses revealed that many participants were engaged through formal training and educational sessions, such as professional courses on peatland hydrology, fungi identification, and webinars. Others were led to participation via school-based initiatives, including projects, workshops, and activities like building mini peatlands. A significant portion learned about opportunities through volunteering and conservation efforts, such as balsam bashing, tree felling, sphagnum moss planting, and litter picking, often organised by workgroups or local councils. Some participants connected through local partnerships and organisations, including collaborations with councils or birdwatching clubs, while others found opportunities through community-focused events, such as health walks, wildlife photography workshops, and nature talks. These varied channels highlight the effectiveness of combining professional education, grassroots volunteering, and local partnerships to engage a wide audience.

Figure 4.31: Bar chart showing which events and materials which participants had attended or engaged with to have become aware of the opportunity to volunteer (n=101)

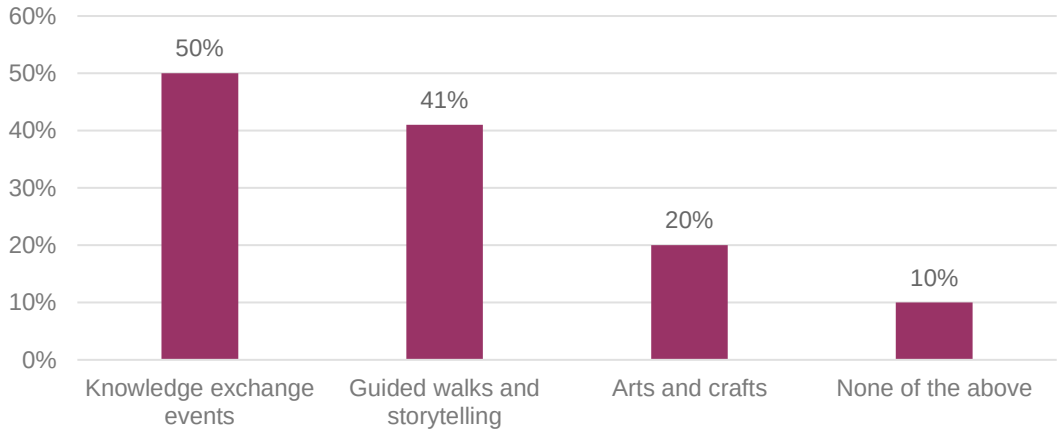
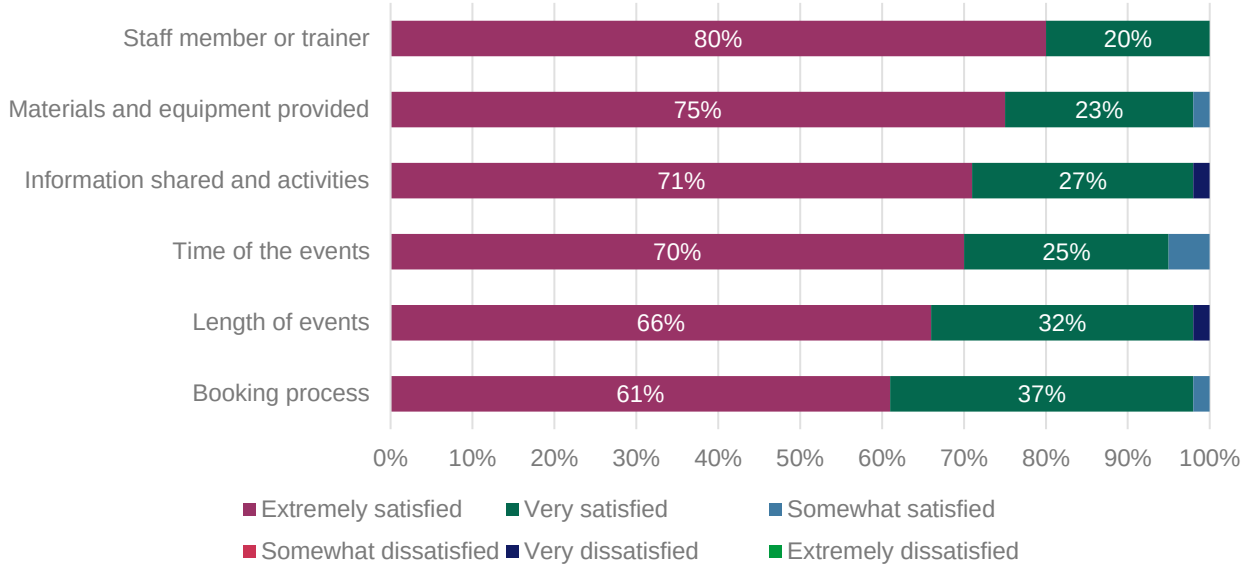


Figure 4.32 below shows that participants were most satisfied with staff members and trainers, with 80 per cent being extremely satisfied, followed by the provision of relevant materials and equipment, which 75 per cent rated as being extremely satisfied with. This was followed by the quality of the information shared and the activities carried out (71 per cent), the time of day which events were held (70 per cent), the length of events (66 per cent) and finally the booking process of events (61 per cent). For those who expressed dissatisfaction with the timing and lengths of events, they elaborated by saying they would have liked sessions to have been held for longer, or at different times in the day.

