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Science Report: SC040051/SR

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This report is the result of research commissioned and funded by the Environment Agency's Science Programme.

Published by:

Environment Agency, Rio House, Waterside Drive, Aztec West,
Almondsbury, Bristol, BS32 4UD
Tel: 01454 624400 Fax: 01454 624409
www.environment-agency.gov.uk

ISBN: 1844325601

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June 2006

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Dissemination Status:

Publicly available / Restricted

Keywords:

Regeneration, wetlands, flood defence, river restoration, fishing

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Science Project Number:

SC040051

Product Code:

SCHO0506BKWG-E-P

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- **Delivering information, advice, tools and techniques**, by making appropriate products available to our policy and operations staff.



Steve Killeen

Head of Science

Executive Summary

This research investigated the social, educational, health and economic benefits of three Environment Agency partnership projects, in order to demonstrate their positive contribution to local regeneration.

The case studies in fisheries (Merthyr Tydfil and Denbigshire, Wales), flood risk management (Freiston Shore, Lincolnshire and Old Moor, Dearne Valley, Yorkshire) and river restoration (Chinbrook Meadows, Lewisham, London) used a mixture of quantitative and qualitative research methods.

Key findings include:

- Teachers reported clear **educational benefits** from the Salmon Homecoming project in South Wales, including development of both **core skills** in literacy and numeracy and knowledge relevant to the science curriculum for Key Stage 2 children. Indirect benefits of increasing the children's **confidence to learn** were also found.
- More diffuse educational benefits of increased environmental knowledge were also found among visitors to the two flood risk management sites, Old Moor and Freiston Shore, which are managed as Royal Society for the Protection of Birds (RSPB) reserves. Around 67 per cent of interviewees felt they had **learnt more** about the environment, while 38 per cent said that their visits had influenced their **attitudes**.
- **Health benefits:** 90 per cent of visitors to Old Moor and Freiston Shore felt increased mental wellbeing from visiting. Nearly 50 per cent used their visits as an opportunity to take exercise, which is a short term indicator of long term health benefits, such as to cardio-vascular health. A third to a half of the visitors had increased their levels of physical activity, making an additional visit to the nature reserves every 1–2 weeks.
- **Social capital:** Environment Agency projects contributed to users' sense of place and community pride. Over 50 per cent of interviewees were members of linked environmental groups, while 44 per cent felt that visiting the Freiston and Old Moor reserves contributed to their attachment to their local community and 100 per cent felt able to trust others in these places.
- Environmental improvements contribute to **Community Safety** when accompanied by increased management of green spaces. This is supported by evidence from the Old Moor Reserve, where 60 per cent felt that the enclosed and managed reserve improved safety. In Chinbrook, re-design, new lighting and introduction of a warden made 20 per cent of visitors feel safer, as well as encouraging wider use of the park.
- **Economic benefits** specifically attributable to Environment Agency projects proved the most difficult to isolate within the global economy. A study of property prices near the Chinbrook Meadows river restoration in south-east London proved inconclusive, although local estate agents did use the park as a selling point.
- **However**, in Old Moor, regeneration of the site has contributed to the sustainable local economy through a huge increase in visitor numbers since 2002, stimulating an increase in full-time staff and a local sourcing policy.
- The micro-study of the impact of the Environment Agency Fishing Wales project on the **tourist economy** of North Wales found that 55 per cent of tourist businesses interviewed had anglers as clients and that 35 per cent had also increased their turnover since the project began in 2003.

- **Partnership working** is particularly effective in delivering regeneration goals. In Chinbrook, the Environment Agency worked with the London Borough of Lewisham, which not only restored the open river in the park but also developed tennis courts and employed wardens. This created a **multi-use urban greenspace**, where local people felt safer and which appealed to a wider range of the local community. Similarly, in the Old Moor Reserve, the Environment Agency worked with the RSPB, bringing together complementary skills to produce a managed reserve that feels safer and forms a focus for increasing social capital.

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1. Introduction

1.1 Policy context

Regeneration policy is area-based and aims to revive and develop communities. Regeneration is intended to cut across the established functional structures of government and to deliver a package of social and environmental benefits. These should mutually reinforce each other so that deprived or socially excluded communities can rejoin the socio-economic mainstream of British society. Regeneration policy aims to improve the wellbeing of communities along a series of dimensions, including: physical and mental health; safety from crime and fear of crime; economic prosperity; level of education and training; quality of the local environment; and the development of social capital.

Regeneration is a strategy for combating social exclusion and is particularly aimed at excluded neighbourhoods. Social exclusion includes poverty, but it also emphasises the isolation of individuals and the marginalisation of communities. The community development dimension of regeneration is concerned with combating isolation, fragmentation, marginalisation and disempowerment. Social capital is a recent theoretical perspective that aims to show the importance of social connections in economic development, community life and general wellbeing.

The concept of social capital emerged from a line of thinking that claimed development depends not only on money (financial capital) and natural resources, but also on education and skills (human capital) and trust between individuals in functioning social networks (social capital). This line of thought has been applied to economic innovation (Granovetter, 1985), flourishing democracy and civil society (Putnam, 1993), as well as communities and neighbourhoods (Coleman, 1988). Trust has emerged as the crucial element in maintaining viable social relations, and trust embedded in networks has been portrayed as three types of social capital. Bonding social capital consists of close networks between people who see themselves as similar to each other and acts as 'social glue' holding a community together. Bridging social capital consists of weaker links between diverse groups and is seen as 'social oil' that facilitates more complex social organisation. Linking social capital are social connections that hook local communities into institutions through regeneration partnerships and funding regimes (Woolcock, 1998; Putnam, 2000). These three types of social capital correspond to different aspects of civil society: bonding corresponds to communities or movements; bridging corresponds to wider civil society; and linking corresponds to governance, including service provision.

Social capital is central to regeneration policy in Britain (for example, the National Strategy for Neighbourhood Renewal in England (Social Exclusion Unit, 2001)), but there are competing definitions of social capital. It has been used to indicate the strength of norms and networks in a neighbourhood (Coleman, 1988) and is thought to reflect both the quality of life in the neighbourhood and the local capacity to act collectively on neighbourhood problems. Social capital can also be used to indicate how individuals use their network connections to access other resources (Bourdieu, 1986). In this form, social capital can be used to indicate the success or failure of community activists in gaining influence in governance structures such as local partnerships (Purdue, 2001). A central (though disputed) claim within the social capital debate is that voluntary associations (such as the Royal Society for the Protection of Birds (RSPB) or Friends of the Earth) and the level of associational membership contribute to generalised social trust, which is good for democracy at a national level (Putnam, 1993).

Community safety is related to social capital. Personal safety clearly has a physical dimension in terms of protection from physical harm and so is a direct extension of physical health. However, community safety is concerned more widely with the incidence of crime and the fear of crime, and takes an area-based focus. Thus, community safety is centrally concerned with mental wellbeing, as well as physical health, but it is also concerned with the impact of local networks and the local environment on feelings of safety. High levels of trust and strong networks in an area are thought to make people feel safer and more confident, and free to enjoy their neighbourhood. High levels of community participation and effective management of local environments are therefore positive contributors to community safety.

The purpose of this research is to show, through a number of case studies, how the Environment Agency contributes to regeneration through its environmental improvement and community partnership projects. This report supports the argument that the Environment Agency can be a valuable partner in regeneration at both a local and regional level.

1.2 Literature review

In the literature review carried out by the University of the West of England (UWE) for the Environment Agency in March 2005, we identified a number of social and economic outcomes of environmental projects. The local economic benefits include: increases in local employment and higher visitor spending; inward investment; and increases in local property prices. Social equity benefits include positive impacts on health, education and leisure opportunities, with environmental projects also contributing to community cohesion, social capital and community safety. Volunteering cuts across these groups of benefits by also contributing to the growth of local economies (Evans and Purdue, 2005).

The creation of additional employment through environmental regeneration is widely discussed in the literature as an important economic impact. There are a variety of jobs in the natural environment sector, such as woodland management, stewardship agreements and conservation jobs (Shield *et al*, 2002). Indeed, the natural environment sector in the UK is estimated to comprise 18,000 Full Time Employment (FTE) jobs (Dickie and Rayment, 2001). Inward investment, particularly in rural areas, can be channelled through conservation organisations, which spend money and generate work in the local area, including through the support of local suppliers and contractors. Conservation organisations spent £384 million in England and £44 million in Wales on nature and landscape conservation in 1991–92 (equivalent to £485 million and £56 million at 2000 prices) (Shield *et al*, 2002). A well-planned, well-managed public space has a positive impact on the price of nearby domestic properties, according to evidence from the Netherlands (CABE, 2003). The amount of green space in wards is the 5th most significant indicator in explaining the variation in average house prices (GLA, 2003). A 1 per cent increase in green space in a typical ward can be associated with a 0.3–0.5 per cent increase in average house prices (GLA, 2003). In a study of the effects of urban parks or green areas on house prices in Spain (Bengochea Morancho, 2003), the researchers found that proximity to a green space does increase house prices, but neither the size of the green space, nor views over green space, have an impact.

Increased spending can occur as a result of environmental improvements, as a result of more visitors being attracted to the countryside for the quality of the environment and spending by conservation organisations (Millar and Maaer, 2004, and Dickie and Rayment, 2001). RSPB nature reserves receive more than 1 million visitors a year, who are estimated to spend £12 million in local economies. This spending is estimated to support more than 3000 FTE jobs in local economies (Dickie and Rayment, 2001).

The health aspects of green public spaces are a dominant issue in much of the literature, which highlights the health benefits – both physical and mental – for children and adults. Access to open green space is claimed to reduce health complaints by encouraging exercise and outdoor activity, thereby saving the NHS money and reducing the number of sick days taken by employees. The Cabinet Office has calculated that the cost of inactivity in England is £8.2 billion for the economy and £1.7 billion for the NHS (Bird, 2004). Initiatives such as health walks and green gyms are using nature as a way of getting people to exercise and lose weight (Nicholson-Lord, 2003). There are approximately 49 green gyms across the UK and more are being developed. There is evidence that green space in an urban environment can improve life expectancy and decrease health complaints. Much of this is thought to be due to having a favourable environment for exercise (Bird, 2004). There is also direct evidence that green space within an urban environment can benefit health and increase longevity (Bird, 2004).

Nature reserves and other conservation work have potential educational benefits (The Wildlife Trust, 2004). For example, a small basic classroom facility has been set up for use by schools and other groups at Thorswood Nature Reserve in Staffordshire (The Wildlife Trust, 2004). Simply being close to open space also improves education. A study of London wards found those with a large amount of green space achieved a better educational performance (GLA, 2003). Education and training is not limited to children, however, and some adult volunteers are being trained in environmental skills and gaining personal development through environmental projects, which can lead to employment (Church and Elster, 2002). Unemployed people develop their skills and experience by working on regeneration projects, such as the environmental training provided by the government's New Deal Programme (Hawkhead, Groundwork website). Community businesses and social enterprises with an environmental theme – such as city farms – offer training, employment and personal development to local unemployed residents.

Environmental projects that include community development strengthen social capital by increasing community pride, bringing communities together and promoting social inclusion. The use of culture to refresh neighbourhoods and to improve the physical environment through good design offers places to go and things to do, and increases local pride and a desire to stay in that place and build local communities (DCMS, 2004). Volunteering in environmental projects can help develop social networks and overcome isolation and the fear of crime in neighbourhoods by putting volunteers in touch with people they would never otherwise have met (Home Office 2004). However, it should be noted that organisations using volunteers do not always have the capacity to manage their volunteers properly, nor do they recruit volunteers from the full social spectrum (Heritage Link, 2003).

Green spaces have multiple uses, including the opportunity for a number of recreational activities such as hiking, walking, camping and angling. In 1994, it was estimated that there were 800,000 salmon, sea trout and trout anglers and 1.1 million sea anglers in England and Wales (Murray and Simcox, 2003). National nature reserves are used for walking and school outings, and as settings for sculptures, photography, painting classes and other activities (English Nature, 2002). Chiesura (2004) conducted a survey of urban park users in the Netherlands and found that urban parks fulfil a range of social and psychological needs, which vary according to age. It has been estimated that 7 per cent of urban park users in England use them for sporting activities (Cabe, 2003).

Many organisations realise that better management of public spaces can reduce the fear of crime and increase community safety. The presence of nearby natural areas has been related to reduced crime, aggression and violence, as well as increased civility, neighbourliness, and pride in communities and urban neighbourhoods (Bird, 2004).

1.3 Research Objectives

Building on the review of existing literature, this research aims to investigate the social and/or economic benefits of three Environment Agency environmental improvement projects in fisheries, flood risk management and river restoration, in order to demonstrate their positive contribution to local regeneration. The case studies look at four types of benefits that can be stimulated by environmental improvements, as identified in the literature review.

