

Department for Environment
Food and Rural Affairs

Case Studies Aimed At Reducing Diffuse Water Pollution From Agriculture In England

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Executive Summary

This report is a collection of projects aimed at reducing diffuse water pollution from agriculture (DWPA). This work commenced in May 2005 as result of the following brief:

“To assess the extent of activity to reduce DWPA across England and to evaluate the factors that characterise a successful project. Drawing upon the key lessons learned from existing projects will help Defra to establish best practice to inform current and future projects, and identify areas where Catchment Sensitive Farming (CSF) Delivery can add value.”

The information has mainly been gathered from stakeholders through completion of a template (appendix 3). This was drawn up to ensure the information collated was standardised, and encompassed all the data required. A large amount of information has been assembled for this project, and the work is currently incomplete due to projects still in progress and new projects constantly being started. It is also highly likely there are a number of projects on the ground, which we do not know about.

Of the 60 projects included, approximately 10 have been completed and 50 are still ongoing. The total cost of these 60 projects is in excess of £35.5 million. The majority of projects are very similar in terms of their aims and structure. They all engage with farmers at some level, many are advisory and the majority fund workshops, demonstration farms and 1:1 advice. Some projects are aimed purely at signposting funding organisations, whereas others include capital grant schemes.

1:1 advice was found to be the most effective way of engaging with, and persuading farmers to change farming practices to reduce DWPA. Evaluation from the projects showed farmers were more willing to work with trusted sources, such as local agronomists, FWAG and River Trusts. Monitoring is an important part of evaluation to show changes are making a positive difference. Many projects are at an early stage, or have not used monitoring of surface or groundwater, therefore it has been difficult to determine the impact of most projects in terms of water quality. Those which have used monitoring have showed a positive difference. Other aspects, such as monitoring farmer and advisor numbers attending workshops, number of farmers changing practices and how, all show a positive impact.

The projects have informed Defra’s way of thinking with regards to the delivery of the CSF initiative. It has been key in discovering how CSF is already underway on the ground, and how we can learn from their conclusions and take the CSF initiative forward. Projects show the importance of catchment steering groups, and how the broad experience of groups and organisations can inform CSF work. Evaluation from projects show where success has been in engagement of farmers and will be an invaluable source of information to the CSFOs in 2006.

Defra wishes to thank those who contributed to this work. The report will be available on the Defra website and circulated to stakeholders in early 2006.

South West

Cornwall Rivers Project

Project website:

www.cornwallriversproject.org.uk

Duration of project:

Phase 1: January 2002 – December 2004

Phase 2: January 2005 – December 2005

Site Description:

Cornwall. The project covers an area of 2455km², which is primarily agricultural land.

Evidence of DWPA impact:

High sediment levels in rivers were having an effect on the salmon population, as their spawning gravels were becoming embedded. High Autumn turbidity due to the sediment was also leading to less than 1% egg survival. Other problems included, eutrophication of rivers in the area, poor water quality in general and an increase in flooding.

Project Overview

Aims and Objectives:

To engage and empower local communities to manage land use in a sustainable way to protect and enhance Cornwall's rivers.

- Extend a proven programme of guidance and technical support on economically and environmentally sound land use practices.
- Raise public awareness of the importance of water resources and related habitat issues and to engage the wider community in the conservation and enjoyment of our river heritage.
- Facilitate the transfer of experience, information and land use practices to those who own and manage the resource.

Stages in Project Activity:

Develop 130 Best Practices Information Sheets, with example cost savings; cold call, visit, write and deliver 868 individually tailored integrated river basin management plans for farms in targeted catchments; development of GIS to monitor project activities; provide capital grant scheme for river improvement works (targeted: 130 km fencing, 86 erosion controls, 30 casting areas, 19 diverters/culverts, 33 spawning fords, and 66 debris dam removals); economic assessment; development of 8 demonstration sites; community talks/presentations; schools education officer/CD produced; vocational training scheme set up.

Funding and Resources

Cost of project:

£2.6m funding from a variety of sources, namely European Union Objective 1 funding, DEFRA, local private sources from January 2002 – December 2005.

Monitoring:

There is no groundwater or surface water monitoring, but use was made of EA data and fisheries statistics

Voluntary uptake of recommendations made in farm management plans such as: undersowing, rough ploughing after maize, soil testing, better use of animal manures, water harvesting, clean and dirty water separation was also monitored.

Most farmers undertook recommendations from their farm management plans to modify their farming practice which consisted of economic savings and environmental gains.

Engagement with Farmers:

Approximately 870 farmers and riparian owners have been involved in the project. Farmers were contacted through cold calling, responding to adverts / press releases and word of mouth. Each farmer took part in an individual farm walk to assess the potential for change on their farm. Each farmer received a free management plan. The uptake of advice was voluntary, but proved to have a high success rate. Ongoing liaison with an advisor has kept the farmer involved. Champion farmers were used through demonstration sites and the development of case studies in the Best Farming Practice (BFP) information sheets. Champion farmer's sites were often used during training of advisors or on public farm walks.

Evaluation

Project Achievements

Project Set Up:

The project was set up following previous Westcountry Rivers Trust (WRT) models, i.e. Tamar2000 Project and Westcountry Rivers Project. The key driver was the focus on economic benefits of environmental interventions, not just on the implementation of environmental riverine improvements.

Funding:

Given the high level of expertise, the standard of delivery and results / outputs, the Project's operational costs represent excellent value for money. The budgets are well managed, staff and management costs are kept to a minimum.

Engagement with Stakeholders:

A Steering Group comprising the key WRT personnel, sub-contractors, WRT Trustees and an EA representative oversaw the running / management of the

project at all times. Individual advisors maintained contact with government bodies as required and links were forged with other advisory bodies in the county e.g. Wildlife Trusts, FWAG, Tourism South West. Newsletters were issued twice a year to all stakeholders and a website was maintained and updated throughout the project.

Engagement with Farmers:

Cold calling proved to be the most useful method of making initial contact and communicating with farmers. The project has demonstrated that a free, voluntary and confidential service is key to engaging with farmers. The personal touch and an assigned advisor also helped avoid confusion and frustration for farmers.

Monitoring:

Physical monitoring of environmental improvements was not allowed through the funding stream, however, before and after photos taken on grant aided physical works, which can clearly show morphological change to watercourses and improved habitat structure.

Lessons Learnt

Project Set Up:

GIS would have been a useful tool in determining areas of prioritisation.

Funding:

The Project has had to be financially subsidised by the Westcountry Rivers Trust, rather than go over budget for one year. The funding for advisor salaries does not reflect the work they undertake. It is thought, the salaries will not retain them beyond the current project. There is no contingency within the budget to allow for over commitment of grant offers. WRT would like ongoing liaison with farming contacts developed - budget for 2 officers post CRP was sought, but no Objective One funds were available

Engagement with Stakeholders:

More contact could have been maintained; WRT acted as a one-stop-shop referring farmers onto other groups and signposting grant schemes available to them.

Engagement with Farmers:

It was concluded that mail-shots, advertising, press releases and show promotions help 'spread the word' but are no substitute for face to face engagement on the farm. A greater awareness of the project would have helped with the advisors targeting of cold calling of farmers. The use of case studies could have been an effective way of communicating real benefits and thus raising the project's profile. A database of farmers contact details would also help the advisors save time in locating new leads in their catchment areas.

Monitoring:

The Project's management information systems are robust and geared towards the monitoring of performance targets and budgetary control. A rigorous and effective quality control system is in place, which includes random checking of the management plans and ongoing Advisor training. Funding however, was restricted for water quality monitoring. Insufficient data limits the reliability of environmental conclusions drawn from the project.

Key Outcomes:**Benefits to Farmers:**

Average savings have been calculated to be £1369 per farm in efficiency savings, soil retention, improved nutrient management.

Benefits to the Environment:

There is potential for improved water quality in 15 river catchments; £9698 savings in soil retention per annum, through improved soil structure, 169km of riverbank fencing protecting watercourses and providing sheltered corridors.

Cycleau Axe and Char

Project website:

www.cycleau.com

Duration of project:

2004 - December 2006.