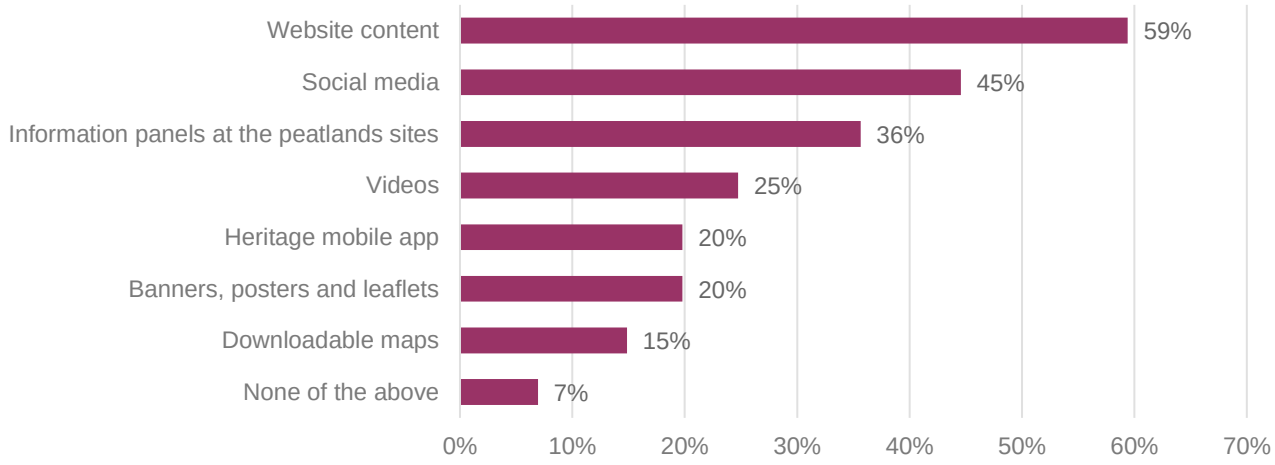
Figure 4.32: Bar chart showing participants' satisfaction ratings for elements of events (n=81)



Participant responses (n=81) to a free-text question asking what was liked the most about events revealed that participants most appreciated the knowledge, passion, and professionalism of the staff and guides leading the events. Many highlighted the educational value of the sessions, praising the informative and accessible explanations of peatland restoration, conservation techniques, and local ecology. Participants valued the practical learning opportunities, with hands-on activities like planting, surveying, and wall rebuilding, which allowed them to directly contribute to environmental restoration. The events fostered a sense of community, with attendees enjoying meeting like-minded individuals and sharing experiences in a welcoming and inclusive atmosphere. Many participants noted the unique experiences offered, such as night walks to observe wildlife and access to otherwise inaccessible locations. The combination of engaging activities, beautiful natural settings, and well-organised events left a lasting impression, making the sessions memorable, educational, and enjoyable for people of all ages and abilities.

Figure 4.33 below shows that website content for the project is the most commonly engaged with, at 59 per cent of participants, followed similarly by social media at 45 per cent. Participants also selected engaging with on-site information panels (36 per cent), online videos (25 per cent), the heritage mobile app (20 per cent), banners, posters and leaflets (20 per cent) and downloadable maps (15 per cent). Seven per cent of participants reported 'none of the above', whilst participants who responded '*Other*' (nine per cent; n=9) described engagement via email, webinar, newsletters and the Lost Peatlands mobile app.

Figure 4.33: Bar chart showing which materials that participants have engaged with (n=101)



When asked to rate their satisfaction with the information provided in sessions, 38 per cent of participants responding (n=77) were extremely satisfied with the quality of information provided in sessions and 55 per cent were very satisfied. Whilst six per cent noted being only somewhat satisfied, this indicated that there were no negative opinions relating to the quality of information provided amongst respondents.

When asked if they had learned something new, 95 per cent of participants who responded (n=77) reported that they had learnt something new as a result of their participation.

When asked how informative that they found events, 90 per cent of participants responding (n=77) found events and activities very informative, with eight per cent reporting that events and activities were at least informative. Overall, only one per cent of participants (one participant) reported that they did not know whether events and activities were informative.

Participants (n=67) responded to a free-text question asking what was learned through sessions, which highlighted that participants gained a broad and detailed understanding of various topics related to peatlands and conservation. Many reported learning about the environmental importance of peatlands, including their role in carbon storage, biodiversity, and as critical ecosystems for local wildlife such as water voles and bats. Attendees appreciated insights into the practical aspects of peatland restoration, such as species monitoring, hydrology, sphagnum moss planting, and tree management, as well as the challenges posed by development and mitigation strategies. Others learned about the history, heritage, and unique ecology of the local area, with some gaining new skills in species identification, fungi ecology, and even crafts like dry-stone walling and wood carving. The sessions fostered a deeper understanding of how peatlands connect to broader environmental and climate goals, inspiring participants to apply this knowledge in their personal or professional lives. Overall, the events successfully combined education, hands-on experience, and local context to deliver a rich learning experience.