- Health improvements through increased recreation.
- Community involvement, social capital and community safety.
- Education and environmental awareness through work with schools/colleges or visitor awareness.
- Local economic impacts through tourist spending and on property prices.

To measure each of these types of benefit, we have collected data from project officers, project users and other relevant stakeholders, where resources allowed.

1.4 Measuring the Benefits of Environmental Projects

Environmental improvement projects may generate a range of social, health, educational and economic benefits. To explore the benefits of environmental projects in a study of this scale, the three case studies each focus on different types of benefit. The local economic benefits resulting from environmental improvements may be assessed from the impact the improvement appears to have on local property prices, or by the volume of trade and new jobs attributable to the project (Dickie, 2004), both of which are used in this study. Yet unambiguous results may be difficult to attain. The impacts of environmental improvements on social capital and community safety may be approached through attitude surveys of project users, as well as stakeholder interviews. Studies of the health benefits of green spaces are usually based on the amount of exercise undertaken by users, which is linked to established research documenting the damage to health resulting from inactivity (Bird, 2004).

The educational benefits of environmental projects may range from improvements in pupils' performance in key stage exams to a broad sense of increased awareness of the environment and changes in attitudes to environmental issues in visitors, which can be measured through visitor surveys. Where projects work with schools (as is the case with one of our case studies), teachers' perception of children's eagerness to use key literacy and numeracy skills is an important indicator of educational benefit. Other indicators include acquiring knowledge of direct relevance to the science and geography curricula and indirect learning, such as increased confidence to engage with public issues and debates.

1.4.1 Case study approach

The case study approach allowed us to observe more closely three different types of environmental projects developed by the Environment Agency: fisheries, flood risk management and river restoration. We could then identify the range of benefits generated by each specific type. Case studies have also been chosen in three very different settings across the UK, including an urban setting in London, rural settings (Wales) and a more semi-urban setting (South Yorkshire). What all have in common is the proximity of local communities affected by socio-economic issues, whether linked to rural isolation (Denbighshire), post-industrial decline

(South Yorkshire and the Welsh valleys) or urban stress (Lewisham). They are therefore all examples of areas where regeneration will be of importance.

In exploring the case studies for these Environment Agency projects (in chapters 2, 3 and 4), we summarise the aim of the research carried out in each case study, and explain the methodology used to investigate the different mix of social and economic benefits appropriate to each case study. Table 1 sets the case studies in their context, showing the locations, the partners involved, the function of the project within the Environment Agency and the kinds of benefits investigated. Thus, in two Environment Agency fisheries projects in Wales, we investigated the local economic and educational benefits respectively. In Lincolnshire and South Yorkshire, two wetland sites developed by the Environment Agency for flood risk management and subsequently managed by the RSPB as bird reserves are used to explore health, educational, community safety and social capital benefits. Finally, an urban park in London, where the Environment Agency undertook a river restoration project, is investigated for the impact on local property prices, community safety and social capital.

Table 1: Case studies

	Location	Partners	Function	Benefits
Clwyd Valley Angling Tourism	Denbigshire, North Wales	Commercial Fisheries	Fisheries	Economic, Tourism
Salmon Homecoming project	Merthyr Tydfil, South Wales	Local Schools, Angling Clubs	Fisheries	Educational
RSPB Freiston Shore	Linconshire Coast	RSPB & local partners	Flood Risk Management	Health, Educational
RSPB Old Moor	Dearne Valley South Yorkshire	RSPB & local partners	Flood Risk Management	Health, Educational, Community Safety and Social Capital
Chinbrook Meadows	Lewisham, London	London Borough Council of Lewisham	River Restoration	Economic, Community Safety and Social Capital

2 Fishing Wales

2.1 Fishing Wales

2.1.1 Background

The Fishing Wales project has received a total of £5.2 million in funding, including EU Objective 1 and Welsh Assembly Government funding. The project aims to link fishing tourism, a high quality environment and the creation of jobs and prosperity in rural areas. The initial partnership brought together the Environment Agency, the Welsh Tourist Board, the Welsh European Funding Office and the Welsh Assembly Government, as Wales was awarded over £2 million of Objective 1 European Regional Development Fund (ERDF) funding by the EU to improve income levels and create jobs in rural areas. The Welsh Assembly Government contributed funds of £2.4m (over 2002–06). Further funding to a total of £800,000 was supplied by public, private and voluntary organisations including the Forestry Commission Wales (FCW), the Countryside Council for Wales, the National Trust, angling clubs, River Trusts and Federations, local authorities, farmers and landowners, individual volunteers, Assembly-sponsored public bodies, fishery owners, angling governing bodies, contractors and suppliers.

Activities of the project include marketing Welsh rivers and fisheries, restoring rivers (building fish passes, improving river and forestry habitats), improving angling infrastructure (providing access to still water commercial fisheries) and work involving the community (angling participation projects with angling clubs and salmon homecoming projects with schools). The environmental benefits of the project will include various improvements to rivers such as in-stream habitat creation, spread over 322km of river habitat. The removal of barriers to fish migration and protection of Welsh natural resources has already resulted in a population increase in adult salmon and trout of 2,000 or more each year. The economic and social benefits include increased tourism linked to recreational fishing in Wales, training for local people in improving fisheries and river habitats, and educational benefits from involving school children in learning about fish and rivers.

Research carried out recently on behalf of the Welsh Tourist Board demonstrates that the Fishing Wales project has already delivered some key benefits to the Welsh economy. People requesting Fishing Wales brochures took a total of 58,687 fishing trips to Wales, worth £69 million to the Welsh economy in 2004–05. Over £27 million of this was directly attributable to the effectiveness of the Fishing Wales marketing campaign by the Welsh Tourist Board.

2.1.2 Aims of the case study research

This case study is intended to capture the educational benefits and economic impacts of the Fishing Wales project in two locations – one in South Wales and the other in North Wales. The case study had two aims.

- To identify the direct and indirect educational benefits of an Environment Agency partnership with local schools and angling clubs in the Salmon Homecoming project and the Angling Participation project in the Taff River catchment in South Wales. This involved educational work with local schools in the area of Merthyr Tydfil, South Glamorgan.
- To assess the economic impacts to tourism businesses from increased visitors and tourism activity due to the promotion of angling through the Fishing Wales project in the

Clwyd Valley, Denbighshire, and around the towns and villages of Denbigh, St Asaph and Ruthin in North Wales.

2.2 Salmon Homecoming and Angling Participation in the River Taff Catchment

2.2.1 Background

The River Taff is formed from three rivers which meet at Cefn Coed, north of Merthyr Tydfil. Before the Industrial Revolution, trout and salmon populated the river. During the 19th and 20th centuries, the area saw the rise of the iron, coal and chemical industries. The habitat was so polluted that by the 1870s all the fish had disappeared from the Taff. Industrial decline in the area over the past 20 years has brought economic deprivation and social problems to the local population, but it has also led to an improvement in the water quality of the river. Today, fish reproduction is self-sustainable in the Taff. The river is recognised by both the Environment Agency and the Welsh Salmon and Trout Angling Association as one of the finest natural Brown Trout fisheries in Britain.

Environment Agency work in the upper Taff catchment has delivered a number of environmental benefits. In particular, the Environment Agency has worked to improve in-stream habitat by removing barriers to fish migration and promoting angling participation. In 2004, the Treforest Weir Fish pass was completed, directly benefiting salmon stock. The key partner working with the Environment Agency in the upper Taff is the Merthyr Tydfil Angling Association (MTAA), whose volunteers have contributed to restoring riparian habitat for trout and salmon and are also partners in the Angling Participation project and in the broader educational aspects of the Environment Agency's work in the area. The MTAA aims to introduce 300 youngsters to angling per year, train 22 angling coaches and deliver 30 angling participation events within local communities. As part of the Fishing Wales project, the Environment Agency has also worked directly with nine schools in the area to develop the Salmon Homecoming project. While it is a small project in terms of funding (£15,000), it has benefited over 1300 school children since 2003. This section is concerned with the educational benefits of these two activities.

2.2.2 Detailed Methodology: Salmon Homecoming project and Angling Participation project, Upper Taff

This case study employed a qualitative methodology, drawing on documentary evidence and interviews with teachers, angling club members and head teachers of schools to identify the educational benefits of the project. Interviews with the Sustainable Fisheries manager and the angling participation officer were conducted, in order to get as much information as possible on the background of the project. These interviews were followed by a visit to the River Taff to examine work carried out by the MTAA and also to talk with two representatives of the MTAA. These interviews allowed us to identify the partnership context in which the Environment Agency Wales operated on the ground, as MTAA was a partner in the improvement of riparian habitat in the Taff. This work helped to ensure good environmental conditions for the Salmon Homecoming project, as well as offering angling opportunities for youngsters who had discovered fishing through the Salmon Homecoming project.

Documentary evidence, including a short film made in one of the schools involved in the Salmon Homecoming project, provided further information about the technical and educational activities that pupils took part in during the project. Three telephone interviews – two with head teachers and one with a science teacher – helped to identify the types of educational benefits generated by the project. Although no pupils were interviewed, their photos, films and examples of their

work helped us to assess the type of benefits that pupils gained through the project. The Fishing Wales Angling Participation project in the Upper Taff was also examined through photos, information supplied by the MTAA and 30 letters sent to the Environment Agency Wales by teachers, community organisations, the local authority and the pupils themselves.

2.2.3 Results: Educational Impact

In winter 2003, the Environment Agency Wales started piloting the Salmon Homecoming project with four schools: Port County Secondary, Tonyrefail Comprehensive, Tonyrefail Primary and Ynyshir Junior School. All were situated in Rhondda, Cynon, Taf, one of the most deprived communities in Wales (Welsh index of deprivation, 2000). The scheme was extended to nine schools in winter 2004, with three of the initial pilot schools very eager to carry on with the project and it will run for the third time during the winter of 2005–06. The project was facilitated by Mid Glamorgan Education Business Partnership. The Salmon Homecoming project, which has a number of educational objectives, was initially designed to raise local primary school children's awareness of an important improvement in their local and regional environment – the return of salmon to the upper Taff after 200 years. This project was only made possible by the completion of the Treforest Weir Fish Pass in 2003. So far, 1300 children have benefited from the Salmon Homecoming project through talks to school assemblies by Environment Agency staff. Some 270 children, mainly at Key Stage 2, have been involved in all the activities.

For Chris Rees of the Environment Agency Wales, the Salmon Homecoming Project is about

“helping community groups and angling clubs to set up their own projects, building knowledge, skills and confidence...”

Other regions in the Environment Agency, such as the Thames Region and the North Wales Region, want to apply the model developed in the Taff to similar projects of their own.

In theory, the Environment Agency acts as a middleman between angling clubs/anglers and schools, with the Environment Agency overseeing the project and the schools delivering the project. In practice, however, the Environment Agency has become more involved than originally intended in the delivery of the project. The schools emphasised that direct contact with Environment Agency staff is more stimulating for children and has a longer lasting educational benefit. Eventually, however, the Environment Agency would like the Salmon Homecoming project to become less dependent on Environment Agency staff input and to be run by the schools and angling clubs, with angling participation following on naturally from the project.

Chronologically, the Salmon Homecoming project includes four stages, each of which has educational impact. This has been demonstrated through pupils' interests, their work, teachers' accounts and the keen eagerness of head teachers to be part of the Salmon Homecoming project or other Environment Agency activities in the future. Table 2 identifies this impact per learning activity carried out. Altogether the project received good feedback from the teachers and angling club coordinators we spoke to, with Sonia Sokalowski (head teacher of Tonyrefail Primary School) commenting that:

“Anyone with opportunity to go into this adventure should go for it with both hands”.