Site Description:

East Devon, Somerset. The River Axe is a SAC area. The catchment project covers an area of 300km² in a primarily agricultural area.

Evidence of DWPA impact:

The region has seen an elevation in levels of nutrients, and increased sediment over river gravels. There has also been increased soil and riverbank erosion in the area. There has been a reduction in fish numbers, higher mobility of river channels and increased flooding.

Project Overview

Aims and Objectives:

To promote Best Farming Practice to reduce the impact of agriculture on watercourses and bathing waters in catchments.

Stages in Project Activity:

The main actions taking place are, to research initial existing baseline data, including water quality and flood evidence. Undertake, nutrient, soil and geomorphology surveys. Stakeholder investigations. Work with farmers based on baseline evidence. Creation of stakeholder liaison groups. Development of a website, farm visits and management plans.

Funding and Resources

Cost of project:

£1m over three years. 50% provided through EU Interreg Fund, 50% provided by partners and stakeholders.

Monitoring:

There is no groundwater monitoring in the project. With regards to surface water – water quality monitoring, fish surveys and nutrient surveys have taken place. Water quality measures are taken by the Environment Agency.

A survey of farmer attitudes showed the main problems and potential solutions.

Engagement with Farmers:

120 farmers have been involved directly, 1400 indirectly. This includes all farming sectors in the catchment, contractors, agronomists and fishery owners/riparian groups. Engagement has been through Individual site visits, farmers liaison group, on-farm demonstration days, local shows, stakeholder

events and direct mail-shots. Champion farmers were used through the farmers liaison group.

Evaluation

Project Achievements

Project Set Up:

Working together with partners and stakeholders has proved a success.

Funding:

Cash provided by partners has been important.

Engagement with Stakeholders:

The farmers Liaison Group and Fisheries Liaison Group has been successful, surveys were very useful and workshops proved popular.

Engagement with Farmers:

Using an organisation that Farmers trust: i.e. FWAG was key, as well as finding out what farmers need and think.

Monitoring:

Use of wet weather surveys, innovative approaches (e-coli work).

Lessons Learnt

Project Set Up:

This started as a local project with local partners but when it became part of the European project this complicated the set up. The project could have used stakeholders more in its set up.

Funding:

The budget monitoring was complex, particularly when it became part of the European project.

Engagement with Stakeholders:

Stakeholders should be involved at the design stage.

Engagement with Farmers:

It would have been beneficial to involve farmers more in the project design.

Monitoring:

This can be complex and challenging. It is difficult to provide updated cohesive monitoring evaluations.

Key Outcomes:

Benefits to Farmers:

There is a reduced liability of infringing regulations and healthier soils as a result of the changing practices. Farm infrastructure has also been improved as a result of the project.

Benefits to the Environment:

There has been improved water quality, protected spawning gravels, improved soil structure, improved nutrient management and a reduction of pollution incidents.

Cycleau Dart Catchment Project

Project website:

www.devonwildlifetrust.org or www.cycleau.com

Duration of project:

3 years to December 2006.

Site Description:

Dart Catchment Area, Devon. The area covered is approximately 475km². The main water body is surface water.

Evidence of DWPA impact:

A concentration of small landowners in the catchment, who are not in countryside Stewardship / ELS / HLS, are impacting on river quality through poor management practice. Risk analysis has been undertaken of 'problem' sub-catchments.

Project Overview

Aims and Objectives:

- Raise awareness of best management for the protection of water, e.g. perception surveys, farm open days and training events.
- Provide free rivers and wetlands management advice to land managers e.g. capital works grant scheme and training events.

Stages in Project Activity:

There has been consultation with stakeholders (including farmers), which has produced a Catchment Profile (including risk assessment) and an Action Plan (2004). Farmer perception surveys, promotion of grants and training workshops took place during Spring 2005. There is continued promotion of grant scheme and awarding of grants (Spring 2005 – present). The project is supporting the installing of cattle watering points, putting in stock proof fencing to protect riverbanks and maintaining guttering by providing small capital grants as well as providing advice and training in partnership with FWAG. Demonstration days, training events and a repeat of the perception survey is planned for the future.

Funding and Resources:

Cost of project:

£900K. The Action Plan is being delivered by 2 project officers. Project Officer £26K, management time £2.5K, overheads £8K, grants £30K. The Dart Catchment Project receives European Regional Development Funding through the INTERREG 118 Community Initiative as a partner in Cycleau. Additionally, the project receives funding from South West Water and a range of charitable trusts.

Monitoring:

There is no groundwater monitoring in the project. With regards to surface water, data and modelling was completed by the EA in addition to species and habitat modelling and a number of research projects. Passive changes have occurred through training, advice and demonstration days. Direct changes have been undertaken through grant aided works, including installing remote cattle watering points, putting in stock proof fencing to protect riverbanks and maintaining guttering. The perception surveys when completed will measure the effectiveness of advice in changing landowners attitudes and behaviour.

Engagement with Farmers:

20 farmers were involved in the Action Plan workshops and 20 farmers were involved in training workshops. 43 site visits have now been completed. In developing the Action Plan, all farming sectors were targeted. Building upon the risk analysis however, only farms in the identified sub-catchments were engaged through the surveys, training events and subsequent advice and grants. Champion farmers were not used in the initial stages, however, they will be used to establish demonstration farms.

Evaluation**Project Achievements****Project Set Up:**

Devon Wildlife Trust's local actions within Cycleau are enabling the running of a pilot project on one of Devon's river catchments to:

- 1) evaluate the effectiveness of a catchment-wide approach for environmental management and,
 - 2) to develop a process methodology for stakeholder and public participation.
- Devon Wildlife Trust will use the results of this pilot to inform the development of the Cycleau methodology and as a model to inform the pending EA consultation on river basin management planning.

Funding:**Engagement with Stakeholders:**

Workshop evaluations revealed that 95% of participants felt the meetings were effective. This result is very encouraging in terms of stakeholder engagement.

Engagement with Farmers:

It was essential that farmers and representative organisations (RDS, FWAG, NFU) were involved in the development of the project, and then kept well informed and involved as the project moves to delivery.

Monitoring:

It is important to evaluate each step of the project, as this has two benefits:

- 1) The project receives feedback from all those involved,
- 2) Those involved get a sense that their opinions are valued.

This increases the ownership of the project and its outcomes.

Lessons Learnt

Project Set Up:

It is important to involve stakeholders (your target audience) in the development of a scheme as its delivery will be more widely accepted.

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Farmers have received financial help with capital work, advice on very complex agri-environmental grant schemes, advice on land management and involvement in catchment management planning process.

Benefits to the Environment:

There has been a reduction in diffuse pollution, diversification of riparian habitats through enhanced watercourse management and improved soil management.

Devon Wildlife Trust

Project website:

www.devonwildlifetrust.org

Duration of project:

3 years to November 2006.

Site Description:

South Hams District Council, Devon. The area covered is approximately 750km². The landuse is mainly smallholders and non-farming landowners.

Evidence of DWPA impact:

Due to a small concentration of small landowners in South Devon, who don't own enough land to qualify for Countryside Stewardship / WGS / Higher Level Scheme, coupled with a neglected, there has been a loss of habitat, declining farmland birds and hedgerows are in poor condition.

Project Overview

Aims and Objectives:

To enhance the local distinctiveness and character of the South Devon AONB by delivering landscape, heritage, and wildlife gain on targeted sites.

Stages in Project Activity:

Visits to farms giving advice on land management plus grant awards, for scrub clearance, hedgerow restoration, fencing, orchard restoration, stone walling for example, began in November 2003 and will continue throughout the project.

Funding and Resources:

Cost of project:

Per year – Project Officer £26K, management of time £2.5K, overheads £8K, grants £80K. The total cost has been funded by HLF.

Monitoring:

There are no ground or surface water monitoring.

With regards to land management changes, capital work has been carried out such as hedge laying, tree planting and fencing. The project hopes to commission work to look at the effectiveness of advice in changing landowners attitudes and behaviour.

Engagement with Farmers:

140 visits have been undertaken so far, with the majority being smallholders and non-farming landowners. 10% of the visits however, are to larger, more commercial farms.