Figure 4.34 below shows that 72 per cent of participant respondents would now strongly agree that they understand the Lost Peatlands of South Wales project, with 64 per cent strongly agreeing that they would be likely to partake in further Lost Peatlands events. Moreover, 59 per cent of participants strongly agreed that they would be likely to visit the peatlands again, and 52 per cent strongly agree that they are aware of available activities for peatland visitors.

Figure 4.34: Bar chart showing participants' agreement with the statements "after reading Lost Peatlands materials and taking part in events..." (n=81)

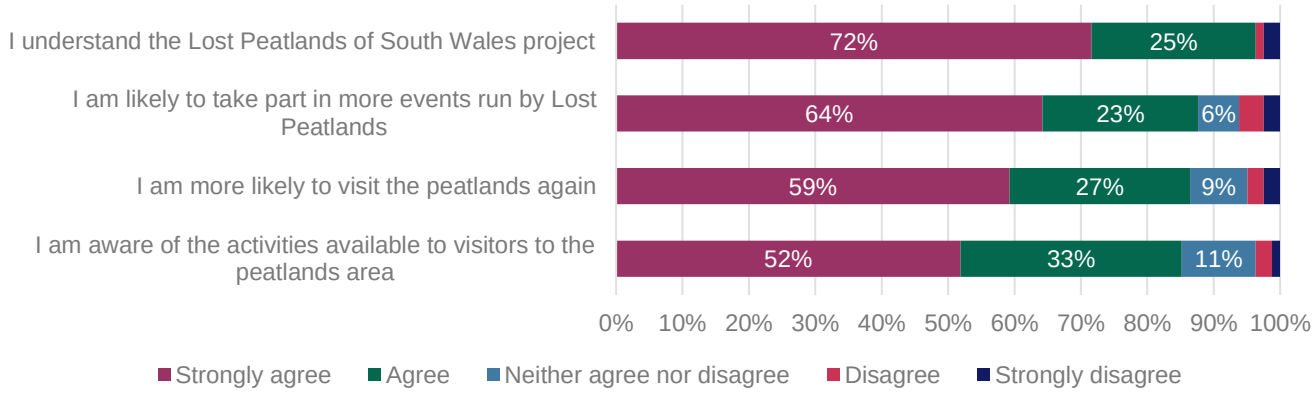


Figure 4.35 below shows that as a result of their participation, a large proportion of participants strongly agreed they have a better understanding of the importance of peatlands for tackling climate change (70 per cent), that they have greater knowledge of what peatland habitats are and why they are important (69 per cent), that they have a better understanding of the importance of peatlands in reducing wildlife decline (65 per cent), that they have a better understanding of wildlife in the area (60 per cent), that they feel a greater connection to the local landscape (58 per cent), that they have greater knowledge of the history of the local area (52 per cent) and that they feel a greater connection to their local community (42 per cent).

Figure 4.35: Bar chart showing participants' agreement with the statements "After reading Lost Peatlands materials and/or taking part in events..." (n=81)