Table 2: Educational impact of Salmon Homecoming project learning activities

Learning Activity	Impact	Evidence
<p>1. Assembly Presentation (whole school) by Environment Agency Wales staff, including:</p> <ul style="list-style-type: none"> • salmon life cycle described • work of the Environment Agency Wales outlined (River Taff restoration) • link between industrial heritage, water pollution and disappearance of salmon explained • negative impact of crime and poaching on the environment described. 	<ul style="list-style-type: none"> • Learning biology in real situation • Awareness of Environment Agency role • Environmental awareness raised • Civic lesson 	<p>Interest of children sustained over several weeks as second Environment Agency visit generates excitement from pupils eager to see their salmon (teachers' account).</p> <p>The Salmon Homecoming project has brought core subjects alive to them (teachers' account). Some children were shocked by facts on the effect of pollution and wanted to help and to learn more.</p>
<p>2. Mini-hatchery set up in school (Key stage 2 pupils) (aquarium with filtration system and cooler).</p> <ul style="list-style-type: none"> • Fertilised salmon ova brought to the school and put into the tank. • Pupils check on tank's temperature • Daily diary writing of progress on computers • Reading further on salmon life cycles and relevant issues • Internet biology and geography resources used • Report writing • Speaking and peer teaching in hall and in small groups about project • Learning that technical aspects of tank maintenance linked to matter of life or death for the eggs • Photos taken • Understanding and carefully wording own questions • Learning to understand better own impact on the natural environment and developing responsibility 	<ul style="list-style-type: none"> • Core KS2 literacy and skills practised in real world situation: <ul style="list-style-type: none"> ○ report writing ○ reading ○ oral presentation skills • Numeracy <ul style="list-style-type: none"> ○ temperatures • ICT skills • Biology/science <ul style="list-style-type: none"> ○ awareness of broader ecological principles ○ questioning • Team building • Confidence building • Civic and environmental awareness • Sense of ownership introduced 	<p>A Science teacher gave her own appreciation that standards in science were being raised thanks to the Salmon Homecoming project.</p> <p>Children also thought that if salmon can travel so can they and the project raised their ambitions.</p> <p>Another teacher told us that the children got emotionally involved and took it on board, by starting to watch the news and learning other facts as their awareness of science and environmental issues grew.</p> <p>Ownership grew as the project evolved and children were very much leading the project by stating what activities they wanted to do next.</p>

<p>The tank is held at school for a month until salmon hatched and became free swimming.</p>		
<p>3. Free swimming fish transferred to Environment Agency Wales Cynrig fish culture unit (hatchery) (to be raised before stocking the river).</p> <ul style="list-style-type: none"> Children visited the hatchery and to see how it works. 	<ul style="list-style-type: none"> Further awareness of Environment Agency work Awareness of broader ecological principles 	<p>Video and photos, reaction of children and teachers' account.</p>
<p>4. Fish release in river</p> <ul style="list-style-type: none"> Children take fish to the river They stock them in the stream outside their school 	<ul style="list-style-type: none"> Learning biology in real situation Awareness of broader ecological principles Awareness raised of human impacts on environment 	<p>Teachers recollect mixed emotion amongst the children as the salmon are released.</p> <p>In one school, the fish were released in a river next to the school and children discovered how polluted the river banks were. The head teachers recollect that the children were appalled and Rhondda Council was later asked by the school to clean up the river banks.</p> <p>It was an eye opener for the children who all come from very poor areas in Wales and have little opportunity to take part in environmental projects.</p>

The Salmon Homecoming Project generated spin-off activities, including a documentary film shown on the regional TV channel, work displays by children, bringing the project home to parents and siblings, and developing the children's taste for angling.

Table 3: Educational impact of spin-off activities from the Salmon Homecoming project

Learning Activity	Impact	Evidence
<p>Documentary film</p> <ul style="list-style-type: none"> Broadcasted twice on "Grassroots" on the regional ITV channel Project highlighted to the children's families Mock school talk prior to the filming. 	<ul style="list-style-type: none"> Better knowledge of media – how documentary filming works Reflection of importance of self, Salmon Homecoming 	<p>Lack of self-esteem is a key problem for valleys' children and anything that will improve their confidence is seen as positive by head teachers.</p>

<ul style="list-style-type: none"> • Children participate in filming 	<p>project, school and area</p>	
<p>Follow-on work at school and at home</p> <ul style="list-style-type: none"> • Posters in school • Children talk to parents 	<ul style="list-style-type: none"> • More practice of core literacy skills • Environmental awareness raised 	<p>Oral feedback in at parents' evenings was very positive, according to head teachers. Parents saw the documentary on TV.</p>
<p>Angling participation</p> <ul style="list-style-type: none"> • Tonyrefail Primary school had a one-day course at the local lake organised by a local angling club 	<ul style="list-style-type: none"> • Confidence building • Awareness of new leisure activity • Awareness of opportunities in local area 	<p>Feedback from angling club organisers, Environment Agency staff and teachers.</p>

A head teacher described the project as “*marvellous*” and said that it broadens the outlook of children (Tonyrefail Primary School). According to another head teacher (Caedraw Primary School):

...the Salmon Homecoming project activities allowed children to understand issues relating to the regeneration of our rivers. It also provided a valuable scientific biology project to extend their awareness of life cycles and habitats

A science teacher commented that “*it (the salmon homecoming) was a project that we’d like to repeat.*”

Feedback from Key Stage 2 children was also very good. Some of their comments included:

- “*(the Salmon Homecoming Project was) ...really good fun...*”
- “*...really good experience...*”
- “*...salmons are amazing creatures...*”

An 11 year old from a science club wrote about releasing the fish in the river:

“I enjoyed the day. It was great fun and I would like to be in this project again. I know the way the salmon live. Chris, Roger, Mike and Selwyn were great and I would like to repeat the day again.”

The Environment Agency Wales would also like to focus on the angling participation side of the Salmon Homecoming project. Four angling days were organised in 2005 in the River Taff, introducing about 120 school children to angling. For Chris Rees, the future of the project must lie in more independence for schools and angling clubs. He said that Environment Agency Wales’

“emphasis in future will be on helping community groups and angling clubs to deliver their own projects, building knowledge, skills and confidence, as well as better sustainable fisheries for all.”

Science curriculum:

- Scientific enquiry is learnt by children through studying the salmon life cycle.
- Health and safety is learnt through setting up and maintaining the mini-hatchery, as well as other activities linked to manipulating the fish and going to locations outside school grounds.
- Children develop their knowledge of a living thing, as well as apply their theoretical knowledge of life cycle to a real life case study.
- They learn about the positive and negative impact of their own behaviour and of scientific and technological developments on the environment.
- They use a range of different sources to enquire about the salmon life cycle.
- They develop their ability to find, exchange and share information.
- They develop their ability to review, modify and evaluate their care of salmon's eggs.
- They planned the different stages of their work for the case study.
- They learn to communicate what they have learnt both orally and through written work, working either individually or in groups.

Geography curriculum:

- Children investigate a variety of places linked to the salmon life cycle.
- They learn about environmental changes to these places by examining how salmon became extinct in the river and learning about global warming.
- They carry out investigations inside and outside the classroom by visiting the site of salmon reproduction.
- They develop investigation skills by using a variety of resources, including globes, maps and internet resources, to find out the route covered by salmons during their life.
- They learn about the use of water, and about rivers and environmental changes, including pollution, through the case study and visits to their local river.
- They learn about their local environment and their own impact on it.

English curriculum:

- The children adapt their writing to a science case study situation, using new technical or technological vocabulary.
- They learn to write differently to suit different purposes and audiences: posters, oral presentation, diary, written report, letters, video.
- They develop their skills for group discussion and interaction through class discussion on planning for the project and reporting about it.
- They learn a new use for language and new media.

ICT curriculum:

- They use various internet resources to learn about salmon life cycle, pollution, maintenance of a mini-hatchery and the various places visited by salmon during their life.
- They develop skills to use various software packages to support their work, including Word, PowerPoint, and graphs and databases.
- They learn to handle information.
- They learn about the quality of the information found on the internet.

2.2.3.1 Upper Taff Angling Participation project

Following on from the Environment Agency Wales work on conserving and restoring fish stocks, as well as completing the Treforest Weir Fish pass, the Environment Agency Wales angling participation officer has been working with local angling clubs through the Upper Taff Angling Participation project. The MTAA is a key local partner for Environment Agency Wales in the Upper Taff, as the MTAA owns the fishing rights to the River Taff and the Treforest Weir Fish Pass. The project was funded (£5,000) by the Environment Agency under the Sustainable Fisheries Project, with added funds from the Sports Council for Sports Development. This is a pilot project aimed at increasing young people's participation in angling, a priority set by the Sports Council for Wales. The Environment Agency Wales put its angling equipment at the disposal of the new anglers and, from 2002–04, 300 boys and girls were introduced to angling.

An objective of the project was to give young people an opportunity to get to know their local environment and to enjoy it through angling. The project comprised three main stages.

- Training new angling coaches, initially to a Level 1 qualification and later to Level 2.
- Organising introductory days for children of primary school age at the Bedlinog Fishing Lake, where Environment Agency Wales staff taught them basic angling skills, water safety and environmental awareness, and where the children were able to try out different types of fishing in their local area with local coaches.
- Children were able to attend events staged by their local fishing club at a venue closer to where they live. These club-led events were open to others, both young and old, within the local community and utilised the club's own store of fishing equipment.

The MTAA has been a key partner in this activity, with advice from the Environment Agency Wales. The partnership, which brings together Environment Agency Wales resources, the knowledge of angling club volunteers and the expertise of the coaches from the Welsh Angling Coaching Foundation, has been a dominant factor in the success of the project.

The enthusiasm of all the participants – including Environment Agency Wales staff, angling clubs and children – was apparent through the number of letters received by the angling participation officer. A small sample (30) of the many letters that children and teachers sent to Environment Agency Wales were examined and they were all extremely positive. Some of the comments from teachers and youth associations are detailed below.

(Angling day)...has given the children and ourselves a respect for the sport of angling and an awareness of safety and environmental issues with regards to rivers and lakes (Year 5 teachers, Pontyclun Primary School)

Lots of pupils expressed an interest in taking part in fishing in the future (Lifelong Learning Section, Education Department, Torfaen County Borough)

(Angling is a)...fantastic activity for the pupils and it proved very popular

...This (angling day) is clearly the way forward in terms of highlighting the fishing industry, and partnership working...Young people were absolutely delighted with the amount of one to one support they received; this was highlighted in their behaviour and attitude throughout the day (Duffryn Community Link, Newport)

...young people gained many new skills (Youth Team, 3Gs Development Trust, Merthyr Tydfil)

...The children really enjoyed the day...new experience for most of them. Following that three boys went to Cwmbran Angling training day...We would like to pay a visit to your hatchery at Brecon as part of geography environment project (Teacher, Abersychan School).

In addition, pupils from Pontyclum and Caedraw Primary Schools made the following comments in their letters.

- *My day at Cefn Mablley was the best of my life*
- *I had a wonderful time at Cefn Mablley lakes...I saw a seven pound fish and an eel...*
- *I had a whale of a time because I learned how to fish...It was a roach...*
- *I wish I could fish every day*
- *So far it has been the best trip we have been to.*

2.3 Angling Tourism in North Wales

2.3.1 Background: Clwyd catchment, Denbighshire

The Clwyd catchment is the second largest river discharging into the Irish Sea along the North Wales coast. It is near the major conurbations of Abergele, Rhyl and Prestatyn, which rely heavily on tourism. Inland, within the Clwyd catchment, the market towns of St Asaph, Denbigh and Ruthin are supported largely by the surrounding farming communities, including fish farming. Several angling clubs use the River Clwyd, where their predominant catch is salmon and sea trout. In some tributaries, however, migration is restricted due to impassable barriers, such as weirs. Within the Fishing Wales programme, the Environment Agency Wales's tasks included improving angling infrastructure (access, stiles, platforms for disabled anglers, signs) and river habitat (for instance a fish pass was installed at Bontuchel, opening up 19km of habitat, and riparian habitat was developed to improve fish population). This work was complemented by education and community involvement. This included: two river habitat training courses, which benefited 36 Clwyd anglers; seven fisheries management seminars for angling clubs and landowners; and a school Salmon Homecoming project at Cyffylliog Primary School, where 20 children benefited from the scheme.

2.3.2 Detailed methodology: fishing tourism in the Clwyd Valley

The aim of this part of the case study was to investigate whether the promotional work and improvements to the fishery infrastructure had increased fishing tourism in the Clwyd Valley. We chose this area as it is one of the less well known areas of Wales for fishing and therefore any benefits associated with the project would be conservative compared to other areas in Wales. A survey was carried out in October 2005.

The case study methodology needed to quickly and accurately assess the impact of these two aspects of the Fishing Wales project on tourism businesses in the Clwyd Valley area. The most appropriate means of assessing this micro-project was to approach businesses directly. We obtained a sample of tourist businesses using the map-based search engine 'Google Local', finding hotels, fisheries and pubs in the areas of Denbigh, Ruthin and St. Asaph. Of the businesses contacted, 31 agreed to take part in the survey: 12 hotels, eight fisheries, eight pubs, one fishing tackle shop, one fishing coach and one self-catering holiday cottage owner. We then carried out telephone interviews, using a questionnaire that asked about changes in the number of fishing visitors and their business activity over the past two years.

2.3.3 Economic impact

The overall effectiveness of the Fishing Wales marketing campaign has been demonstrated at macro-level for the whole of Wales through research by the Welsh Tourist Board. Figures showed that those requesting Fishing Wales brochures took 58,687 fishing trips to Wales, which were estimated to be worth £69 million to the Welsh economy over the year 2004–05. The research further demonstrated that almost 40 per cent of this was directly attributable to the campaign itself (Environment Agency, 2004). As these figures apply to the whole of Wales, caution must be used when assessing the specific economic impact of the Clwyd catchment project, given its size (micro-project) and location (away from beaten tracks and with difficult access, not in a high profile Welsh site). However, the marketing campaign and angling infrastructure improvements, such as working in partnership with commercial fisheries and fishing clubs to increase signage, car parks, tracks, paths, platforms and pegs, is already showing some signs of economic benefits, including increased visitor numbers and spending in the local economy in the short term. Table 4 presents the results of the survey.