Evaluation

Project Achievements

Project Set Up:

A key success was building upon previous projects which made the set up much easier. The project is structured to be simple and direct. The involvement of partners (South Hams District Council, BTCV) has helped.

Funding:

So far, HLF have been helpful and flexible. The reporting demands of the funder have not taken over the project to the detriment of actual delivery.

Engagement with Stakeholders:

Engagement with Farmers:

Demand for the scheme has been very high, suggesting good engagement with farmers in the area.

Monitoring:

South Hams District Council monitor the quality of the work carried out using the grants.

Lessons Learnt

Project Set Up:

It is important to build upon past achievements, work simply and directly.

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

A high demand makes the scheme reactive. It may be better to target the scheme more tightly to particular geographical areas and / or environmental problems.

Monitoring:

The standard of work varies.

Key Outcomes:

Benefits to Farmers:

Farmers benefit from financial help with capital work, advice on very complex agri-environmental grant schemes, advice on land management.

Benefits to the Environment:

There has been restoration of key features, fencing of watercourses and new hedgerows which prevent soil erosion.

Empool Project, Wessexwater

Project website:

Duration of project:

March 2005 – March 2010.

Site Description:

South West, Dorset. The area covered is 35km² with predominantly arable (75%) land use with winter wheat and oilseed rape being the predominant crops. Winter barley, beans, spring barley, linseed and maize are also grown. 20% of the land is put down to grass and dairy enterprises run on this area. There are a small number of sheep grazed and one pig unit in the catchment. To the east of the catchment there is a large gravel and sand extracting enterprise.

Evidence of DWPA impact:

Wessex Waters (WW) Empool source is failing on peak nitrate exceedance. As the regulatory standards are based on peak values and not averages, unless the peaks can be reduced WW will be required to construct expensive and large-scale treatment works. Rising nitrate trends combined with strong peaks associated with high groundwater level conditions show the nature of the problem.

Project Overview

Aims and Objectives:

- To reduce nitrate peaks and ultimately the overall trend of nitrate concentrations at Empool public water supply source.
- In order to achieve the above outcome, to better understand the source, transport and magnitude of the pollutants.
- To work with a range of stakeholders to develop measures to address these problems, and raise awareness among the farming community of problems with groundwater issues relating to bad farming practices.

Stages in Project Activity:

A survey of current problems in the catchment has been undertaken to provide a baseline understanding of the impacts of current land management practices (water quality, soil N min levels, SMP's, NMP's and MMP's to be carried out). Problem areas were identified for targeted farmer advice (slurry spreading, soil compaction and erosion, manure management). Individual soil risk assessments are to be made at each farm involved in the project, with advice on where they could improve practices. Practical workshops will be set up for both farmers and advisors to raise awareness, diagnose problems and implement low cost improvements. Changes in farmer behaviour and practices will be monitored through questionnaires following workshops, ongoing monitoring and demonstrations. Monitoring of groundwater and river nitrate levels will be carried out.

Funding and Resources

Cost of project:

Yearly costs: Catchment Advisor £25K; Monitoring £55K (purchase and installation of equipment); Nitrate modelling 10K; Reporting £10K. This project is funded 100% by Wessex Water and is initially to cover a 5 year period.

Monitoring:

There is groundwater level monitoring and measuring groundwater quality (nitrate) data in approximately 35 locations. Water quality sampling is also undertaken monthly at approximately 30 locations (including rivers, ditches and land drain discharges)

Farmers should take account of soil N levels when applying fertilisers. Nutrient levels in applied manures and slurries are to be used when calculating crop requirements. Farmers should alter where and when slurries/manures are applied to fields. Farmers should take more care with the soil condition to enhance rooting of crops and improve efficiency of nutrient use. Farmer awareness has been raised on the issues and all are keen to look at ways to reduce nitrogen leaching. It is still too early within the project to monitor changes

Engagement with Farmers:

24 farmers are involved in the project, which had targeted all farming sectors. The aim is to reduce nitrates leaching into groundwater. To start with farmers have been asked to provide historical data on rotations, yields, cultivations, livestock numbers, fertiliser applications and timings, rainfall, etc. The project is still in the early stages but farmers will be asked to look at improving soil structure through subsoiling, min-till, use of lo-ground pressure vehicles. Farmers will be encouraged to drill autumn crops earlier, plant catch crops such as mustard or rye during winter months where spring crops are to be drilled. The aim is to involve farmers in drawing up their soil, manure and nutrient management plans and to take into account soil mineral N and manures applied when calculating spring fertiliser applications. Farmers will also be asked to ensure fertiliser spreaders and muck/ slurry spreaders have been calibrated. Where problems of high nitrate are evident advisors will work with farmers to reduce nitrogen applied to crops or grass. Farmers will be asked to store dirty water and slurry for longer during winter months and looking at the amounts applied. Where necessary advisors will signpost ELS/ HLS options such as turning high risk areas into no input fields. Farmers will be asked to provide information during the growing season such as when fertiliser has been applied, in what quantities and when. The next aim is to have champion farmers but these are not yet in place.

Evaluation

Project Achievements

Project Set Up:

Other projects were researched before the project commenced to learn from their successes and failures.

Funding:

Sufficient funding for a full-time project officer provided strong leadership, co-ordination and project planning. Funding from a single source meant that there were fewer constraints regarding the allocation of resources.

Engagement with Stakeholders:

This area of the work is developing - EA are involved and a recent move with Wagrico have made closer links with ADAS and the NFU. There is some benefit for WW to approach landowners as the sole contact on the basis that WW have a problem, the landowner is contributing to it, can we work together to try and solve it - this seems to open doors.

Engagement with Farmers:

Engagement with farmers has been on a more or less informal basis with the Catchment Advisor spending a lot of time in the catchment and becoming a familiar figure on site. Results are exchanged on a personal level and discussed. Awareness of issue has been heightened.

Monitoring:

Lots of site specific data has been collected on farm and should lead to much more accurate nutrient planning.

Lessons Learnt

Project Set Up:

Ongoing.

Funding:

Ongoing.

Engagement with Stakeholders:

Ongoing.

Engagement with Farmers:

Some farmers are better than others at archiving data and planning. It is probably the less able/wealthy/interested farmers who will be the target for improvements in nutrient planning. Present costs of fertilisers are putting pressure on all farmers to act to reduce inputs.

Monitoring:

Monitoring of water levels in the catchment help to better define the actual catchment of the boreholes. Water quality sampling is showing "hotspots" which can normally be attributed to specific local issues. Nitrate problems may be as much a number of point sources as simply generally diffuse pollution.

Key Outcomes**Benefits to Farmers:**

Reduction in valuable nitrogen lost by leaching, improvements in soil management leading to enhanced yields, reduction in costs due to less use of nitrogen, up to date soil analysis.

Benefits to the Environment:

Reduction in pollution of groundwater. Improved soil structure through better soil management. Less runoff of nutrients so less pollution of surface waters.

Farm Environment Link Project

Project website:

Currently under construction.

Duration of project:

3 years 3 months.

Site Description:

The area covered by the project is the whole of Cornwall. The main land use in the area is agriculture.

Evidence of DWPA impact:

Intensive agriculture in the area, poor timing for field works, badly positioned gateways and over application of nutrients have all added to the problem of silting up of rivers, poor water quality, invertebrate absence, compaction of soils, and poaching of fields.

Project Overview

Aims and Objectives:

To enhance the economic sustainability of Cornish Agricultural holdings, by advising the economic opportunities achievable through environmental measures. This aim should result in a reduction in the levels of phosphates and nitrates in local rivers.

Stages in Project Activity:

- To undertake 600 environmental visits on farms, highlighting to the farmer key opportunities for improved environmental performance and economic benefit.
- To complete 100 Whole Farm Plans, a more in depth analysis and an action plan individually tailored to each farm.
- To provide support through capital grants (funded by the Environment Agency) to install environmentally beneficial measures.
- To hold open/demonstration days and produce newsletters throughout the Project life.

Funding and Resources:

Cost of project:

£564,015.

Each Whole Farm Plan produced costs the farmer £100.

£280,033 of funding supplied from the European Agricultural Guidance and Guarantee Fund (EAGGF), £231,922 from DEFRA, £42,019 from Cornwall County Council and £10,039 from private sources.