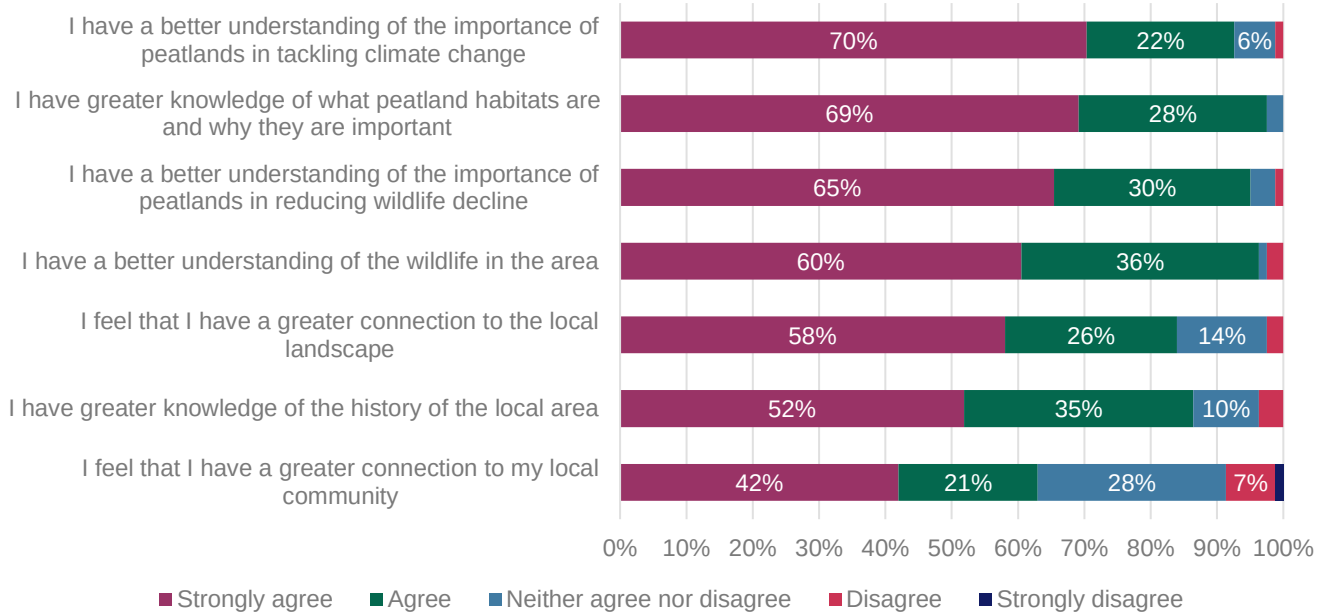
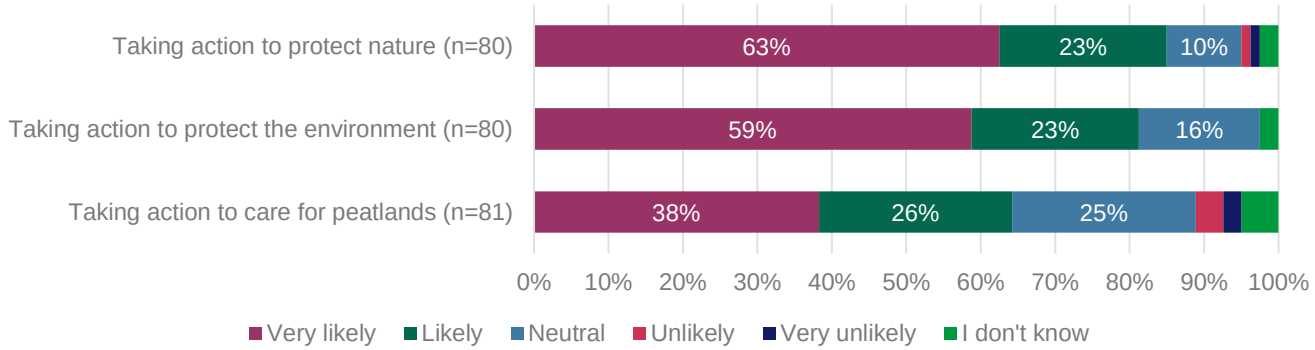


Figure 4.36 below illustrates that 63 per cent of participants (n=80) are very likely to begin taking action to protect nature, as a result of their participation. Similarly, 59 per cent of participants (n=80) report being very likely to begin taking action to protect the environment and 38 per cent (n=81) to protect the peatlands.

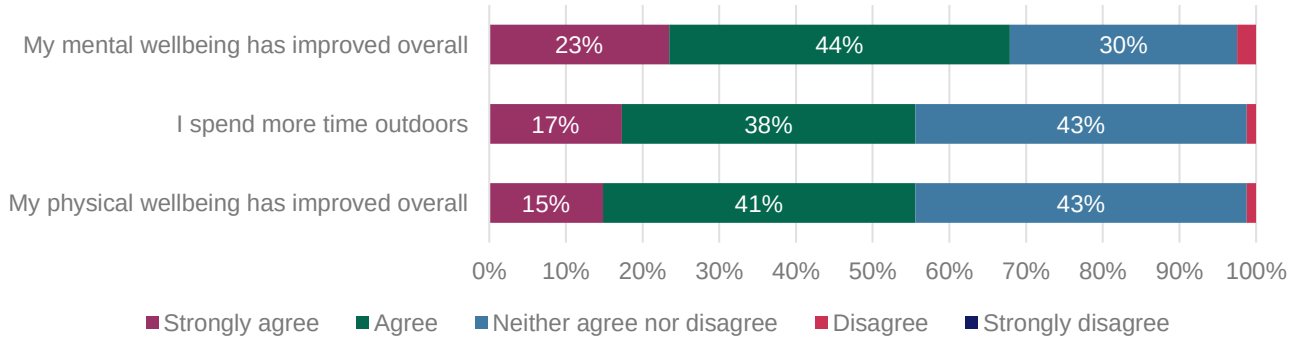
Figure 4.36: Bar chart showing participants' responses of likelihood to the statements "As a result of reading Lost Peatlands materials and/or taking part in events, I am..."



Participants (n=34) responded to a free-text question asking what they had been inspired to do as a result of taking part in events and activities. Answers revealed that participation in the Lost Peatlands project inspired many to take meaningful action, both personally and professionally, to support environmental conservation. Participants applied their newfound knowledge to their careers in land management, education, and conservation, incorporating lessons into teaching, volunteering, and everyday decisions. Several were motivated to engage in local environmental activities, such as forming or joining volunteer groups for path maintenance, woodland management, and litter picking, or taking on leadership roles to guide others in nature walks and conservation work. Others took inspiration to pursue personal projects, such as creating wildlife-friendly gardens, conducting species surveys, or exploring additional peatland areas in Wales. Many shared their experiences and knowledge with friends, family, and community members, spreading awareness of peatland conservation. Overall, the project not only deepened participants' environmental awareness but also empowered them to act, contribute to ongoing efforts, and to inspire others to value and protect natural habitats.