Table 4: Impact on the local tourist economy

	Number of businesses	Percentage of sample
Businesses who have had some visitors coming to fish in the past	17	55
Businesses who have seen an increase in people coming to fish since 2003	13	42
Businesses whose turnover has increased since 2003	12	39
Businesses that had taken on new staff since 2003	10	30
Businesses reporting that 75 per cent or more of their employees live locally	30	97
Businesses started up since 2003	4	13

Cross referencing the results shows that:

- 17 businesses (55 per cent) had some level of fishing tourism in the past;
- 13 of these (42 per cent of the sample) had seen an increase in people coming to fish since the inception of the project in 2003;
- 11 of these 13 businesses (35 per cent of the sample) had experienced an accompanying increase in turnover.

Thus over a third of businesses interviewed had experienced an increase in the number of angling tourists since the project was launched and have consequently increased their income from tourist spending.

2.4 Key Findings

2.4.1 Educational Benefits

The Salmon Homecoming project covers some key aspects of the school curriculum, especially contributing to the knowledge, skills and understanding of the following subjects at Key Stage 2:

- english literacy
- maths/numeracy
- science/biology
- geography
- ICT.

In addition, the Salmon Homecoming project also helped children to develop generic skills useful for their learning, including:

- self-confidence
- awareness of and confidence in their local area
- civic awareness
- environmental awareness at both local and global levels.

2.4.2 Economic Benefits

The survey of local businesses in the Clwyd catchment further confirms the national research carried out by the Welsh Tourist Board that marketing and angling infrastructure work has benefited the local economy in the short term, as reflected in positive responses from over a third of the businesses interviewed.

3 Sustainable Flood Risk Management

3.1 Aims of the research and common methodology

This case study focused primarily on social benefits, such as health benefits from recreation and leisure use, education awareness, social capital and community safety. Social benefits were captured quantitatively through a use and attitude survey. The visitors' survey was carried out at the RSPB reserves Freiston Shore and Old Moor over the period September to October 2005. A total of 160 visitors were interviewed: 70 at Freiston Shore reserve and 90 at Old Moor reserve. The questionnaire was designed to identify:

- the profile of the visitors to both reserves;
- potential health benefits provided by both RSPB reserves from increased physical activity and time spent in tranquil settings;
- benefits to social capital from the reserves and visitors' perception of community safety;
- the pattern of learning and behaviour in both reserves due to better environmental awareness.

In addition to quantitative information, visitors were also encouraged to explore their attachment to the reserves as local places of significance to their communities along the following themes.

- Whether the creation of the nature reserve made them feel differently about their local area?
- Whether they felt they had learnt anything about wildlife or natural habitats from their visit(s) there?
- Whether coming to the nature reserve made them more generally aware of environmental issues or influenced them to do anything differently?
- What they liked about the place?
- Whether they would visit it again and why?

3.2 RSPB Old Moor

3.2.1 Background: RSPB Old Moor

The Dearne Valley lies between Barnsley and Doncaster and is a former coalfield area of mining villages set within a mainly rural landscape. Since the decline of the coal industry, significant public resources have been invested in land reclamation, transport and infrastructure, job creation and community regeneration in the Dearne Valley, as it is critical to the performance of the sub-region. The Dearne Valley has been designated a Strategic Economic Zone, with local authorities responsible for the continued regeneration and promotion of the area under the guidance of the South Yorkshire Coalfield Partnership.

The valley supports a number of floodplain wetlands of both national and local importance. These wetlands are closely linked to the area's mining heritage, as many were created by mining subsidence or directly by land restoration. The Environment Agency has made substantial improvements to water quality in the River Dearne and restored natural river habitats, benefiting wildlife and fish, and creating a better place for informal recreation. To complement the river restoration, the Environment Agency aims to restore floodplain wetlands. The Dearne Valley

offers an ideal place to do this, because the Environment Agency owns a series of flood-storage washlands, many of which are intensively farmed with no wetland value. The Environment Agency is working with many partners towards a joint aim: *'To promote the Dearne Valley Wetlands and associated habitats to ensure their wise, integrated and sustainable management to benefit wildlife, people and the landscape'*.

The 250-acre Old Moor is one of four sites owned by the Environment Agency in the Dearne Valley. It was created as part of the Wath Manvers colliery restoration and lies at the heart of the wetlands. Barnsley Metropolitan Borough Council (MBC), through its Planning and Transportation Services, Countryside Group, has been responsible for promoting the development of the Old Moor Wetland Centre since the late 1990s. The Environment Agency is working with the RSPB on a five-year project (2002–08) to improve the visitor centre at Old Moor, bring existing wetlands into more favourable management and create new wetlands. The Dearne Valley is included in a national Memorandum of Understanding (2000) between the Environment Agency and the RSPB. Following on from its river and wetland restoration work, the Environment Agency is contributing about £40,000 to managing the site, along with staff time and loss in rental income from the Environment Agency's agricultural tenants of about £8,000 a year. The project will deliver approximately 300ha of wetland, including 175ha of grazing marsh and 40ha of reedbed. These are priority habitats in the UK Biodiversity Action Plan (BAP), and the Dearne Valley will account for 3 per cent of the UK target for reedbeds and 1.8 per cent of the UK target for grazing marsh.

The Environment Agency has a number of specific objectives for this project.

- To increase the biodiversity value of flood storage washlands in the Dearne Valley by restoring land to traditional floodplain habitats and bringing existing wetland habitat into better management for wildlife.
- To deliver BAP targets for reedbed, floodplain grazing marsh and eutrophic standing water. These habitat targets will also help to achieve BAP targets for species such as bittern, otter, water vole and a number of wetland bird species.
- To deliver better access for the public to Environment Agency owned sites.
- To manage Environment Agency land in a more sustainable and environmentally acceptable way.

RSPB is the lead partner in the partnership and is raising the £3.45 million required for the five-year project. Of this sum, £620,000 will come from RSPB funds, £100,000 from trusts and business partners and £2.56 million from grants, including from Barnsley MBC, the Heritage Lottery Fund, Yorkshire Forward, EU Life fund and Waste Recycling Environmental (WREN). The RSPB is providing an education programme, adult training, and improved access, including better access for disabled visitors, as well as employment, leisure and tourism. In 2004, the builders of Old Moor Wetlands Centre won both Barnsley MBC's Design and Site Stewardship Awards and National Awards for the high quality of the refurbishment work of a derelict farmhouse, piggery, visitors centre, education wing and toilets, plus maintenance work on a garage. The RSPB are also working to ensure that energy and resource use is sustainable, installing a wind turbine, photovoltaic solar panels, solar water heating, water recycling and a woodchip burner at Old Moor. The centre is intended to provide a working example of best practice for sustainable development.

Old Moor reserve is situated near urban areas and close to the Transpennine Cycle Trail, which also links Old Moor to the other two RSPB Dearne Valley reserves – Gypsy Marsh and Wombwell Ings. Old Moor has compact but comprehensive visitor facilities including a large parking area offering coach bays and bicycle racks, a visitors' centre, five hides, viewing platforms, an outdoor play area for young children, picnic area, seminar rooms for business or training activities, and an indoor classroom for curriculum-linked activities for primary school

children. It has developed a programme of nature-led activities, including bird watching for beginners, dragonfly and butterfly walks, pond-dipping, 'mini-beasting' and other science-based activities. It is also easily accessible to less mobile visitors with two mobility vehicles and a lift to the café, while the furthest hide is half a mile from the visitor centre, providing a round trip walk of 1.6km. The Cyclist Touring Club, South Yorkshire and North Derbyshire District Association, voted the café as the best cyclist café. The reserve has a broad range of users and the shop at Old Moor caters for gardeners and cyclists, as well as bird watchers. Old Moor also offers a great mix of habitat for a variety of birds all year long, including open water, marsh, reedbeds and grassland. It offers a good spread of activities for bird-watchers with passage wading birds, wintering wildfowl, tree sparrows and golden plovers, and the Dearne Valley is generally a good breeding area for birds.

The number of RSPB members has increased substantially and new members come from within a 10–20 mile radius. The database shows that site visitors increased from 13,000 to 20,000 in the first year, and then to 45,000 in 2003 and 55,000 in 2004. A recent report by Sheffield Hallam University estimated visitor spending associated with Old Moor at over £600,000 per year. Staff also increased from five FTE in 2003 to 17 FTE in 2005, most of whom are local people. The café tries to source its food from local farms, using local free range produce and fair trade food. There are also about 50 volunteers working at the site.

The RSPB is attempting to make community engagement with the Old Moor reserve more inclusive than is usually the case for bird watching. It has created passports for socially-excluded visitors (for instance, the unwaged in Doncaster, Rotherham, Sheffield and Barnsley, as well as disabled people and their carers) that allow them to be admitted free. The reserve has also won lottery money to work with children from deprived areas. The money funds a life-long learning manager, a community officer, and visitors' officers, as well as travel bursaries. The whole team of field teachers (either paid by RSPB or volunteers) deliver a successful programme, together with Barnsley MBC, based on key stages 1 and 2, and the children often return to visit with their parents.

3.2.2 Methodology: Old Moor

The methodology was developed to assess:

- the visitor profile;
- why visitors were attracted to the reserve;
- the health impact of the reserve;
- the social capital building impact of the reserve;
- the impact of the reserve on community safety;
- the environmental learning and behaviour impact of the reserve.

Qualitative and quantitative methods were utilised at the Old Moor site, as the reserve has a more structured organisation, with commercial activities developed through a shop, a café and conference facilities and the proximity of the cycle path. In addition, as Old Moor is situated at the fringe of a very deprived urban area, capturing the social capital benefit of the reserve was a very relevant task.

The following quantitative data were collected.

- Information on group and individual visitors were obtained from the managers of the site.
- Visitors and representatives of community groups were asked to define how the reserve supports the local community.
- Visitors were asked how safe they felt in the reserve.

In addition to quantitative data, four interviews were carried out to investigate further the social capital and health benefits of the reserve. Two local community partnerships, as well as the local Primary Care Trust (PCT) and a voluntary health organisation, were contacted and asked to identify:

- the types of activities conducted by their members/target group at the Old Moor wetland reserve;
- the types of benefits resulting from these activities;
- and the overall perception of the site.

They were further asked whether they:

- recommended the site to other people or other groups.

3.2.3 Old Moor Results

The results of the survey carried out at Old Moor between 29 September and 20 October 2005 are presented below, together with the results of the qualitative research at the Old Moor site, organised into the areas of physical and mental health, social capital, community safety and educational benefits.

Visitor profile

The 90 responses from the Old Moor survey allowed us to identify the visitor profile. As many men and women visit Old Moor and 95 per cent of them are aged over 30. The vast majority of visitors are either working or retired (not unemployed) with no noticeable pattern in employment type. The vast majority of visitors described their ethnicity as British, White or English and 10 per cent stated a disability. Around 95 per cent of visitors use a car/motorbike or car share to visit the site and 51 per cent of visitors live within 10 miles of the reserve, while another 32 per cent live between 10 and 30 miles.

Why are visitors attracted to the site?

The leading motivation of those surveyed for visiting Old Moor was to see wildlife (58 per cent), followed by walking and getting exercise (28 per cent). The reasons visitors gave for why they like to visit Old Moor, together with the main examples given by respondents, can be split into six key features (see Table 5).

Table 5: Visitor motivations at Old Moor Reserve

Facilities	Environment	Proximity	Wildlife	Health	Safety
Café Parking Hides Shop	Art work Friendly Clean Friendly staff Peaceful	Local place Easy access	Range of birds Habitat Good variety of birds	Exercise Feel good Calm, friendly, relaxing	Enclosed area

There was only one negative point made about the creation of an enclosed area, which was mentioned several times by visitors. This was that the opening hours are limited to the average

working day, which limits bird watching time in the early morning and the evening, especially during the summer.

Physical health benefits analysis

The Old Moor site offers a 2km walk for visitors. This suggests that visitors can derive physical health benefits through taking exercise as a result of the creation of the reserve. Table 6 compares visit frequency before and after the reserve was created, and also looks at whether visitors' use of other sites changed. This allows us to identify whether the creation of the reserve resulted in an overall increase in physical activity for visitors.

Table 6: Visitor frequency at Old Moor

	Number of respondents	Percentage of sample
Total sample size	90	
Useable sample size	90	100
Respondents visiting site more frequently	55	61
Respondents who visit more frequently but also visit a substitute site less frequently (displaced activity)	10	11
Respondents for whom increase in visits is net increase in physical activity (no reduction in frequency to substitute site)	45	50

For those 45 visitors for whom their increase in visits is a *net increase* in physical activity, their combined visits to Old Moor reserve can be broken down as shown in Table 7.