Monitoring:

There is currently no monitoring of surface or ground water.

With regards to land use changes, soil risk assessments and changes in management practice have been undertaken, timing, minimum tillage methods, over winter stubbles and slurry injection have also been considered. Farmers have been positive, with encouraging results on farms and well attended events. There has been a change in direction towards best practice, a definite embracing of ideas underpinned by new agri-environment schemes and modernisation of methods and technology.

Engagement with Farmers:

600 farmers have been involved in the project from all agricultural sectors. Farmers have taken time out to spend with agronomists and the advisory team on their own farm. This has involved discussing current management and the potential for improvement. This includes:

- Reading through reports;
- Taking soil and manure sampling and applying the results;
- Developing small works improvement schemes on farm;
- Applying to grant scheme for assistance.

Evaluation**Project Achievements****Project Set Up:**

The project was complex, but was achieved.

Funding:

Funds were adequate to run the scheme as the project bid was well devised and costed.

Engagement with Stakeholders:

Stakeholder engagement was excellent as there was a good communication chain. There was opportunity to discuss problems relating to the project and other outside factors, there were also opportunities to be flexible with budget management.

Engagement with Farmers:

FWAG are a trusted name among the farming community and the engagement with them has been relatively easy and successful.

Monitoring:

The bespoke database software which has been used to monitor outputs and targets has worked well.

Lessons Learnt**Project Set Up:**

This required more time than was allocated at the outset.

Funding:

A more accurate costing of future projects will be possible due to experience.

Engagement with Stakeholders:

A greater level of external involvement at steering level is needed.

Engagement with Farmers:**Monitoring:**

Finite adjustments from experience would have yielded up more useful data.

Key Outcomes:**Benefits to Farmers:**

Gross additional sales/costs saved was in excess of the project target of £122,386.

Benefits to the Environment:

In excess of 2,500 ha of land are now subject to measures to reduce soil erosion, flooding or other adverse effects from current agricultural practice.

Hampshire Avon Landcare Project

Project website:

www.landcareUK.net

Duration of project:

1992 - 2008

Site Description:

Hampshire Avon, Wiltshire. The Avon Landcare Initiative covers roughly 950km². There are three main high risk target areas, East and West Avon which has mainly cereals with some dairy farming, Upper Nadder which has mainly cereals with some dairy farming and Wylye which has cereals farming. The area has a SAC.

Evidence of DWPA impact:

Soil and nutrients (N and P) are transferred in wet weather run-off from agriculture, into nearby rivers. This is due to problems caused by farming practices and the impact of climate change (shorter more intense rainfall events). Gulleys and rills are evident on fields leading to rivers on sandy soils (winter cereals), and general runoff of soil and nutrients is occurring from clay soils (mainly maize fields). There is excessive algal growth in local rivers during the summer months, and there has been an increase in the levels of sediment and discolouration in the river. In addition, there has also been flooding of villages in the area, due to run-off from steep sided slopes under agriculture. Local fishermen along the river have also stated the fish population is in decline.

Project Overview

Aims and Objectives:

- To better understand the source, transport and magnitude of the pollutants.
- To work with a range of stakeholders to develop measures to address these problems.
- To raise awareness among the farming community of environmental issues relating to bad farming practices.
- To intervene with high risk farms and drive improvements to reduce risk.

Stages in Project Activity:

A baseline study was undertaken to determine the impacts of current land management practices (May – June 2004). Problem areas were then identified for targeted farmer advice. Demonstration farms were set up in these high risk areas, to show farmers how different timings and depths of cultivations affect crop growth and run-off / erosion rates. Individual soil risk assessments were made at each farm involved in the project, with advice on where they could improve practices (July – September 2004). Practical workshops were set up for both farmers and advisors to raise awareness, diagnose problems and implement low cost improvements (September –

December 2004). Changes in farm behaviour and practices were monitored through questionnaires following workshops and demonstrations (January – April 2005). Monitoring of river pollutant levels were also carried out (May 2004 –2005).

Funding and Resources:

Cost of project:

A catchment advisor is employed through the project costing £25-30K. With regards to monitoring, there is one existing DEFRA funded project in the Upper Catchment costing £110K. For two other high risk sub-catchments the project is bidding for approximately £30K. Newsletters, a web site, demonstration farms, a video and workshops equate to £22K.

Monitoring:

Monitoring is taking place in high risk areas, with turbidity monitoring in two of the three high risk sub-catchments under the DEFRA funded PSYCHIC project. In addition, wet weather event sampling for suspended solids, nutrients and biological sampling is in progress. This will be continuing in one of the high risk catchments for the next three years.

Maize farmers in a problem sub-catchment (Sem), and problem winter cereal farmers, have taken on best practices to minimise run-off to the watercourse. In two high risk catchments, yard runoff has been remedied. There is also evidence of an increase in buffer strips and contour ploughing in the area.

Awareness has risen following the attendance of farmers and advisors at workshops, and farmers seemed keen to implement changes on their farm. 92% of farmers receive the monthly “timely” advice newsletter, which has been well received.

Engagement with Farmers:

Approximately 150 farmers, from all sectors, in the targeted high risk sub-catchments have been involved in the project. Demonstration farms were set up in key areas. Workshops have been attended and newsletters have been sent to farmers in the area. There is direct contact with farmers through 1:1 visits with a Catchment Officer.

Evaluation

Project Achievements

Project Set Up:

Other projects were researched before the project commenced, to learn from their successes, failures, evaluation and impact on water quality.

Funding:

Sufficient funding for a part-time project officer provided strong leadership, co-ordination, project planning and implementation. Funding from two sources meant that there were fewer constraints regarding the allocation of resources.

Engagement with Stakeholders:

Involving a variety of stakeholders increased awareness of the project.

Engagement with Farmers:

Practical workshops on demonstration farms increased awareness, diagnosed problems and advised on solutions. Monthly newsletters distributed to farmers via advisors, promoted timely good practice and is currently valued by them. Trained competent agronomists are available to visit and remedy problem farms. The delivery of this information by a highly trusted independent agronomist has raised the credibility of the project.

Monitoring:

Monitoring of changes in practice with maize and winter wheat growers, as well as livestock yards in high risk areas, have significantly reduced run-off inputs. Farmer questionnaires show they are more aware of the problems of diffuse pollution from agriculture and are willing to change their practices if economically viable. In addition, there is now visible evidence of change, for example, contour ploughing and buffer strips.

Lessons Learnt**Project Set Up:**

The language used with farmers was important, diffuse pollution was not well understood by farmers, but agricultural field run-off was clearer. It is important to review and expand water quality sampling as an evidence base to target key areas. The use of soil maps, and key stakeholder contacts to ground truth assumptions being made on where the problem is coming from is key. The use of demonstration farms and workshops to disseminate best practice advice is beneficial. Local advisors should be trained to raise competency and deliver better advice to local farmer clients. Using advisors to distribute monthly “timely” advice newsletters worked well. The use of wet weather catchment inspections and farm visits in high risk sub catchments, was important in identifying high risk farms and offering advice support to drive changes and follow-up to check these were implemented.

Funding:

Funding was limited for water quality monitoring in the past, until national DEFRA funding support was established under the PSYCHIC project (which provides a good baseline). If funding is not available to continue the level of monitoring, then the reliability of conclusions drawn from the project will be limited.

Engagement with Stakeholders:

Where a range of stakeholders are involved in engaging with farmers in a project area, it is important that the messages they convey are consistent with the aims of the project. It may be more beneficial to have one point of contact for the farmer.

Engagement with Farmers:

Farmers want 1:1 advice from a competent independent advisor.

Monitoring:

Fisheries levels are beginning to show an upturn, which has been attributed to the project. There has been water quality compliance / improvements in the high risk sub-catchment following farm improvements. It is however, too early in some areas to see some water quality improvements. Although, from what is known of the run-off levels from problem farms prior to changes, there will be a significant improvement locally on the river stretch. Unfortunately these improvements may not be picked up as well on the catchment scale, where the monitoring equipment is placed.