Figure 4.37 overleaf shows that 23 per cent and 44 per cent of participants either strongly agree or agree, respectively, that as a result of participation their mental wellbeing has improved, with 30 per cent noting that they neither agree nor disagree with the statement. Similarly, 17 per cent and 38 per cent of participants either strongly agree or agree, respectively, that as a result of their participation they have spent more time outdoors, with 43 per cent noting that they neither agree nor disagree with the statement. Finally, 15 per cent and 41 per cent of participants either strongly agree or agree, respectively, that as a result of their participation their physical wellbeing has improved, with 43 per cent noting that they neither agree nor disagree with the statement. This means that participation had a mostly positive or neutral effect on wellbeing.

Figure 4.37: Bar chart showing participants' agreement with the statements: "As a result of spending time in/ engaging with the peatlands..." (n=81)



4.5.1 Community engagement

During interviews with the project team and partners, the value of the engagement work was highlighted throughout. The project team spoke of the success of the project in reaching communities that are usually hard to reach, making positive headway in a challenging area. One interviewee highlighted the importance of working within this specific area and socioeconomic context, stating that because the area struggles socioeconomically, it is especially important to get people outdoors for the benefit of their mental health. Furthermore, the value of combining the outcomes of habitat restoration and increasing the understanding of local people was highlighted as a positive way to get individuals outside.

Project team and partner interviews clearly demonstrated the benefits of the project for **positively changing local communities' opinions on local heritage**. One interviewee stated the importance of highlighting the beauty of the peatland in order to increase individuals' connection to the area. This is further demonstrated by an increase in the number of complaints received from the public since the start of the project in regard to the local landscape, demonstrating an **increase in pride in place**. Alongside this, the partner stated they had seen an increased demand to understand what is going on in the area. They went on to highlight the importance of continuing to share resources with the public in order to keep the momentum, citing this as a reason to develop a follow-on project for Lost Peatlands.

"I've been here 28 years, and in the last five years, we get so much more complaints from the public because now they're taking pride for where they live. And we are seeing a much greater appetite from the public to understand what's going on. They want to understand what's important about their area and how they can help." – Project Partner

The importance of this was reinforced by another project team member, stating that community engagement as a part of Lost Peatlands had successfully rebuilt trust within the community and once again demonstrated to local people the value of the land and natural heritage. Furthermore, this work has helped to increase local communities' knowledge and understanding of local biodiversity.

"So the community engagement is important because we need to make sure the people are getting something out of these schemes, it's not just something that's being imposed on them." – Project Team

"Through this project we can inform people what biodiversity recovery means specifically to their landscape. To the specific place that they live. So, showing them that the wimberries are back, and they can make the tarts that their grandmothers used to make, so connecting them to their landscape again" – Project Partner

Attendance at community engagement events helped to reinforce the outcome data collected during project team and partner interviews. During the visit at a community event attendees were enthusiastic about the event and expressed a desire to return to future events. Furthermore, more evidence was provided of an increase in knowledge around local biodiversity, as a young attendee detailed the negative impact of Himalayan balsam.

"We've learnt that bees eating Himalayan balsam is really bad for them even though they love the taste of it" – Mother and child at community event (Participants)

"If there was another event, we would come rain or shine. My kids are weatherproof, so rain is not a problem!" – Father with family at community event (Participants)

4.6 Summary

A range of positive outcomes were achieved across all areas of the Lost Peatlands project in line with what was planned at the outset.

Overall, **peatland restoration outcomes** were positive, as evidenced by a variety of sources. With regards to Peatlands Restoration, the primary objectives included raising water table levels, promoting mire specialist species, and ensuring minimal impact on protected species. Restoration efforts utilized methods like ground smoothing, cross-tracking, timber/peat dam installations, and Sphagnum plug planting across Castell Nos, Cregan, and parts of Cwm Saerbren. Outcomes were measured by monitoring work completed by project ecologists, alongside additional monitoring completed by staff and students at Swansea university.

As would be expected, outcomes varied by site. Water tables rose significantly at Castell Nos and Cwm Saerbren, with Cregan showing promising signs but needing more monitoring to analyse the full impact. Vegetation recovery was positive: Castell Nos showed strong positive trends, with mire specialists expanding across the site. Cregan is in a transitional stage, however positive indicator species such as Sphagnum and Drosera are emerging. Cwm Saerbren also shows positive signs of vegetation response in the works areas. Collocated monitoring from Swansea University will continue to measure changing greenhouse gas dynamics as the vegetation recovery continues.

Improved habitat conditions at Castell Nos are likely the cause of increased water vole population at the site. Borrow pits and ditch blocking (increased open water) appear to have enhanced habitat suitability and areas of suspected presence were successfully avoided during works. Positive trends in bird and bat assemblages were also noted, though long-term monitoring is required to differentiate restoration impacts from other factors.

Key lessons included the importance of effective control datasets, enhanced monitoring infrastructure protection, and addressing evidence gaps like water table compression effects from cross-tracking. Long-term data collection remains vital for refining hydrological estimates, tracking vegetation, and monitoring fauna.