Table 7: Total visits of those with net increase in physical activity (n=45)

	Number of visits per month by the 45 visitors who show a net increase
Previous total visits per month (before reserve created)	16.5
Total current visits per month since reserve created (over 30 minutes in length)*	98.5
Net increase in total visits per month over 30 mins in length	82

* Average length of visit time is over two hours, but not all this time will be spent walking because of shop & café

In addition to the visitor survey, qualitative interviews were undertaken with the Healthy Living Advocate of the Barnsley Healthy Living Centre (HLC) and the Physical Activity Lead Officer of

Barnsley PCT (Health Promotion), to provide some feedback on the health impact of the Old Moor site. Both organisations look for sites offering short walks for 'novice' walkers and Old Moor's 1.5 mile path offers them ideal walking length and conditions. The members and clients of both organisations live in Barnsley and nearby in areas of multiple deprivation, which receive regeneration funding (such as the Single Regeneration Budget). They are made up of people of all ages, including families with young children, who are encouraged to take part in more physical activities. Old Moor ran an initial pilot walk for a group from the Healthy Living Centre, which now sends groups of about 20 walkers to come independently on walks.

The reserve staff at Old Moor also organised activities for the 2005 Barnsley Walking Festival's 'Million steps in May', a health campaign led by the local PCT, which encourages people of all ages to take up walking. The PCT also trains volunteer walk leaders to accompany and encourage people to walk at Old Moor, amongst other places. Indeed, as Old Moor is close to Barnsley town centre it is a good destination for the PCT's healthy walking promotion service. The reserve is seen as a vital and strategic element in helping to increase and promote physical education amongst the population. In deprived communities, many people generally struggle to motivate themselves to be active. Old Moor, through offering a range of activities and a pleasant environment, can help to motivate people to be more active and to experience something new (Interview, Barnsley PCT).

According to the Healthy Living Centre and the local PCT, many health benefits have resulted from Old Moor. People are fascinated by Old Moor, want to go back and some have joined the RSPB. An additional advantage of the site is that it is very accessible for the disabled and people with push chairs. Both HLC and PCT recommend the site to other walking groups and individuals across Barnsley. However, there is no direct access to the reserve by public transport. The closest local bus services (from and to Barnsley, Doncaster, Mexborough and Wath) stop half a mile away from the reserve and the closest train stations are three miles away (Wombwell and Swinton). Individual visitors are likely to travel to the site by car, while funded walking groups use their own mini-buses.

Mental Health

Eighty-seven per cent of Old Moor visitors stated that they felt better because of their visit to Old Moor (64 per cent were calmer/more peaceful and 23 per cent were happier). In virtually all cases, respondents stated that ***seeing wildlife played a very important or quite important role*** in this improvement. The mental health aspect also includes confidence building, which is significant as low self-esteem is considered to be 'a risk factor in depression, suicidal behaviour, being bullied and eating disorders' (Emler, 2002, cited in Griffiths, 2005). Low self-esteem is also connected to a reduced ability to initiate and develop social interactions (Murray-Mohammed and Guite, 2004) and consequently has a negative impact on developing the supportive social networks that constitute an important feature of social capital in regeneration. The value of the green exercise available at Old Moor is also supported by previous research, which found that a range of types of green exercise have beneficial impacts on self-esteem (Countryside Recreation Network, 2005).

In addition, local organisations that we contacted also praised the fact that Old Moor gives people living in deprived areas a place to visit for quality time with their families, with activities for all ages (Interviews with Barnsley PCT, HLC, Cudworth and West Green Community Partnership and Grimthorpe, Shafton and Brierly Community Partnership).

Educational Impact

Old Moor is contributing to visitors' understanding of and behaviour towards wildlife in general. In our survey, **67 per cent of visitors felt that they had learnt something about wildlife or natural habitats** from their visit. In addition, 38 per cent of people stated that they were now more aware of environmental issues or had been influenced to do something differently as a result of visiting.

The RSPB outreach programme attempts to counterbalance the tendency of Old Moor to attract visitors who are already knowledgeable about wildlife and environmental issues. It aims to appeal to broader constituencies of visitors by offering a range of learning experiences to different age groups. The outreach programme is funded through a five-year lottery grant (2004–09) and aims to create opportunities for informal education at Old Moor and encourage action to support wildlife in local residents' own gardens. The **outreach programme has so far attracted 1015 visitors in the past year**. Many different groups have been targeted including pre-schools and schools, youth groups (cubs and brownies) and community groups (adults, Rotary, Women's Institute, family learning, anyone in the area). Different activities are aimed at different target audiences, but they are all focused on the opportunities created by the wetlands, which are an unusual environment to many of the target groups.

Table 8: Old Moor Educational Benefits

Target groups	Educational Activities
Schools	Promotion of national RSPB initiatives: <ul style="list-style-type: none"> • such as feed the birds The idea is that children take the message home
Youth groups	<ul style="list-style-type: none"> • record breaking birds (smallest, fastest) • road shows and follow-up • sponsored walks
Community Partnership Neighbourhood Learning Nets have developed, linked with Old Moor	<ul style="list-style-type: none"> • help children and adults of deprived areas gain more informal education • help people spend quality time with their families in an interesting place • mini-beasts • pond dipping • photography • bird watching • mini-safari walks
Community groups	<ul style="list-style-type: none"> • community talks on history of the site to all local groups • follow-up group visits to Old Moor

Educational benefits have come about through more formal education for children, as it allows projects from school to be brought to life and contributes to encouraging children to practice core skills, as well as providing information relevant to the science curriculum. For adults, it is more hands on and less formal learning, with more focus on increasing their confidence and making them aware that Old Moor is an educational resource for the community that offers new experiences for children and adults.

Social Capital

Social capital refers to the strength of social networks and the level of trust between people in a community or neighbourhood. Actions that lead to increasing social capital (such as strengthening networks and improving mutual trust) improve the capacity of a community to solve problems. The survey assessed aspects of social capital in relation to visitors to Old Moor in terms of:

- their links to other groups (which are nodes of social networks);
- their level of trust of each other;
- whether the reserve plays a part in making them feel part of the community more generally.

In the qualitative interviews, local organisations were asked to assess if Old Moor contributes to increasing social capital by reaching out to local communities, and, if so, how.

Bonding Social Capital: individual visitors' appraisal of Old Moor

Respondents to the visitors' survey at Old Moor recorded a high level of social capital on all the measures we questioned them on, as shown in Table 8. Just over 50 per cent of people were members of environmental groups or community groups with links to the reserve. While 44 per cent of people stated that using the reserve made them feel part of the local community, all respondents, whatever their age or gender, said that they trusted other visitors. Around 85 per cent felt other visitors were 'generally trustworthy' and 15 per cent felt they were 'fairly trustworthy'. Here we may conclude that the way the reserve functions contributes to bonding social capital in that those with an interest in visiting it both trust others who have similar interests and have organisation networks related to the reserve that connect them to others.

Table 9: Measures of Social Capital

Measures of Social Capital	Percentage of sample
Members of environmental or community groups	50
Reserve made feel part of the community	44
Found other visitors to be Trustworthy	100
Generally Trustworthy	85
Fairly Trustworthy	15

Bridging and Linking Social Capital: building community capacity through outreach to the local community

In addition to the survey, social capital was examined through the activities developed by Old Moor to reach out to the local communities and by requesting feedback from groups participating in the RSPB reach-out programme. Old Moor is situated amongst areas with high scores on the index of multiple deprivation, with a range of regeneration funding available from Office of the Deputy Prime Minister (ODPM), the Learning Skills Council (LSC), EU objective 1 structural funds and Yorkshire Forward (Regional Development Agency). This includes a two-year pilot project funded by ODPM/LSC as a national test bed for community learning, which uses Old Moor as part of its activities.

The outreach programme attempts to engage socially-excluded local groups by working through local community partnerships and their Learning Net managers. The main aim of these community partnerships is to increase educational opportunities for adults and their families, including parents, in the local community. Their target groups are people who generally need more skills, adults with no qualifications, unemployed people, ethnic minorities, and people with no transport or access to formal education. There are twelve learning nets across Barnsley and at least five of them use Old Moor.

The outreach programme has received good feedback from the four local organisations contacted (Barnsley HLC, Barnsley PCT, Cudworth and West Green Community Partnership and

Grimethorpe, Shafton and Brierly Community Partnership). Old Moor is considered to be an important place on the doorstep of many deprived areas, not just as a nature reserve but as a good place to visit. It was felt that, while some people would not think it was for them as they are not bird watchers, there is in fact something there for everyone. Once local communities with little previous interest in walking and wildlife get to know Old Moor, the reserve appeals to them and local organisations are keen to bring more people to the reserve. The two learning nets were very positive about Old Moor, which they see as offering wide ranging opportunities and facilities, having very knowledgeable and friendly staff and delivering programmes at the right level (adapted to different audiences, including children). The field instructors were thought to meet the needs of the socially excluded groups.

While our survey questioned individual visitors on their motivations for using the site, the outreach programme uses Old Moor as a site where more diverse groups meet and engage with institutions such as funded partnerships. While these contacts may be quite weak, it indicates that Old Moor is being used to grow at least embryonic forms of bridging social capital (that is trust and networks across social boundaries between mainstream and excluded groups) and linking social capital (developing a network of productive contacts of socially-excluded groups with institutions that can deliver goods and services to them). For example, the confidence building work and re-integration of excluded adults back into the educational system and the development of a sense of ownership of environmental resources by local people, through working with local agencies or voluntary sector organisations based in deprived neighbourhoods.

Community Safety Impact

Community safety is concerned with the impact of local networks and the management of the local environment on feelings of safety. High levels of trust and strong networks in an area are thought to make people feel safer and therefore more confident and free to enjoy their neighbourhood. This is relevant to an area such as the Dearne Valley, which has been affected by the closure of pits and loss of employment in traditional industries. A number of wards in Barnsley and Rotherham suffer from multiple deprivation, including Dearne Thurnscoe ward (ranked 94 out of 8414 in the 2000 indices of multiple deprivation). Such areas tend to lack public space in which the full range of local residents may feel safe. Instead, public space is often characterised by anti-social behaviour, which can be particularly intimidating to older residents, but can also affect a wider range of people.

People do feel safe at Old Moor. One component of community safety is fear of crime versus degree of trust towards others in the location. As we have pointed out previously, all respondents, whatever their age or gender, stated that they thought other visitors were ‘generally’ or ‘fairly’ trustworthy. New visitors in our sample were asked how safe they felt and people who had visited before the reserve was created were asked if they felt safer since its inception. All new visitors said they felt safe, with 87 per cent feeling ‘very safe’ and 13 per cent ‘fairly safe’. Overall, the creation of the enclosed reserve and the improvements to the visitors' centre have been welcomed by visitors and have added to the feeling of security. Of the respondents who had visited Old Moor before it had become a reserve, 59 per cent felt safer since the reserve opened, (21 per cent much safer and 38 per cent a bit safer) and the rest indicated ‘no change’, as shown in Table 10.

Table 10: Level of community safety perceived by visitors (n=86: four people did not answer this question)

	Degree of Safety	Number of Respondents	Percentage
New Visitors		52	100
	Very Safe	45	87

	Fairly Safe	7	13
People visiting the site before the reserve opened		34	100
	Much safer than before	7	21
	A bit Safer	13	38
	No Difference	14	41

Of the respondents who had visited Old Moor before it became a reserve, the reasons given for the increase in safety included 'better community', 'better management', 'car parks' and 'less risk from air rifles', as shown in Table 10.

Table 11: Reason for improvements in Community Safety

Reason for improvements in community safety	Percentage
Better community	39
Better management	29
Car parks	11
Used to get people with air rifles	11
Other or not answered	10

Over 50 per cent of respondents stated that they may have been discouraged from attending in the past because of various factors (see Table 12).

Table 12: Factors discouraging use of the wetland prior to the reserve

	Percentage of sample
Discouraged from attending in the past	51
Due to antisocial behaviour	40
Due to personal safety issues	6
Due to dog fouling	3
Due to litter	2

So, while the creation of the reserve has limited daily access to bird watching (the reserve is open from 9:30am to 4:00pm from November to January and 9:30am to 5:00pm the rest of the year), it has improved the sense of security given to visitors and local people interested in bird watching and nature trail activities. It also offers a peaceful haven for local groups coming to visit and use the site. Fear of crime or feelings of community safety will vary according to the specific context, and according to the social group that is making the judgements of safety. Clearly it is difficult to assess the impact of increased safety in an enclosed reserve on perceptions of community safety in the neighbouring areas, especially as Old Moor is not in the centre of a community. There is also a problem in measuring displacement of potential anti-social behaviour from a well managed site to other, less organised public spaces. However, Old Moor does provide a safe space for some people to enjoy their leisure time and to increase their feeling of being part of a community of interest. Old Moor cannot replace community safety strategies and activities in, for example, Barnsley, but it does complement such work.