Key Outcomes:**Benefits to Farmers:**

There has been a reduction in inconvenience to the local community regarding localised flooding and mud on roads. Valuable top soil loss with costly inputs, i.e. nutrients and pesticides, has also been reduced. There has been improved yields for winter cereals once soil compaction was remedied. Farmers are now making good use of manures / slurries resulting in artificial fertiliser savings.

Benefits to the Environment:

Fisheries are currently on a steady upturn in numbers. There is less soil compaction, which is reducing soil and nutrient run-off. Flooding of local villages has not occurred since changes in farming practices took place. Water quality results have shown improvement in one high risk sub-catchment.

Helford Cycleau, Cornwall

Project website:

www.cycleau.com

Duration of project:

October 2003 – September 2006.

Site Description:

Helford, Cornwall. The project covers an area of 115km² of which the land use is dairy, beef, cereals, and land rented for potatoes, vegetable and bulbs. Tidal areas in the region are SSSI and cSAC.

Evidence of DWPA impact:

There is a suspected nutrient enrichment and sedimentation problem as a result of diffuse water pollution from farming, and unrestricted sewage / septic tank discharges. Historically there have been elevated phosphate and nitrate in some tributaries, although water quality data is limited. There has been an increase in the level of sedimentation in creeks.

Project Overview

Aims and Objectives:

- To engage and offer advice to farmers and land owners in terms of soil management, nutrient and manure management and biodiversity.
- To signpost them to Environmental Stewardship Scheme where appropriate.
- To liaise with partner organisations to develop a co-ordinated, joined up approach to managing the catchment.
- To manage a small capital grant scheme to fund minor works on farms to reduce pollution.

Stages in Project Activity:

The project is currently halfway through, with encouraging uptake from farmers, although the grants are slow to process. There is also good communication between partners. The main activity includes:

- Promoting the use of set-aside / Environmental Stewardship to take risky areas out of production.
- Encouraging farmers to think more about soil management to reduce erosion, compaction, flooding etc.
- Provide advice regarding better management of slurry / fertiliser, timing of application, application methods and nutrient value.
- Highlight valuable habitats / species and management to ensure protection.
- Deploying grant funds to move vulnerable gateways, fence cattle out of streams, better manage dirty water / slurry.

Funding and Resources:

Cost of project:

A Catchment advisor costs £85K, with grants costing £24K, plus a small amount for soil and slurry testing. The duration for the funding is 3 years, which is being supplied by Interreg IIIb European Funding.

Monitoring:

Under this project, the Environment Agency are monitoring all freshwater inputs, plus some tidal waters. Exeter University are also doing some monitoring for e-coli and sediment transport.

The project has increased farmers receptiveness to 'green' ideas and ensured they understand the project aim is not anti-production. Farmers have been encouraged to think about management and not to carry out activities because they have always done it that way. It has also raised awareness of how they are impacting water quality downstream and the livelihoods of others, i.e. shell fishermen.

Engagement with Farmers:

55 farmers have been contacted so far and approximately 30 farmers are currently actively engaged. Contact was initially undertaken through a farmer meeting to explain the work and how they could be involved. Their opinions were gathered about land management changes, (where they were very open and honest), pollution problems from farming, solutions and how public perception can be improved.

Evaluation

Project Achievements

Project Set Up:

There was a good joined up approach from all partners and organisations.

Funding:

Funding for soil and slurry testing was found to be extremely useful, as it is a good way of encouraging farmers to be involved, and gives a good basis for discussion on soil and fertiliser management.

Engagement with Stakeholders:

It was found to be useful to attend parish council meetings and other user groups.

Engagement with Farmers:

The farmer meeting worked really well as it gave the attendees a chance to have their say from the start, as well as informing the advisor about the issues and the possible solutions. The meeting made the farmers feel at ease with the idea of a catchment officer, and that they could work with the advisor, not be threatened by them.

Monitoring:

Monitoring and communication of results to the catchment officer are essential to ensure that advice is targeted at the right tributaries. At the moment this does not happen, but will need to under WFD.

Lessons Learnt**Project Set Up:**

It is important to make sure all existing groups and stakeholders are included from the start.

Funding:

The soil and slurry testing funding enabled the farmers to think about their land management rather than just funding capital works.

Engagement with Stakeholders:**Engagement with Farmers:**

Trust and confidentiality are very important, and farmers need to know that having an advisor come to visit them will not lead to any action from the Environment Agency.

Monitoring:

Good, regular dialogue is essential between the Environment Agency monitoring teams and catchment officers. This should not just be quantitative results, but anecdotal notes too, such as mentioning tributaries and creeks that become discoloured after heavy rainfall.

Key Outcomes:**Benefits to Farmers:**

There will be sustainable farming in all ways, better economic performance through improved management of soil, slurry and fertiliser. Additional income will be derived from Environmental Stewardship scheme. Indirect benefits will occur to farm tourism enterprises. Long-term survival as a result of improved environmental performance, also reduces the chances of prosecution or restrictions in farming methods in the future.

Benefits to the Environment:

There will be reduced inputs of nitrate, phosphate, suspended solids and crop protection products to watercourses. Soil structure will improve, resulting in reduced flood risks and better retention of water supplies. Restoration / protection of existing good habitat or creation of new ones will take place through Environmental Stewardship Scheme. There will be identification of habitats for key species, i.e. Lesser Horse bats, rare arable weeds.

Parrett Catchment Project (PCP)

Project website:

Duration of project:

The project ends March 2006.

Site Description:

The Parrett Catchment covers an area of 1690km². There are 47 SSSIs (41 biological and 6 geological) covering an area of 9,377 ha. Internationally designated SPA / Ramsar sites cover 5,290.9 ha.

Evidence of DWPA impact:

Flooding is a major issue in the catchment. Much of the area receives higher than average rainfall, and the capacity of the river channels in the lower reaches is often exceeded. Flooding is expected, however, the problem is becoming increasingly worse. The summer floods of 1997 and severe flooding of 1999/2000 proved the Parrett Catchment's river system is unable to cope in extreme weather events.

Project Overview

Aims and Objectives:

The main aim is flood management and the objectives are:

- To develop an integrated flood management plan;
- To provide a sustainable approach to flood management, including flood defences for towns, villages and safeguarding of environmental interests, particularly wildlife habitats;
- To promote measures to modify land use across the catchment. Including improving soil management as one of the ways of reducing surface runoff from agricultural land and increasing water retention.

Stages in Project Activity:

One of the main ways of engaging with farmers has been the establishment of workshops and open days. It has also been important to undertake farm visits in the catchment, with 1:1 advice on diffuse water pollution issues.

Funding and Resources:

Cost of project:

Monitoring:

Engagement with Farmers:

Evaluation

Project Achievements

Project Set Up:

Funding:**Engagement with Stakeholders:**

Involvement with stakeholders has been good, with very strong collaboration between statutory agencies.

Engagement with Farmers:

75% of farmers visited have made some kind of management changes as a result of the project. The biggest drivers of change were found to be from the local community, peer pressure, as well as good business sense. Little / no administration was essential to gain and maintain interest with farmers. Emphasis should be on farmers recruiting “ownership” of the problem rather than form-filling or paper work. Another important factor in engagement was face-face contact.

Monitoring:**Lessons Learnt****Project Set Up:****Funding:****Engagement with Stakeholders:**

It is important to involve key influencers in the area for the project to be successful.

Engagement with Farmers:

Often workshops / open days can only attract farmers who are already converted, committed and interested. Some of the worst offenders do not attend workshops.

Monitoring:**Key Outcomes:****Benefits to Farmers:****Benefits to the Environment:**

Tale Valley Project

Project website:

N/A

Duration of project:

2001 – 2002.

Site Description:

East Devon. The area is primarily agricultural.

Evidence of DWPA impact:

There was a reduction in water quality and a decline in fish populations. It is thought the main reason for these issues was from diffuse water pollution from agriculture. These problems were due to reduced soil infiltration rates, causing increased sediment loading upon watercourses, high stocking densities where livestock have access to watercourses causing poaching of soil and nutrient enrichment.

Project Overview

Aims and Objectives:

The main aim was to improve the water quality and habitat of the River Tale.