The **education of school pupils** also saw steps to positive outcomes. Teachers reported pupils as being more engaged in outdoor learning and displaying an increased interest in environmental activities. Many pupils expressed a desire to continue exploring nature, whether through engaging with school gardens or local projects, and as such have developed a greater awareness of biodiversity and ecological issues. Teachers also reported that the pupils were more confident and eager to apply their learning outdoors. Positively the impact extended beyond the sessions themselves, with more pupils actively involved in school projects, such as caring for gardens and studying local environmental issues, demonstrating a long-term commitment to sustainability and environmental stewardship.

Alongside improvements in engagement, teachers also reported positive knowledge and skill development for pupils, emphasising the importance of both practical and environmental learning in creating this change. With a wider range of pupils involved in the project, engagement significantly increased. In addition, adaptations in the delivery led to the Lost Peatlands team working off timetable with a group with special learning needs, demonstrating adaptability, and success in increasing access and inclusivity, and taking positive steps towards changes in attitudes, and connectedness to nature.

This range of positive results for peatland being identified and better explained amongst students is demonstrated by the positive feedback they shared. This feedback increased over the course of the project, as students demonstrated understanding of the habitat, and its importance for wildlife such as water voles, as well as the benefits for reducing flooding and general water management. Students also displayed positive learning on the biodiversity of peatland, as well as climate change and the role of peatland in counteracting climate change, alongside noticeable positive behavioural changes including increased interest in spending time outdoors, increased engagement with environmental activities and greater interest in biodiversity.

An important outcome that was also identified, was increased wellbeing, attributed to involvement in the project. Techers reported pupils enjoyed spending time outside and expressed enthusiasm and enjoyment. Feedback from pupils reinforced this, with students consistently highlighting the joy of outdoor learning and hands on interactive activities, which supported their wellbeing.

A range of positive outcomes were also identified for teachers, particularly around skill development. Teachers expressed an increase in understanding as a result of sessions, alongside a greater ability to apply their learning. In addition, an increased ability and desire to integrate outdoor learning into the curriculum, demonstrates positive change from involvement and engagement with the project. Further to that, benefits to integrating the learning for the students were outlined by teachers, such as increased environmental awareness, local pride, and connection to nature, this was highlighted as crucial to creating future environmental stewards.

Positive outcomes were also realised through engagement in both outdoor and indoor activities celebrating the local area's natural resources. Family groups were provided with activities to connect adults and children to nature through games and learning opportunities. Participants reported strongly agreeing that sessions had been enjoyable, supported improvements to their wellbeing and taught them new skills and knowledge.

A notable increase was observed for individuals making and maintaining social connections and friendships, alongside becoming more connected to their local communities. It was noted that these positive trends occurred for both children and adults engaged in the project. Additionally, similar positive trends were reported that participants felt that greenspaces were made more accessible and people were encouraged to be more physically active.

Notably, 55 per cent of adults (n=22) showed a statistically significant increase (three points) in their Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) scores after participation in the programme. With participants and project team members and partners highlighting the 5 ways to wellbeing as benefits of engagement. Partners also noted success in increasing confidence and social connections of participants, especially amongst the most vulnerable members of the communities supported. Suggestions for improvements on the sessions included more variety in session length and the inclusion of evening and weekend options to support working families to have equal access to engagement.

An increase in volunteers accessing training related to environment or peatland was recorded, although it was noted that volunteers were not proactive in trying to gain new skills. However, of those who did participate, they overwhelmingly reported that training was effective at teaching new skills, and acknowledged that the opportunities provided by the project had increased and improved their knowledge of the local area, climate change and their understanding of the peatlands role in reducing wildlife decline. Attributed to this was a desire to continue volunteering, showing a strong commitment to conservation and environmental stewardship amongst the volunteer group.

A key success factor to engagement was the diversity of ways in which participants became awareness of the project and its opportunities, with many participants initially engaging through formal training and education sessions. School based initiatives and connections through local partnerships and collaborations, also proved successful at encouraging engagement and reaching a far wider audience. Sessions were highlighted as educational and informative, fostering a real sense of community amongst likeminded individuals. Many participants noted the unique experiences offered, such as night walks to observe wildlife and access to otherwise inaccessible locations as key to the success of the project. The combination of engaging activities, beautiful natural settings, and well-organised events left a lasting impression, making the sessions memorable, educational, and enjoyable for people of all ages and abilities.

The project was successful at reaching previously hard to reach communities and making positive headway in challenging areas. The value of combining the outcomes of habitat restoration and increasing the understanding of local people was highlighted as a positive way to get individuals outside, and contribute to

positively changing communities opinions on local heritage, which in turn fostered an increase in pride of place and more ownership of the natural area by those who live there. Community engagement as a part of Lost Peatlands has successfully rebuilt trust within the community and once again demonstrated to local people the value of the land and natural heritage.

5 Legacy

The work carried out via Lost Peatlands is likely to have a long-term impact on both the landscape and people of South Wales. As such, during interviews with project team and partners, interviewees were asked what they expected the legacy of the project to be, the results of which are outlined in this section. In general, the responses either focussed on peatland restoration or the local community.