3.3 Freiston Shore

3.3.1 Background

At Freiston Shore in Lincolnshire, the Environment Agency, in partnership with RSPB, Boston Borough and Lincolnshire County Council, HM Prison North Sea Camp and English Nature, is managing an innovative project, the Boston Wash Banks, which links flood defence and conservation. Altogether 800 sq km of Lincolnshire coast (low lying fenland including Boston, villages and agricultural land situated 3m or more below surge tide levels) is protected by the flood defence improvement scheme. In 1996, the Environment Agency was looking for an eco-friendly solution to improve the earth banks that had been constructed around the shore of the Boston Wash to protect settlements. It developed the Wash Shoreline Management Plan (1996), which offered both effective sea defence and conservation. Following several studies, a £1.2 million Wash Banks managed realignment project, covering 8km of Lincolnshire coast, started to take shape. It is, so far, the largest such project in the UK. Work was necessary to improve the standard of sea banks, as their alignment had weakened over the years and they were not considered safe anymore. Both realignment and reinforcement of the sea banks was deemed necessary. Banks were strengthened and a new cross bank built in 2000, and 50m-wide cuts were made through the outer sea bank in 2002, which enabled tides to enter nearly 89ha of land through a creek system. The area reverted to a salt marsh and inter-tidal mudflat that created a sea defence and an inter-tidal habitat.

The scheme was funded by a number of sources, including grant aid from the Department for Environment, Food and Rural Affairs (Defra) and the Lincolnshire Flood Defence Committee, and received almost £800,000 from the European structural funds through Objective 5b. The 733ha reserve at Freiston Shore is part of the conservation enhancement element of the project and provides a mixed habitat for breeding, roosting and wintering water birds. A 12ha saline lagoon has been created from the 'borrow area' used for sourcing the material for the flood defence works. Other improvements include the provision of one new car park and one improved car park at Freiston Shore to enable viewing of the salt marsh and the lagoon, a new bird hide and improvements to a cycle route that passes by Freiston Shore.

One of the aims of the project was to support economic regeneration and rural tourism. The RSPB estimates that around 60,000 people visited the reserve per year, up from an estimated 11,000 in 2001, and supporting an estimated six FTE jobs in the local area. The reserve is not accessible by bus or train, but is situated a few miles from the National Cycle Network and cycle storage is available. The sole bird hide is accessible for wheelchair users, as are other parts of the reserve in good weather, and it has a good reputation as a bird-watching site. Altogether, Freiston Shore offers a 1.8km circular walk and, as from January 2005, a new wetland trail 4.8km in length became available.

3.3.2 Freiston Results

The 70 responses from the survey carried out at Freiston Shore in September 2005 allowed us to identify the profile of visitors. Out of our sample of visitors, 58 per cent were men and 42 per cent women; 95 per cent of them were over 30 and 66 per cent over 50. The vast majority of visitors were either working or retired (not unemployed) with no noticeable pattern in employment type. The vast majority of visitors described their ethnicity as British, White or English and 10 per cent stated a disability. Around 95 per cent of visitors used a car/motorbike or car share to visit the

site. Sixty per cent of visitors visited Freiston Shore to walk and get exercise, while the second main reason for visiting was to see wildlife (26 per cent).

Why are visitors attracted to the site?

The reasons why visitors like Freiston can be divided into four categories.

Table 13: Visitor motivation at Freiston Shore

Environment	Wildlife	Health	Safety
Openness Beautiful area Natural environment	Birds	Calm, peaceful Exercise (walking)	Like minded people Protection against flood defence

Freiston Shore health benefits analysis

Health benefits have accrued from the creation of the reserve, which offers an approximately 2km circular walk. Table 14 compares visitor frequency before and after the reserve was created, and also looks at whether visitors' use of other sites changed. This allows us to identify whether the creation of the reserve resulted in an overall increase in physical activity for visitors.

Table 14: Net activity in at Freiston Shore

Total sample size	70
Useable sample size	62 (8 didn't provide information on previous visit frequency)
Respondents visiting site more frequently	24
Respondents who visit more frequently but also visit a substitute site less frequently (displaced activity)	4
Respondents for whom increase in visits is <i>net increase</i> in physical activity (no reduction in frequency to substitute site)	20 (32 per cent). Of these 9 had never visited area before the reserve opened.

Table 15 shows more detail for the 20 visitors reporting net increases in physical activity.

Table 15: Net increase in activity at Freiston Shore (n=20)

Total previous visits per month (before reserve created)	4.5
Total current visits per month since reserve created	124
Total visits per month over 30 minutes in length	86

Net increase in visits per month over 30 mins	81 (18 times as many visits over 30 mins in length after the reserve created than before)
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Educational Impact

Freiston attracts visitors who already have a good knowledge of environmental issues, and wildlife and habitat in particular. It is also contributing to visitors' understanding of and behaviour towards wildlife in general. In our survey, 60 per cent of visitors feel that they have learnt something about wildlife or natural habitats from their visit. Freiston is more successful at changing attitudes towards the environment than Old Moor: 46 per cent of visitors said that visiting Freiston has either made them more aware of environmental issues generally or influenced them to do something differently vis-à-vis the environment. One major reason given was that people had learnt more about flood defence and coastal erosion. Freiston is also more successful at making people feel differently about wildlife and natural habitat (35 per cent compared to 27 per cent at Old Moor). At both Freiston and Old Moor, this is mainly because their visit has taught them more about wildlife and natural habitats.

3.4 Key Findings

3.4.1 Old Moor

- The leading reason why visitors come to the reserve is the desire to see wildlife (58 per cent), followed by to walk and take exercise (28 per cent).

Health

- The short walk (1.5 mile) is appealing to novice walkers.
- Creation of the reserve has led to a net increase in physical activity for 50 per cent of visitors, who tend to stay more than 30 minutes and often much longer.
- The variety of activities available at the site has attracted the interest of local agencies and voluntary sector organisations.
- 87 per cent of visitors feel better thanks to their visit to Old Moor.

Social Capital

- New recreational assets for all ages.
- Improved access and enjoyment of a quality environment.
- Just over 50 per cent of people stated that they were members of environmental groups or community groups with links to the reserve.
- 44 per cent of people said that using the reserve made them feel part of the local community.

Community Safety

- 100 per cent of respondents said that they thought other visitors were 'generally' (85 per cent) or 'fairly' (15 per cent) trustworthy and that they felt 'very safe' or 'fairly safe'.

- 60 per cent of respondents feel safer since the reserve was enclosed and staffed.
- 36 per cent of those using the reserve more frequently now were previously deterred because of antisocial behaviour and/or personal safety concerns.

Educational Impact

- 67 per cent of people stated that they had learned something about wildlife or natural habitat, with a strong emphasis on birds.
- 38 per cent of people stated that they were now more aware of environmental issues or had been influenced to do something differently by their visits to Old Moor.
- Local community groups place great value on the informal learning experience provided by Old Moor.

3.4.2 Freiston

- The leading reason for visitors to come to the reserve is to walk and exercise (59 per cent), followed by the desire to see wildlife (26 per cent).

Health

- The creation of the reserve has led to an increase in net activity for 32 per cent of visitors, 86 per cent of whom tend to stay for more than 30 minutes.
- 64 per cent of visitors feel calmer and 26 per cent happier following their visits to Freiston.

Educational impact

- 60 per cent of visitors feel that they have learnt something about wildlife or natural habitats from their visit.
- 35 per cent visitors feel differently about wildlife and natural habitat as a result of their visits to Freiston.
- 46 per cent of visitors said that visiting Freiston had either made them more aware of environmental issues generally or influenced them to do something differently vis-à-vis the environment.

Table 16: Comparison of results for Old Moor and Freiston

Visitor attitudes in percentages	Old Moor	Freiston
Sample size	90	70
Visiting to see wildlife	58	26
Visiting to take exercise	28	59
Health benefit: net increase in physical activity	50	32
Mental health: feel better	87	90
Feel calmer/more peaceful	64	64
Feel happier	23	26
Education: have learnt new information about wildlife and natural habitats	67	60
Education: have changed their attitudes to environmental issues	38	46

4 Restoration of the River Quaggy

4.1 Case Study Description

4.1.1 Background

Chinbrook Meadows in the London Borough of Lewisham is a large linear park that follows a length of the River Quaggy, a tributary of the River Thames in south-east London. Prior to restoration work, the river was contained in a straight concrete channel though most of the park. The Green Chain Walk ran alongside the concreted river and the park also had dilapidated sports facilities, including a cricket pitch on one side of the straightened river and tennis courts on the other side.

In 1995, the Quaggy Waterways Action Group (QWAG) proposed 'Operation Kingfisher' to restore the natural habitat of the River Quaggy. This included 14 sub-projects, one of which was the restoration of the River Quaggy in Chinbrook Meadows. QWAG contacted Lewisham Council and the National Rivers Authority, and Lewisham Council agreed that restoration of the river could be considered for inclusion in plans to regenerate Chinbrook Meadows as a public park.

In 1999, the Environment Agency promised £250,000 to ensure that the river was restored. After consulting local people, overwhelming support for the restoration of the river was secured and in 2000 a partnership was formed. This partnership oversaw the project to regenerate the whole park, including the restoration of the river, and raised funds to enable the works to go ahead. The partnership included Lewisham Council, the Environment Agency, QWAG and Glendale Grounds Management, which is contracted to manage the parks and their facilities in the borough of Lewisham. Glendale works in partnership with Lewisham Council to improve the accessibility and quality of parks and open spaces. Lewisham Council also supported the creation of a park user group for Chinbrook Meadows. The user group meets regularly to promote further improvement of the park, particularly with respect to environmental and safety aspects.

In October 2002, the work to restore the River Quaggy in Chinbrook Meadows was completed. The concrete channel, with its fence and hedge, were removed to make space for a low maintenance open river running in a natural riverbed and allowing more space in the park for other amenities.

4.1.2 Aims of the research

The varied social and economic benefits of well-managed urban green space featured significantly in the literature reviewed for this project. This case study sought to identify the social and economic benefits of river restoration in the Chinbrook Meadows park, including:

- improved community safety;
- social capital building;
- property price increases adjacent to the park.

4.2 Social Benefits

4.2.1 Methodology: visitors survey

A survey was conducted, which involved interviewing 80 park users. The purpose of the survey was to ascertain the impact of the river restoration on:

- use of the park;
- people's feelings of safety in the park;
- appeal of park to the local community.

While quantitative data were sought, the questionnaire also allowed visitors to comment on:

- the areas where safety had improved or worsened;
- the way they felt that the river had transformed the park;
- the contribution of the river restoration to the local community;
- what they liked best about the park.

4.2.2 Results

4.2.2.1 Profile of visitors interviewed

Eighty questionnaires were completed on 25 and 26 October 2005. The profile of visitors was as follows:

- gender balance 50:50;
- 26 per cent were aged 30 or under – 33 per cent were aged between 31–50 years;
- 50 per cent were in work – 22 per cent were retired – 13 per cent were house people;
- 88 per cent expressed their ethnicity as 'white', 'English' or 'British';
- only one person indicated a disability;
- 97 per cent had lived in the area for more than three years;
- 80 per cent of visitors walked to the park, while 14 per cent used a car or motorbike;
- 53 per cent spent 30 minutes or more in the park, and 23 per cent spent an hour or more;
- 40 per cent visited the park on a daily basis, 79 per cent once or more a week and only 6 per cent were occasional users.

4.2.2.2 Aesthetic and community impact

Out of the total sample of 80 visitors, 69 were able to recall what the river looked like prior to restoration. These comprised our key respondents, as they were able to record their responses to the changes in the park and its relationship to the local community. Since the river restoration:

- 30 per cent of people interviewed visited the park more frequently;
- 38 per cent spent longer per visit;
- 89 per cent of visitors indicated that the river restoration had improved the park;
- 75 per cent thought that the river restoration had encouraged more people to visit the park.

Our survey showed that 55 per cent of current visitors use the park for walking or walking their dog, 14 per cent for sport and 8 per cent to see the river and/or wildlife. Visitors' comments suggest two main reasons why people may visit the park more than before: the impact of the river restoration itself and the accompanying development of the sports facilities. Each reason can be further divided into the sub-categories summarised in Table 17 below.