Stages in Project Activity:

15 farms were initially involved, followed by a further 10 farms; 5.5km of fencing was erected overall and 3km of selective coppicing has taken place. An initial survey report of the catchment was undertaken, and a brief marketing strategy was developed. A summary document was written upon completion of Phase 1. A confidential database will be developed. In the future, a demonstration site will be established.

Funding and Resources:

Cost of project:

Catchment advisors, computer equipment, grant pool and landfill tax grant; costing £80,000. The funding for the project was for 2 years.

Monitoring:

There was no groundwater monitoring in the project. With regards to surface water, water quality and electro fishing data was provided by the Environment Agency.

Engagement with Farmers:

Farmers were contacted by cold calling, responding to adverts/press releases and word of mouth. Each took part in an individual farm walk to assess the potential for change on their farm, and each received a free management plan. The uptake of advice was voluntary but had a high success rate, and ongoing liaison with an advisor kept the farmer involved.

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Farm visits were a successful tool for engaging with farmers.

Monitoring:

Fisheries monitoring results show improvement is taking place in the area.

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Workshops would have been useful as a method of engaging with farmers.

Monitoring:

Key Outcomes:

Benefits to Farmers:

There has been an improvement in soil structure, fencing has been erected to protect watercourses and there has been an increase in awareness in general.

Benefits to the Environment:

There is a potential for improved water quality, savings in soil retention, improved soil structure, riverbank fencing protecting watercourses and providing sheltered corridors.

Tamar 2000 Support Project

Project website:

N/A

Duration of project:

4 years to June 2000.

Site Description:

Devon and Cornwall. The area covered is 928km² and is primarily agricultural.

Evidence of DWPA impact:

There is evidence of excessive siltation, nutrient enrichment, habitat degradation and water pollution. Large and local scale alteration of river channels; excessive siltation; poor returning fish numbers; eutrophication of river and coastal shelf, poor water quality, loss of biodiversity, loss of amenity and capital value, loss of environmental value.

Project Overview

Aims and Objectives:

- The T2000 project sought to address the problems relating to DWPA in a linked and integrated catchment scale approach, that simultaneously promoted environmental improvement and economic benefits.
- To provide advice and grants to farmers and landowners to support environmentally sensitive farming practices and enterprise diversification, that generate increased income and improved environmental quality.
- Parallel to this, riparian projects sought to directly improve environmental quality and access to fisheries, leading to increased economic benefits to the region.

Stages in Project Activity:

The project involved 515 farmers and resulted in the completion of 300 Management Plans. Physical works were installed as a result of the project. Mapping of wetlands also took place during the project.

Funding and Resources:

Cost of project:

The project required funding for Catchment Advisors, an Angling officer, a project manager, consultant input, purchase of computer equipment, GIS, and a grant pool. The money was obtained from European Union funding through 5b, match funded by DEFRA with the remaining % acquired from local private sources, principally private contributions from beneficiaries towards the capital grants made through T2000. Overall the project cost: £1.6m over a period of 4 years.

Monitoring:

There was no groundwater monitoring for the project. In terms of surface water monitoring, there was none undertaken via the project, but use has been made of EA data and fisheries statistics.

Voluntary uptake of recommendations made in farm management plans such as: undersowing, rough ploughing after maize, soil testing, better use of animal manures, water harvesting, clean and dirty water separation was monitored.

Engagement with Farmers:

More than 300 farmers and riparian owners have been involved in the project. Farmers were contacted by cold calling, responding to adverts/press releases, word of mouth etc. Each took part in an individual farm walk to assess the potential for change on their farm; each received a free management plan; uptake of advice was voluntary but had a high success rate; ongoing liaison with an advisor kept the farmer involved; farmers were invited to farm walks etc. Champion farmers were used through use of demonstration sites and the development of case studies in the BFP Information Sheets. Champion Farmer sites were often used during the training of advisors or on public farm walks

Evaluation**Project Achievements****Project Set Up:**

The initial Catchment Scale project design was a success.

Funding:**Engagement with Stakeholders:****Engagement with Farmers:**

Cold calling proved to be the most useful method of communicating with farmers and making initial contact. It was found that a free, voluntary and confidential service is key to engaging with farmers. The personal touch and an assigned advisor helps avoid confusion and frustration for farmers. Free and confidential advisory service ensures maximum uptake by farmers who are naturally wary of DEFRA / EA and potential prosecution for wrong doings. Two independent surveys undertaken by consultants during the life of the project showed a high uptake of recommendations and project endorsement.

Monitoring:**Lessons Learnt****Project Set Up:**

The model of this project set up has been used for future WRT projects.

Funding:**Engagement with Stakeholders:****Engagement with Farmers:**

It was discovered that mail shots, advertising, press releases and show promotions help 'spread the word', but are no substitute for face to face engagement on farms.

Monitoring:

The management information systems were robust and geared towards the monitoring of performance targets and budgetary control. A rigorous and effective quality control system was in place, which included random checking of the management plans and ongoing advisor training. Funding was restricted for water quality monitoring, resulting in insufficient data which limits the reliability of environmental conclusions drawn from the project.

Regrettably, Objective One cannot provide funding for ongoing monitoring of environmental parameters.

Key Outcomes:**Benefits to Farmers:**

An average saving of £2,684 per farm has been calculated in efficiency savings, soil retention and improved nutrient management.

Benefits to the Environment:

There is a potential for improved water quality in targeted catchments; savings in soil retention per annum and improved soil structure. 54km of riverbank fencing protecting watercourses have been erected and are providing sheltered corridors.

Tone Project

Project website:

Duration of project:
1998.

Site Description:
Somerset.

Evidence of DWPA impact:

There are considerable problems with pollution by silt in the area, but no significant research had been done on the problem or how to solve it.

Project Overview

Aims and Objectives:

The main aim is to find out what the problems are, where they are occurring and how to deal with them.

Stages in Project Activity:

The first communication of the project to farmers in the local area was a mail shot of a simple leaflet giving farmers basic information about the project. The scheme was essentially advisory but FWAG has made use of incentive payments under the Countryside Stewardship and regulatory mechanisms, such as the threat of action from the Highways authority for soil erosion onto roads.

Funding and Resources:

Cost of project:

The project acquired £8K from the EA, £2K from Somerset County Council, and a small amount of funding from Landfill Tax. The project was funded on a yearly basis.

Monitoring:

Engagement with Farmers:

The catchment area has approximately 300 farmers, but only 30 of these were thought to be a highly significant source of nutrient and silt pollution. The farmers were mainly involved through leaflets and 1:1 advice.

Evaluation

Project Achievements

Project Set Up:

The first field officer was a farmer from the local area, the second (replacement) was an agronomist who had worked in the local areas for some time. People already known to local farmers prior to their commencement in the project resulted in a higher participation and co-operation rate.

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

In order to achieve a high level of participation and co-operation with farmers, the project organisers were careful to choose a field officer who was well known and liked among the farming community. The main reason for a known person was to get a good response and command sufficient respect and trust.

Monitoring:

Lessons Learnt

Project Set Up:

Farm demonstrations have a crucial role in persuading farmers to change their management practices, but in isolation they are not enough. Demonstrations must be accompanied by 1:1 advice which is carefully tailored to the area and individual farm needs. Agronomic experts need to be involved in determining suitable farm plans. A range of suggested farm practices is needed, a one size fits all approach will not work. Communication must be carefully considered. The project found that one leaflet had a negative effect on farmer acceptance of the project, as they felt it was both patronising and confrontational about the issue of soil erosion.

Funding:

Advice has already had important, measurable results in improving water quality. However, the project partners believe that a locally designed grant-aid package delivered alongside the advice would significantly increase results. The partners believe there are limits to the effectiveness of standard national grant-aid packages. It is thoughts national packages contribution is helpful, but not as much as the local advisory and follow-up work.

Engagement with Stakeholders:

It was found true partnership with the local community is crucial to the success of projects. Co-ordination of knowledge between different authorities and organisations is essential. In the case of the Tone project, an important example is the establishment of a joint database (by the County Council) to

record any action taken by the different agencies involved. It is important to build up a network of important local organisations.

Engagement with Farmers:

It is important to note that one approach will not convince all farmers. Some farmers will co-operate with voluntary schemes, some will respond to incentives and others will not change management practice unless confronted with regulation and / or penalties. Even when awareness has been achieved it is still difficult to turn this into action.