5.1 Peatland

5.1.1 Restoration

The legacy of the peatland restoration is easier to quantify in comparison to that for the local communities, as the monitoring and research carried out make it easier to project the long-term impact. On a basic level, interviewees highlighted that now the peatland has been restored and management plans are in place, the peatland should remain restored, as long as there are no drastic changes to the weather in South Wales.

"In terms of the environment side that is going to be fairly solid (…) We've restored stuff back to its natural state; it should all be self-reliant now; you just need rain which isn't hard to ask for in South Wales." – Project Team interviewee

There is more to the legacy of the peatland restoration than just the physical delivery of the project however, as, through delivery, Lost Peatlands has contributed towards increased information and knowledge within the field of peatland restoration. The methods used on the project have positively contributed towards knowledge on what is best practice for peatland restoration. In fact, a delivery partner stated that Lost Peatlands has already fed into the peat bog elements of six other upland windfarm schemes, with best practice contributing towards the mitigation plans for these. They went on to state that the case study examples are specific to the peatland of South Wales, as in Scotland, where most other schemes are based, the peatland is deeper which makes it unsuitable for these methods.

Furthermore, an interviewee highlighted that the work done on Lost Peatlands is likely to be crucial within the wider context, as they expect the demand for upland windfarms to be maintained in the coming years. As a result, the research and practice insights will remain useful in the upcoming years. Not only that, but partners expressed positivity that relationships built on the project will support increased work throughout South Wales.

"One of the things for this area is that the appetite for upland windfarms isn't going to diminish, so more will come in, and peat restoration will become the priority land management delivery on all of those sites. So, this is best practice well paid for, because it will inform all this work that is going to happen at an increased rate" – Project Partner interviewee

5.1.2 Monitoring

Alongside acting as a useful case study for future peatland restoration, the research and monitoring carried out as part of Lost Peatlands has positively contributed towards filling gaps in information within the wider sector. This was highlighted during project and partner team interviews, as examples were provided of areas Lost Peatlands has contributed towards, one of which was in relation to methane emissions. Monitoring on Lost Peatlands revealed that methane emissions from furrows prior to restoration was far higher than expected. Furthermore, it was found that smoothing out furrows was really key in this area, building solid information for moving forward. This provides useful supporting information to go alongside the data collected on carbon storage.

Supporting this increase in knowledge was the work done in collaboration with the university. As previously highlighted, Lost Peatlands has been credited with driving an increased interest in peatland restoration, along with a shift in the curriculum at Swansea University to account for this. Interviews further revealed that thanks

to this increasing interest both from students and within the departments at the university, the Welsh Government have shown interest in sponsoring PhDs in this area, further supporting research in the field. Furthermore, alongside this increase in expertise and momentum within the university, interviewees stated Lost Peatlands has helped to increase capacity of the university to contribute to research in the field, by contributing to the increase in equipment within the university. It is important to note the equipment has been purchased as part of the match funding so is not strictly funding by the project.

"Welsh government has come and said they want to maybe sponsor some PhDs on this in the future, so we've given them a list of focus areas students could look at. So, the potential is there, more people are working on it and know about. It's so dependent on all these moving parts though! But the momentum is there, and there will definitely be students looking at this in future!" – Project Partner interviewee

5.1.3 Reputation

One of the main areas the legacy of Lost Peatlands is secured is from the effective sharing of information collected on peatland restoration. To do so, a variety of methods have been used and have potential to be used in the future. Lost Peatlands has already been spoken about in both international and national conferences, helping to spread the information and awareness of the project throughout Wales and the wider sector. Furthermore, interviewees shared confidence that this will be shared further through scientific papers and literature, helping to shape discussions around the relationship between peatland restoration and climate change.

5.2 People and Communities

"The history is coming back. The history of those valleys isn't written down, it's a spoken history. There are older people who know why that bump on the hill is there and what went on etc. These are places that aren't well explored by professional bodies. The local people are the ones seeing what no professional has seen, so there's a lot of knowledge there that isn't written down." – Project Partner interviewee

Through multiple different strands of the project, Lost Peatlands strived to impact and influence the local and wider communities, leaving behind a legacy which is hoped will cross through multiple generations. This was explored in detail in project team and partner interviews, with team members from all different strands of the project commenting on the lasting impact the project will have on the people of South Wales.

An interviewee highlighted the benefits to the increased interaction with the landscape that was witnessed within the community as part of the health and wellbeing aspect of the project, stating that:

"The biggest thing is that people are getting out into the landscape more, because we know that this is so important for wellbeing as they're challenging their boundaries and seeing other people. And we know that people are going from never leaving their houses to going for a walk every day – and that's life changing." – Project Partner interviewee

It is hoped that this increase in connection to the landscape, will lead to an increased ownership of the maintenance of that landscape, further increasing support for the restoration into the future. A partner stated that more will need to be done to ensure this legacy however, highlighting the importance of carrying on the engagement with local people into the future.