Table 17: Motivations for increased park visits

Uses of the park	Impact of river restoration	Sport facilities
<ul style="list-style-type: none"> Walking or dog walking (55 per cent) Other sports (14 per cent) To see the river or the wildlife (8 per cent) 	<ul style="list-style-type: none"> Friendly park, river attracts families and hence might attract other like-minded people More aesthetically pleasing park (nice, looks better...) River appeals to children, and use of river by children (more kids with fishing nets, kids in river...) Wildlife/fish Curiosity 	<ul style="list-style-type: none"> Tennis and football, more used during holidays A green walk Sports facilities appeal to children

Eighty-nine per cent of respondents indicated that opening up the river had improved the park. Visitors seem to have made the link between the improved tidiness and cleanliness of the park with the river opening up, rather than with the establishment of park wardens who regularly patrol and clean the park. The main positive consequences of the river opening up, as given by these 89 per cent, are summarised in Table 18.

Table 18: Positive attributes of River Restoration: respondents' comments

Improve aesthetic value of the park	Wildlife	Safety improvement	Attraction to children	Value added for local community
<ul style="list-style-type: none"> Openness More to look at More interesting Decking More natural Cleaner Water Wildlife and flowers Environmentally friendly 	<ul style="list-style-type: none"> Birds Fish Dragonflies Hérons 	<ul style="list-style-type: none"> Removal of concrete channel Openness 	<ul style="list-style-type: none"> Pond dipping Wildlife Birds Water Interesting Nature reserve educational for children 	<ul style="list-style-type: none"> Aesthetic of the park Nature in urban area Attractive to all ages, especially children Educational

Negative comments focused on the easier access of children and animals to the river and the dangers associated with the park absorbing flood waters.

- Mud (for dog owners), especially when flooding.
- Safety for children, with the park too dangerous during flooding.

When asked what they liked best about the park, the sense of space resulting from the removal of the hedge and fences around the canalised river topped the list of answers. Other reasons can be put into the following categories.

- Openness – sense of space
- Aesthetically pleasing
- Range of activities (sports, tennis courts, river, football cages)
- Relaxing place, peacefulness
- Convenience
- Park wardens
- Cleanliness
- Wildlife
- Friendliness of visitors.

Community Safety

Evidence suggests that the opening up of the river has helped improve the safety of the park, with 20 per cent of respondents reporting fewer personal safety concerns since the river was restored and the park regenerated. Improvements in lighting across the park appear to be a major reason for people feeling safer, but several people complained that some sections of the park (along the edges) were still not lit brightly enough. A clear result was the reduction in various anti-social activities since the river restoration, as reported in Table 19.

Table 19: Respondents perceptions of changes in behaviour in Chinbrook Meadows since completion of the river restoration

Respondents perceptions of change in behaviour in the park	Percentage of sample
Reduction in litter	56
Reduction in graffiti	43
Reduction in dog fouling	36
Reduction in anti-social behaviour	20
Fewer personal safety concerns	20

Responses concerning ongoing anti-social behaviour referred mainly to mini-bikes. For those who reported less anti-social behaviour, mini-bikes remain a key issue. Twenty per cent of the visitors surveyed felt that the reduced incidence of mini-bikes in the park could be attributed to the factors summarised in Table 20.

Table 20: Anti-social behaviour in Chinbrook Meadows

Reduction in anti-social behaviour due to:	Remaining anti-social issues
<ul style="list-style-type: none"> • Wardens doing a good job • Gates have limited size of bikes 	<ul style="list-style-type: none"> • Mini-bikes • Loud voices, drinking, graffiti and yobs (each mentioned once)

4.3 Property price impacts

The aim of this part of the case study was to determine whether the restoration of the River Quaggy in Chinbrook Meadows had increased property prices close to the park. We attempted a Delphi study, approaching property professionals working in the case study area.

We obtained expert opinion on the impact of Chinbrook Meadows on property prices by identifying the estate agents operating in the case study area (Grove Park in Lewisham, south-east London). An internet search identified six estate agents selling property in the area and we undertook a short telephone interview with each of them.

We initially sought to obtain information on property types and locations in the case study area. The hypothesis to be tested was whether the impact of the improved green space on property prices will be highest close to the park and then diminish as distance from the park increases. We also attempted to establish some approximate increase in house value due to the restoration work. So that we could compare like-with-like prices, we also asked the experts to identify similar property types.

We wrote a letter to estate agents with a map of the area asking them the following questions.

- To identify the most common types of property in the study area.
- To identify on the map three areas around Chinbrook Meadows that are:
 - (a) on the park;
 - (b) a street or two away from the park;
 - (c) further away from the park.

(The areas were chosen to be as unaffected as possible by other factors such as proximity to shops, train stations, busy roads and schools.)

- Estimate average prices for each of the three areas across different types of property.

In the small-scale telephone survey we asked the estate agents two questions:

- Do you think Chinbrook Meadows has a positive effect on property prices in the area?
- Do you mention Chinbrook Meadows as a plus point when selling property in the area?

The survey produced mixed results. In answer to the first question, four of the six estate agents answered that they did not think that the restoration of Chinbrook Meadows had particularly had a positive effect on property prices in the area. Two estate agents said they thought it might have an effect on properties on the road directly bordering the park (Amblecote Road). One said they thought that property prices in the area were overshadowed by the transport links into the city centre provided by the nearby Grove Park railway station. However, in response to the second question, all six estate agents said that they would mention the park as a benefit when selling properties in the area, especially for properties on Amblecote Road. Two of the agents said they mention that

“it’s a nice park and people want somewhere to go and get a breath of fresh air”

and that they

“sell the benefits of not being over-looked by other properties and the peace and quiet.”

4.4 Key Findings

Use of the park

- 40 per cent of respondents to the survey use the park on a daily basis.
- 79 per cent use the park once or more a week.
- only 6 per cent are occasional users.

Aesthetic and Safety impact

- 89 per cent of visitors indicated that the river restoration had improved the park.
- 75 per cent thought that the river restoration had encouraged more people to visit the park.
- 20 per cent reported fewer personal safety concerns since the river restoration.
- Respondents perceived that there had been a reduction in various anti-social activities since the river was restored.
- The two main reasons why people visited the park more than before the river restoration were the river opening up and the new sports facilities.
- When asked what respondents liked best about the park, the sense of space topped the list of answers.

Impact on property price

- There was no specific identifiable impact on house prices, although local estate agents mention Chinbrook Meadows as a plus point when selling property in the area.

5 Analysis and Discussion

The chosen case studies show the range of environmental and institutional contexts in which the Environment Agency has developed its work, both urban (Chinbrook Meadows) and rural (Freiston and Denbigh). But the Environment Agency's contribution also extends to working in areas that have gone through profound social and economic changes and are still looking for a sense of purpose. Impact on the environment through coalmining in the Welsh valleys (Taff) and in South Yorkshire (Old Moor) has been dramatic in the past and has left scars on the landscape. Industrial restructuring in the 1980s has alleviated some of the negative impacts on the environment but has left communities struggling economically. Environment Agency projects in the Welsh valleys and Yorkshire aim at restoring environmental balance and also contribute to the regeneration needed in a number of areas across the UK.

5.1 Social/Community Impact

While very different in nature and location – one creating wetlands on the edge of a deprived urban area and the other opening up of a river in metropolitan London – both Old Moor and Chinbrook have two common features that emphasise the impact that environmental projects can have on local communities and on community building. These are:

- partnership working;
- multiple community benefits.

5.1.1 Partnership working

The Environment Agency has worked to assist other bodies such as the RSPB in Old Moor, and QWAG and Lewisham Council in Chinbrook Park. In Old Moor, the work of the Environment Agency has created an environment that provides more opportunities for key local social and voluntary organisations to introduce their clients to a natural environment and increase their environmental awareness. The RSPB must be credited with developing the outreach and school programme, but the creation of the wetland for flood risk management was done by the Environment Agency.

The Environment Agency's work at both Old Moor and Chinbrook has been structured within a funding partnership that has brought together key parties within a multi-level and multi-sector context. Through this partnership, the parties have developed environmental projects that clearly benefit local regeneration of inner city districts and areas that have suffered from economic restructuring. It has led to the creation of an environment that can cater for a range of visitors, rather than simply bird watchers or dog owners. According to 75 per cent of people surveyed, the opening up of the river in Chinbrook has led to more people visiting the park and the restoration started a partnership that achieved the wider regeneration of the park, including the renovation of sports facilities, lighting and the introduction of a warden. At Old Moor, the RSPB's strategy is to develop different sets of objectives for different audiences, but this was only made possible by the creation of the wetlands.

Partnership working, through Environment Agency funding, has also rewarded civil engagement in environmental projects and the work carried out by QWAG and the Friends of Chinbrook, which is the local user group.

5.1.2 Multiple Community benefits

Environment Agency work has led to cross-cutting benefits that can bring added value to regeneration projects, including proximity to a high quality natural environment, and health and educational benefits.

Environment Agency work has specifically enhanced projects aimed at 'local' communities. In Old Moor, 51 per cent of visitors surveyed travelled less than 10 miles, while in Chinbrook 60 per cent of visitors surveyed travelled for five minutes or less to reach the park and 89 per cent for 15 minutes or less. Local community organisations in Barnsley also emphasised the proximity of Old Moor as an advantage for their target groups.

Proximity to a natural and scenic environment is important, especially in areas of multiple deprivation where local communities have fewer opportunities, time and money to travel outside their local urban area. It is important because it allows deprived communities to access a peaceful environment. In Old Moor and Freiston, visitors from a cross-section of the population have given 'peaceful, calm, quiet' as reasons why they are attracted to the nature reserve. Around 90 per cent of people stated that they felt better because of their visit (64 per cent were calmer/more peaceful and 25 per cent were happier). In Chinbrook as well, the relaxing and calm environment was given as a reason why people visit the park. Old Moor and Chinbrook give local communities in poorer areas the chance to visit a relaxing place. In virtually all cases, respondents also stated that seeing wildlife played a very important or quite important role in this improvement.

Old Moor and Chinbrook also give the local population a nearby place to go for both mental and physical health reasons. Old Moor is used by local organisations whose primary aim is to make people from poorer areas take up walking in an aesthetically pleasing environment. Their target groups are people who are either obese or suffer other health problems and have little knowledge of the health benefits of walking. In turn, the variety of activities these people experience in Old Moor makes them better appreciate the site and gives them more reasons to carry on walking and coming to Old Moor with their families. Old Moor allows them to spend quality time and caters for all generations. The same can be said of Chinbrook, where walking is supplemented by the natural environment created by the river restoration. Children play in the river, and herons, meadow flowers and the openness of the site offer walkers a varied environment.

The educational value of Environment Agency work in both Old Moor and Chinbrook is also an added value for visitors, and again offers local communities a place for informal or more formal learning experiences. In Old Moor, programmes around wetland themes aimed at various ages and local communities serve the local population and can be used as pilots for projects that can be emulated in other nature reserves. Feedback from users is therefore important.

The health, educational and environmental benefits of Environment Agency-sponsored projects have also been enhanced by other partnership actors like the RSPB or Lewisham Council. The Environment Agency, RSPB, Lewisham Council and other actors and funding bodies can learn from each other regarding what works and what does not work in regeneration.

5.2 Community Safety

Community safety was a particularly important impact of Environment Agency work at Chinbrook and Old Moor. According to our survey, visitors' perceptions were that the changes to both sites had improved community safety. Two points must, however, be raised. Firstly, visitors' perceptions were based on their own experience at the site and were not necessarily linked

exclusively to Environment Agency work. In Chinbrook, visitors mentioned that the opening up of the river, as well as wardens, better lighting and a different gate system, helped to improve safety. Indeed, more people in the park, drawn from a wider profile of user groups including young families, also added to the perception of improved safety. In Old Moor, 58 per cent of visitors felt safer since the creation of the reserve. They mentioned the better sense of community created by the reserve, as well as its management and the car park, as key reasons for improved safety. Hence, the Environment Agency's work alongside its key partners (Lewisham Council for Chinbrook, Barnsley MBC and RSPB at Old Moor) has contributed to producing a better and safer environment. Here, partnership was also of the essence.

Secondly, in the case of Old Moor, aiming for improved safety can be an ambiguous aspect of regeneration. Indeed, the feeling of safety is being conveyed implicitly by the fencing of the reserve and the creation of the visitors' centre, which channels all visitors. While this has created a feeling of 'safer community' and good management, wetlands regeneration should not only aim to benefit bird watchers and people able to afford the entry cost to the reserve. The RSPB is trying to address the issue of access to the reserve and its outreach programme has demonstrated this commitment. The Environment Agency's work in the Dearne Valley has proven that wetlands can be an interesting and stimulating environment for all ages in the local community.

5.3 Educational Impact

Educational impact has been clearly demonstrated in the Salmon Homecoming and Angling Participation projects in South Wales. The range of educational benefits can be divided into three main categories:

- direct impact on delivery of the curriculum;
- indirect benefit of confidence building;
- raising civic and environmental awareness.