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

Upper Torridge

Project website:

N/A

Duration of project:

2003 – 31st March 2006.

Site Description:

South West Torridge, Devon. The area covered is approximately 75km² with a mixture of land use.

Evidence of DWPA impact:

The Upper Torridge and their tributaries are failing to meet their River Quality Objectives. There are signs of eutrophication and sediment in the watercourses and a decline in the fish stocks.

Project Overview

Aims and Objectives:

The main aim of the project is to stop the deterioration in water quality and reduce the drop in salmon stocks in the Upper Torridge catchment.

Stages in Project Activity:

Farmers in the tributaries of the Upper Torridge are being visited with whole farm plans produced as a result. Free soil testing plus detailed waste management plans are available. Various educational tools are being employed including leaflets, workshops, seminars and shows.

Funding and Resources:

Cost of project:

2003 - 2004 = £15K

2004 - 2005 = £15K

2005 - 2006 = £20K

Monitoring:

There is currently no groundwater monitoring through the project. There is continuous surface water monitoring using Grant YSI 930 meters, which are supplemented by occasional spot samples and normal routine sampling.

In terms on monitoring engagement, subjective assessment appears to indicate most farmers are fully co-operative and anxious to ensure the project is successful.

Engagement with Farmers:

By the end of the project 35 farmers will have been visited. They actively take part in the farm visit and are encouraged to take up recommendations. A farm walk and an Entry Level Scheme workshop was organised and well attended.

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

Initial evaluations indicate an improvement in river quality and recent compliance with the river quality objective. Two tributaries, namely the Dipple Water and the Clifford Water have been singled out for particular attention this year (2005).

WAGRICO – Life Project

- **Frome**
- **Piddle**
- **Wey**

Project website:

Duration of project:
2005 – 2008.

Site Description:

Evidence of DWPA impact:

Project Overview

Aims and Objectives:

- To identify diffuse pollution issues;
- To identify potential management solutions;
- To work with land managers / advisors to implement measures and to assess their effectiveness – in terms of pollution reductions and costs. Lessons learnt can then be used to develop River Basin Management Plans.

Stages in Project Activity:

The project will consist of monitoring of individual farms, post-measure farm surveys to assess farmers attitudes, direct soil and water studies, economic analysis at farm level, environmental impacts scaled up by modelling, working groups, training and farm exchange visits.

Funding and Resources:

Cost of project:

Monitoring:

Engagement with Farmers:

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

Wessex Chalk Rivers Project

Project website:

www.wiltshirewildlife.org

Duration of project:

1999 – present.

Site Description:

South West England, Wessex, Wiltshire. The area has SAC and SSSIs.

Evidence of DWPA impact:

There has been an increase in sediment delivery into the system, causing discolouration and covering fish spawning gravels, which is damaging eggs and fish fry. There has also been a decline in macrophyte growth. Lows flows have been experienced for extended periods with winterbournes and headwaters drier for longer periods. Excessive algal growth is evident, smothering gravels and ranunculus communities. There is also a presence of invasive species, such as exotic plants, signal crayfish, mink and rainbow trout which is damaging the riparian ecosystem.

Project Overview

Aims and Objectives:

The main aims and objectives of the project are:

- To promote understanding and conservation of the River Avon system, including the SSSI and SAC.
- To provide a point of contact for riparian owners and aid understanding of each partner's role.
- To encourage and support sympathetic management, particularly restoration and enhancement works.
- To support national, local and Wessex Water's BAPs.
- To contribute towards the Water Framework Directive's aim of good ecological status within the Wessex region.
- To develop work with volunteers, particularly river monitoring.
- To highlight the importance of the river system and develop understanding by local communities.
- To involve the community directly in management of the river and associated wetlands.

Stages in Project Activity:

Key work areas in the project include, identifying and prioritising river enhancement projects to benefit key habitats and species. These projects will include associated wetlands and areas suitable for restoration. In addition, it will be important to assist in securing funding through English Nature Management Agreements and Environment Agency Letters of Agreement. Site visits will be conducted to advise on management of the river, concentrating on fishing clubs landowners. Joint initiatives will be developed to support The River Avon and Avon Valley Initiative and attend the LIFE

Project technical group and other initiatives to address river and wetland issues. Bi-annual newsletters will be produced for owners and managers of the River Avon SAC/SSSI, to keep them informed of changes, relevant information and advice, publish press articles, and to organise demonstration and training days. Ecological information related to rehabilitation projects will be collected, and interpreted results will inform future projects. The project will ensure the volunteer river monitoring scheme is jointly coordinated with the Wiltshire Biological Records Centre. Pre and post monitoring of river restoration projects be also be conducted. So far, more than 100 land owners have been visited and received advice on management.

Funding and Resources:

Cost of project:

The project costs approximately £40K annually. This cost is part-funded by Wessex Water, the Environment Agency, English Nature and Wiltshire Fishery Association until April 2006.

Monitoring:

Engagement with Farmers:

The project targets land which is within the floodplain. Key concerns are arable land, lack of buffers, livestock access to the river, sheep dip etc. Farmers are not involved directly unless in conjunction with fisheries interests. Usually they are engaged via partners and collaborative projects (e.g. Environment Agency, Landcare, Defra, Rural Development Service and English Nature).

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

West Country Rivers Project

Project website:

www.Wrt.org.uk

Duration of project:

November 1999 – March 2001.

Site Description:

Devon. The project covers an area of 220km² in a primarily agricultural area,

Evidence of DWPA impact:

There has been large and local scale alteration of river channels, excessive siltation, poor returning fish numbers, eutrophication of river and poor water quality.

Project Overview

Aims and Objectives:

- The main aim was to address the impact of DWPA in a linked and integrated catchment scale approach that simultaneously promoted environmental improvement and economic benefits.
- The project also aimed to provide advice and grants to farmers and landowners which, sought to support environmentally sensitive farming practices and enterprise diversification that generated increased income and improved environmental quality.
- Parallel to this, riparian projects sought to directly improve environmental quality and access to fisheries, leading to increased economic benefits to the region.

Stages in Project Activity:

100 Best Practice Information Sheets with example cost savings were developed. Cold calling of farms was undertaken with 340 individually tailored Waterwise Management Plans for farms in targeted catchments written and delivered. GIS was developed to monitor project activities and wetland mapping. A capital grant scheme was provided for river improvement works. 5 demonstration sites were developed in the area. Community talks/presentations were undertaken and a school education pack produced.

Funding and Resources:

Cost of project:

The overall project cost was £1.1m. This included Catchment Advisors, an Angling Officer, a project manager, consultant input, GIS, website set up, purchase of computer equipment and a grant pool. The money was acquired through European Union Objective 5b funding, with match funding from DEFRA and the remaining amount from local private sources. The funding ran from November 1999 to March 2001.

Monitoring:

There was no groundwater monitoring in the project. There was also no surface water monitoring, but use was made of EA data and fisheries statistics.

There was voluntary uptake of recommendations made in farm management plans such as: undersowing, rough ploughing after maize, soil testing, better use of animal manures, water harvesting, clean and dirty water separation.

Most farmers undertook to modify their farming practice in order to realise economic savings and environmental gains as recommended in their management plans

Engagement with Farmers:

More than 340 farmers and riparian owners have been involved in the project. Farmers were contacted by cold calling, responding to adverts/press releases, word of mouth etc. Each took part in an individual farm walk to assess the potential for change on their farm and each received a free management plan. Uptake of advice was voluntary, but had a high success rate and ongoing liaison with an advisor kept the farmer involved. Farmers were also invited to farm walks. Champion farmers were used through use of demonstration sites and development of case studies in the BFP Information Sheets. Champion Farmer's sites were often used during training of advisors or on public farm walks. All demonstration sites were on farms; whole farm water systems were funded in some instances to provide examples of reduced reliance on mains water.

Evaluation**Project Achievements****Project Set Up:**

The project was based on the successful methods developed through the Westcountry Rivers Trust's and Tamar 2000 SUPPORT.

Funding:

The capital grant scheme worked well.