"I would say a greater area of better-quality wetland habitat within the uplands of south Wales, and a greater knowledge of it and appreciation of its value within the local communities. If people appreciate it, they are more likely to buy in to its value to them and be more interested in its maintenance I suppose." – Project Team interviewee

Positive changes in both older and younger participants increase the hope for an intergenerational shift, as younger participants become more connected to their landscape. These younger participants not only have the chance to affect the next generations; it was also witnessed that they were encouraging parents to get outside more, making a larger impact in the present as well.

"People said their kids requested playing outside more and not computer games! It's making a change for people while they're there, how they interact with their landscape, then they're passing this on to others and it might affect their children or older relatives or others in their communities." – Project Partner interviewee

Another factor which is hoped will increase the longevity of the impact is on the building of support networks. Partners stated that the support networks within the health and wellbeing programme were strong, that the formation of groups should mean that the positive impact is carried forward, whether it be for health and wellbeing or volunteering.

"We've brought people together into groups and introduced friends. We've formed groups and helped them strengthen themselves so they should be around to carry on what they're doing." – Project Partner interviewee

Lastly there is the legacy of the skill development within the community. Partners highlighted that local skills which had been previously forgotten were being taught, with the hope that these would then be passed on to the next generations. Not only does this have the benefit of increasing skills within the community but also reconnecting people to their local heritage both now and in the future.

"We've empowered the community and those skills are there forever now. These skills were lost over the generations – we've had workshops where all the older women remember doing these things as kids, but it got lost, now they're passing this on again to the younger generation." – Project Partner interviewee

6 Conclusions

The need for a project of this scale was an environmental necessity. By engaging local communities to learn about this habitat, steps have been successfully taken together by project team members and communities to support the peatland restoration, developing new skills amongst local people and reconnecting them to the land to care and protect it for generations to come.

The Lost Peatlands Project performed well across all areas, exceeding a number of targets and achieving most others, despite challenges and delays to commencement of the project. Flexibility and adaptability were key success factors in ensuring that improvements were delivered and targets reached in an iterative manner, responding to the changing needs of the local communities.

Volunteers were engaged and supported across a range of areas, and whilst some challenges meant that certain outputs were below target, proactive work and diversion of resources helped to combat the shortfall and support an overwhelmingly positive volunteer experience be maintained across the duration of the project.

The most vulnerable and hard to reach communities were targeted and supported by the project to engage in a range of activities designed to increase awareness of peatland restoration and its importance to addressing climate change, whilst also supporting individuals to take steps to improve their physical health and wellbeing and reaffirm connections to nature and the heritage of local areas.

Partnership working was a key success factor for the project, with each partner working to their own strengths, bringing a wealth of knowledge and expertise to increase the reach of the programme to diverse audiences.

Challenges identified most notably a disconnect in communication between the design and delivery teams, highlighting the need for better collaboration in the initial design stages of delivery and project management team members who can provide realistic insights and expertise to the development and planning of large-scale programmes of work across extensive areas and diverse populations.

These challenges were mitigated however by the previously mentioned flexibility and adaptability of the team, alongside that of the funder and steering group. Effective communication, collaboration and a willingness to adapt where necessary supported a responsive approach to the changing and evolving needs of the programme.

A range of positive outcomes were achieved across the breadth of the Lost Peatlands project, evidenced by a range of sources and key lessons learned across all areas. Increases in engagement and enthusiasm for outdoor learning and environmental activities was reported by pupils, teachers, volunteers and participants. A key driver of these positive changes was the adaptations made to respond to the needs of the project, its participants and its communities. This supported an important increase in accessibility and inclusion aspects of the project, reaching a wider audience and supporting longer term outcomes in the wider communities.

Positive improvements to the wellbeing of pupils and wider community participants was also a highlight of the programme, with feedback confirming the positive effects of the engagement and activities on the perceptions of individuals.

The value of partnerships, connections and local collaborations should be noted, as providing well established routes into hard to reach communities and supporting the building of overwhelmingly positive relationships between project team members and the wider local communities, restoring pride in place and reminding them of the intrinsic value of their land and natural heritage.

The work carried out via Lost Peatlands is likely to have a long-term impact on the landscape, research sector, and people within South Wales. The project has contributed towards best practice in the field of peatland restoration with this best practice being implemented on at least six other upland windfarm schemes during the lifetime of the project alone, with more demand expected.

Alongside contributions to best practices, the project has also contributed to the wider research sector informing and inspiring a range of projects to come. The project has added to the established evidence base and been credited driving interest in peatland restoration at Swansea University and within the Welsh Government. The project has been recognised in international and national conferences, shaping discussions around the relationship between peatland restoration and climate change.

The project indicates positive outcomes including increased connection to the landscape, with hope of an intergenerational shift as young people become more engaged in the stewardship of their homes and landscape. Partnerships and support networks within the health and wellbeing programmes are strong, and that the formation of groups should mean that this positive impact is carried forward for health, wellbeing and volunteering across the communities. Lastly, the importance of renewing local skills which had been previously forgotten and bringing them back to use and focus within the communities is hoped to continue to the next generation and beyond.