5.3.1 Direct impact on delivery of the curriculum

The Salmon Homecoming project has contributed to the delivery of the school curriculum, in particular at key stage 2. Four subjects have benefited from Environment Agency staff input and the Salmon Homecoming case study: science, geography, English and ICT. The case study has particularly contributed to improving children's knowledge of the salmon life cycle, and the geographic places and environments that a salmon crosses throughout its life. It has also enhanced their vocabulary and introduced them to new media as well as new resources and ICT programmes. The project has contributed to the children's understanding of the processes of reproduction and life cycle, of global and local phenomena, of causal links between human activity and environmental changes and of ICT processes. Finally the project has helped children develop a number of skills: enquiry; developing ideas; exchanging information; using technical vocabulary; and using computer programmes.

5.3.2 Indirect impact of confidence building

Both the Salmon Homecoming project and the Angling Participation projects helped the children build other more generic skills useful for their own development and learning outside the classroom. The Salmon Homecoming project gave the children a feeling of ownership over their river and their fish, hence building their confidence and self-esteem. The children learnt that they

can participate in re-populating the river. The Angling Participation project also gave the children a better understanding of the opportunities available in their own local area, thereby helping to promote a more positive local image and giving them more confidence in their ability to shape their own future.

- **Self esteem** – the children developed their confidence and self esteem by: learning to work in a team; understanding the impact of human behaviour on salmon populations and the natural environment more generally; and learning how to improve fish populations and protect their river and water quality. They also learned that they too can participate in a new sport and catch fish.
- **Pride in their own environment** – the children learned positive aspects of their own local environment, especially that the river can be a source of life and that it can offer a range of leisure activities. This is important as their local environment is often associated with negative images of pollution and dereliction.

Marian Thomas, science teacher at Tonyrefail primary school, commented that the *"children got emotionally involved and took it on board, they started watching the news, learning about other facts and increasing their awareness of science."*

5.3.3 Raising Civic and Environmental Awareness

The Salmon Homecoming project and Angling Participation project also helped to develop a link between the project and the local community. A TV programme on the Salmon Homecoming project was shot in two of the schools and broadcast on regional TV twice in the same year. This meant that the community at large learnt about the project and it made the children feel that they were involved in an important project. Angling participation days also taught children to behave responsibly by emphasising a sustainable approach to angling where fish are released back into their local river.

- **Civic awareness** was developed by learning about environmental crime and pollution of the river through human activity and by taking responsibility for re-introducing life to the river. Hence civic awareness and responsibility is very much linked to the children's local environment.
- **Environmental awareness** was developed by all the above activities and by learning about more global issues of climate change and pollution through studying the salmon's life cycle.

5.4 Health

The Walking Your Way to Health initiative, which is sponsored by the NHS, the British Heart Foundation, the Countryside Agency and the Big Lottery Fund, suggests that walking, regardless of intensity, is a healthy activity since it helps to burn calories and is also a positive influence on self-esteem (Countryside Recreation Network, 2005). Organised walks, whether or not they are intense, can influence the health of individuals by allowing them to socialise and improve their health through a good social network. Organised walks also offer distractions from everyday stresses that can be a detriment health. Both Old Moor and Freiston offer opportunities for individuals and groups to improve their mental and physical health by offering a safe place for interesting walks and other nature-related activities. Past research has also shown that social deprivation leads to higher stress and bad health through a number of contributing factors,

including low employment, high crime rate, poor housing and poor health care (for instance, see Mitchell, Shaw and Dorling, 2000). Old Moor, situated among deprived communities, can offer local residents a place to learn to exercise and improve their health.

5.4.1 Mental Health

Previous research commissioned by the Environment Agency (Peacock *et al*, 2005) surveyed the literature to demonstrate that stress and mental ill health are increasing, and that depression in particular is becoming a major health problem. Mental health is also a risk factor for a series of severe physical health problems such as heart disease. As argued previously, lack of self-esteem is also linked to depression, and a range of physical health and social issues.

Consequently, the positive impact of 'green exercise' (experiences of natural environments and various types of exercise including walking and fishing) on happiness, positive moods and increased self-esteem (Peacock *et al*, 2005) is a major health benefit provided by environmental projects. Across both Old Moor and Freiston, 90 per cent of people stated that they felt better thanks to their visit, 64 per cent were calmer/more peaceful and 25 per cent were happier. In virtually all cases, respondents stated that seeing wildlife played a very important or quite important role in this improvement. Of course, respondents to this survey chose to go to Old Moor and Freiston and it is to be expected that they would feel positive about their visits to the reserves. However, further interviews demonstrated that local community partnerships, the local PCT and voluntary health organisations actually chose to bring members of deprived communities to Old Moor, because the reserve offers local communities access to a different environment and allows them to spend qualitative time with their children or in a group.

5.4.2 Physical well-being

Regular walking is recommended to avoid poor health and to help in the treatment of a series of ailments such as hip replacement, diabetes, arthritis, asthma, high blood pressure and heart conditions. Government guidelines recommend five sessions of 30 minutes moderate exercise, such as walking, a week to achieve real physical health benefits (DoH, 2004). The Walking Your Way to Health initiative recommends regular walking, even non-strenuous walking, as the best form of exercise.

Old Moor and Freiston are used by both individuals and group walkers. Our research showed that slightly fewer than half of respondents stated that they used the reserve specifically for walking. Of those, 25 per cent stayed between one and two hours and 75 per cent stayed longer than two hours. While Freiston is mainly used for walking (59 per cent), with wildlife second (26 per cent), Old Moor is mainly used for seeing wildlife (58 per cent), with walking second (31 per cent). Visitors surveyed clearly used the reserves for health purposes and 51 per cent of all respondents visited either area more often since the nature reserves opened. This equates to:

- an additional visit per week for a third of the visitors to Freiston Shore;
- and an additional visit per fortnight for half the visitors to Old Moor.

Of course, even those respondents coming to the reserves for watching wildlife and to participate in nature-related activities will be able to benefit from walking and being in a natural environment. Freiston offers a 2km walk and Old Moor a 1.8km walk. While not offering a long walk, it must be emphasised that Old Moor is situated in close proximity to areas of multiple deprivation, and hence offers more deprived communities the opportunities to exercise in a pleasing environment.

To be a key actor in regeneration, it is crucial that Environment Agency projects also reach people who are not aware of the health benefits of walking, those who have no time for it and

those who live in poor surroundings. The stronger preference for walking at Freiston is not unexpected, as Freiston has no visitors' centre and is free to visit, and offers no other activities outside bird watching. Although bird watchers seem to be the largest group at Old Moor, the reserve is also used by local groups situated in the Dearne Valley to introduce people to walking in nice surroundings. For organisations whose primary aim is health promotion, such as Barnsley HLC and the local PCT, Old Moor is definitely on their map as a place to bring local communities of poorer districts of Barnsley back to health. The advantage of Old Moor is that it is close to local communities, and offers a range of activities for those not used to walking and who might find it boring, as well as a safe environment.

Walking is not only recommended for physical well-being but can also help reduce depression, stress and provides help to people with learning difficulties by building their confidence, making them aware of their surroundings and improving their communication skills.

5.5 Economic Impact

5.5.1 Tourism

Research has demonstrated that across the whole of Wales, through marketing and improvement of angling infrastructure, Fishing Wales, which started in 2002, has already made a contribution to the Welsh economy. We were interested in the local or micro-level impact of the programme and our investigations found that:

- 55 per cent of businesses surveyed have had some level of fishing tourism in the past;
- 42 per cent had seen an increase in people coming to fish since the inception of the project in 2003;
- and 35 per cent had experienced an accompanying increase in turnover.

Thus, over a third of businesses interviewed had experienced an increase in the number of angling tourists since the project was launched and had consequently also increased their income from tourist spending.

5.5.2 Property prices

Whilst estate agents do use Chinbrook Meadows as a positive aspect in the sale of housing, we were unable to discern any clear impact of the river restoration project on property prices. The Environment Agency might develop new insights into the impact on house prices by undertaking further research work in the area of Hedonic Pricing in the housing market. Such results may be transferable between Environment Agency project locations for future use. Alternatively, a more cost-effective route may be found in the Benefit Transfer literature.

6 Research Objectives and Conclusions

Regeneration policy aims to improve the wellbeing of communities along a series of dimensions, including: physical and mental health; safety from crime and fear of crime; economic prosperity; level of education and training; quality of the local environment; and the development of social capital. This research investigated the social and/or economic benefits of three Environment Agency environmental improvement projects in **fisheries** (Merthyr Tydfil and Denbigshire, Wales), **flood risk management** (Freiston Shore, Lincolnshire and Old Moor, Dearne Valley, Yorkshire) and **river restoration** (Chinbrook Meadows, Lewisham, London), in order to demonstrate their positive contribution to local regeneration.

The case studies used a mixture of quantitative and qualitative research methods, including surveys of project users (in Old Moor, Freiston and Chinbrook), interviews with stakeholders (in Merthyr Tydfil, Old Moor and Chinbrook), a telephone survey of local business (Denbigshire) and a telephone survey of housing experts (Lewisham). This combination of case studies and methods allowed us to focus on four types of benefits of regeneration that are stimulated by environmental improvements, as identified in our review of the existing literature in the field. These are:

- education and environmental awareness through work with schools and visitor awareness;
- health improvements through increased recreation in green spaces;
- enhancing social capital and community safety in local communities;
- local economic impacts through tourist spending and increasing property prices.

The research has shown that improving the environment does indeed have significant and measurable benefits on people's wellbeing and quality of life. The following paragraphs offer some conclusions on the key findings of the project.

'Creating a Better Place' – delivering Corporate Strategy commitments

The findings of this project demonstrate that the five case studies helped the Environment Agency to deliver key corporate strategy commitments. The findings also show that Environment Agency work, and environmental improvements generally, can contribute to different aspects of regeneration, each of which engages with wider Governmental priorities.

- *A healthy environment* – access to high quality, well-managed natural environments is beneficial to the mental and physical wellbeing of adjoining communities. Environment Agency projects provide access to 'green exercise', which combines physical exercise and exposure to the natural environment with some support to build self-esteem. This provides both physical and mental health benefits, which together are relevant to government health priorities such as reducing heart disease, obesity and depression.
- *Addressing inequality* – environmental education projects in deprived communities help children learn a range of Key Stage 2 topics and develop life skills. Wetland reserves in deprived areas are a valuable resource for volunteering, and for health and education projects.

- *More people caring for their environment* – access and education projects raise awareness of environmental issues, including biodiversity and flood risk management, and promote behaviour change. Developing high quality, well-managed natural environments contributes and widens the liveability priority that forms part of the Government’s Neighbourhood Renewal Strategy, and demonstrates that people value natural and biodiverse environments as much as neat and tidy manicured ones.
- *A better quality of life* – the above factors, combined with better community safety through environmental management and increased social capital, collectively contribute to a better quality of life. By promoting community building, social capital and community safety, Environment Agency projects contribute to the Government’s community development agenda, which is embodied in such recent initiatives as New Deal for Communities, Community Safety Partnerships and the ‘Respect’ agenda.

Increasing people’s awareness of their local natural environments is a central part of changing their attitudes and behaviour towards more sustainable lifestyle choices. Increasing awareness of environmental issues and wildlife therefore also contributes indirectly to the Government’s goal of sustainable consumption and production. Thus, it is clear that the projects the Environment Agency has developed for their intrinsic value to the environment are also of benefit to people and may help to achieve one or more the Government’s regeneration policy priorities.

7 Recommendations

What the Environment Agency can do differently

The Environment Agency delivers a wide range of benefits that contribute to regeneration and, more broadly, to quality of life. These benefits should be promoted externally to raise the organisation’s profile as a partner in regeneration and to attract external funding.

Evidence of the Environment Agency’s contribution to regeneration and quality of life should be used to demonstrate that environmental improvements can help address major public policy concerns such as: public health, education, economic development, community development and the ‘Respect’ agenda.

To demonstrate it is contributing to these policy areas and achieving its corporate strategy commitments, the Environment Agency should invest in evaluating the social and economic outcomes of its work. Currently, these outcomes are underplayed, often going unacknowledged and rarely quantified. The methods used in this study could contribute to the development of evaluation guidelines.

The findings of this project and other evaluations should be used by the Environment Agency to:

- illustrate commitment to the corporate strategy, ‘Creating a Better Place’, and help translate this commitment into action;
- develop understanding among Environment Agency staff of the social and economic benefits of their work.

Regional Directors and Area Managers should recognise and reward successful partnership projects. The factors contributing to success should be recorded and disseminated as good

practice. Information flows between Area, Region and Head Office should be improved to allow staff to learn from successful partnership projects.

Project management within the Environment Agency should be strengthened so that potential social and economic outcomes are considered alongside environmental outcomes. Following delivery, these outcomes should be evaluated.

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