Engagement with Stakeholders:

A Steering Group comprising the key WRT personnel, sub-contractors, WRT Trustees and an Environment Agency representative oversaw the running / management of the project at all times. Individual advisors maintained contact with government bodies as required, and links were forged with other advisory bodies in the county e.g. Wildlife Trusts, FWAG and Tourism South West. Newsletters were issued twice yearly to all stakeholders, and a website was maintained / updated throughout the project.

Engagement with Farmers:

Cold calling proved to be the most useful method of communicating with farmers and making initial contact. It was found that a free, voluntary and confidential service is key to engaging with farmers. The personal touch and having an assigned advisor helps avoid confusion and frustration for farmers. The free and confidential advisory service also ensured maximum uptake by farmers who are naturally wary of Environment Agency / DEFRA, and potential prosecution for non-compliance of regulation.

Monitoring:

Physical monitoring of environmental improvements was not possible through the funding stream. However, photos were taken prior to commencement of grant aided physical works and subsequently. These pictures clearly show morphological change to watercourses and improved habitat structure.

Lessons Learnt**Project Set Up:****Funding:**

Unfortunately Objective 5b funding could not provide for ongoing monitoring of environmental parameters.

Engagement with Stakeholders:

More contact could have been maintained with stakeholders. WRT acted as a one-stop-shop referring farmers onto other groups and grant schemes where necessary to avoid farmer fatigue.

Engagement with Farmers:

It was concluded that mail shots, advertising, press releases and show promotions help 'spread the word', but were found to be no substitute for face to face engagement on the farm.

Monitoring:

The management information systems were robust and geared towards the monitoring of performance targets and budgetary control. A rigorous and effective quality control system was in place, which included random checking of the management plans and ongoing advisor training. However, funding was restricted for water quality monitoring and insufficient data limits the reliability of environmental conclusions drawn from the project.

Key Outcomes:

Benefits to Farmers:

Average savings of £2,700 per farm have been made in efficiency savings, soil retention, improved nutrient management.

Benefits to the Environment:

There is a potential for improved water quality in two large river catchments; savings in soil retention and improved soil structure. 59km of riverbank fencing protecting watercourses has been erected and is providing sheltered corridors. 84 erosion controls are now in place, and 84 debris dam removals have been undertaken.

South East

Sussex Landcare Project

Project website:

Duration of project:

2005 – 2010.

Site Description:

Evidence of DWPA impact:

The main cause of diffuse water pollution is thought to be surface run-off from soil, which may contain nitrates.

Project Overview

Aims and Objectives:

The main aim is to promote positive land management to conserve and enhance biodiversity, landscape and water resource management issues in line with the policies of the Environment Agency, Sussex Downs Conservation Board and the Farming and Wildlife Advisory Group.

The objectives are:

- To promoting best farming and environmental practice;
- To identifying land use practices producing diffuse pollution, and seek solutions to the problem;
- To maximise river restoration schemes;
- To develop land management schemes that safeguard important ground water resources;
- To work with all statutory functions of the Environment Agency to identify solutions to specific incidents of diffuse pollution from agriculture.

Stages in Project Activity:

Landscape and habitat restoration:

- 1) Promote river habitat and catchment restoration projects that deliver multiple benefits.
- 2) Develop potential habitat mapping through land management schemes e.g. arable reversion resulting in less intensive management of land thus contributing to water resource and biodiversity objectives.
- 3) Undertake demonstration projects to promote best farming practice and opportunities to achieve high environmental standards through agri-environment schemes.
- 4) Assist farmers and land managers achieve the highest environmental standards through the Higher Tier Scheme in areas where water resource protection is a priority.

Pollution control:

- 1) Assist farms to comply with NVZ regulations and promote voluntary uptake of measures in areas outside of NVZs.
- 2) Assist farmers to meet obligations of the WFD.
- 3) Ensure greater awareness of cross compliance issues to ensure an integrated approach to the management of water resources within Sussex.
- 4) Work with Environment Agency Officers to establish effective regulation of surface and groundwater NVZs.
- 5) Commission a study looking at current land use, crop and livestock production systems and their potential impact upon water quality.
- 6) Develop a potential habitat mapping project to include resource protection options for soils to provide a GIS based soil risk assessment.
- 7) Incorporate resource protection and flood management options into all agri-environment schemes where appropriate.

Funding and Resources:

Cost of project:

The total cost is £8K per annum for a Project Officer, accommodation and administration. The funding is obtained from the Sussex Downs Conservation Board for the duration of the project.

Monitoring:

Engagement with Farmers:

Evaluation

Project Achievements

Project Set Up:

Experience from pilot projects such as the Rother Valley Landcare Project, has shown that solutions to land management issues can only be found if they are both environmentally and economically sound, and combine specialist agricultural and environmental disciplines. These conclusions have helped in setting up this project.

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

Southern

Test and Itchen Landcare Project

Project website:

N/A

Duration of project:

2005 – 2008.

Site Description:

Both the Test and Itchen are designated SSSIs, the latter is also a candidate SAC.

Evidence of DWPA impact:

Both rivers are currently in unfavourable condition due to excess levels of nutrients and suspended solids. Pollutants of concern are silt, nitrate, phosphorous, faecal pathogens and farm chemicals. Surface water quality has been affected, and salmonid egg survival through siltation of spawning beds has decreased.

Project Overview

Aims and Objectives:

The main aims are to encourage and support sustainable land management practices, and tackle the problems associated with diffuse pollution, resource protection and riverine ecology.

Stages in Project Activity:

The project consists of targeted campaigns, consisting of proactive wet weather surveys and advisory farm visits, running in conjunction with demonstration sites to provide training and raise awareness. Farm visits have been targeted at high-risk sub-catchments to identify poor land management practices that needed addressing, and are often informed by wet weather surveys conducted each year. The visits also promote Landcare demonstration farms, workshops, and encourage uptake of ELS to develop integrated farm management plans. The project is also providing a small capital grants budget.

Funding and Resources:

Cost of project:

River Itchen (I) / River Test (T)

2005-2006 – Workshops £6K (I), Farm visits £6K (I) /£5K (T).

2006-2007 – Farm visits £6K (I) / £5K (T). Farm workshops £6K (T)

2007-2008 – Advisors £5K (I), Demonstration farms £6K (I), Farm visits £5K (T).

Monitoring:

Engagement with Farmers:

The main methods of engagement in the project are, farm visits, advice, workshops, demonstration farms and capital grants.

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Farmer co-operation and interest through farm visits have been extremely high. The establishment of demonstration farms have proved very successful in raising awareness, identifying opportunities and providing training for farmers and advisors.

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

Should farmers implement the sustainable land management practices, it should result in reduced nutrient and sediment loads, reduce the risk of pesticide contamination, improve compliance with River Quality Objectives and reduce the risk of localised flooding.

North East

Ure Initiative

Project website:

N/A

Duration of project:

2005 – 2010.

Site Description:

Yorkshire and Humber, North Yorkshire. The land use is a mixture of blanket bog and heather moorland, forestry, pasture and arable.

Evidence of DWPA impact:

There is a need for sustainable management of the catchment. The main issues relate to overgrazing and bank erosion, disconnection of the river from its floodplain, moorland drainage, agricultural run-off impacting on flooding, nutrient and sediment pollution, sheep dip entry to watercourses, invasive plants and barriers to fish. There is algal growth on the river bed and in the water in the Upper Ure, which is extending down the catchment. There has been an increase in spatiness of flows and river bank erosion. There are also indications of poor fish populations in some areas.

Project Overview

Aims and Objectives:

The main aim is to implement the Ure Initiative Strategy for sustainable management of the catchment. This covers water quality and quantity, abstractions and discharges, fisheries, bio-diversity, land management, flood risk management, recreation and tourism and education.

Stages in Project Activity:

The Ure Initiative Strategy was established in 2004. Implementation has now begun through various initiatives. These schemes include mapping of land management risks, based on run-off connections and sediment delivery to target areas where management action will provide maximum environmental benefit. This encompasses a Yorkshire Dales Rivers Trust project in the Upper Ure linked to a NERC research project and the national park work with farmers, and water vole conservation project in the lower Ure catchment. The mapping also identifies areas vulnerable to future management change.

Funding and Resources:

Cost of project:

Monitoring:

There is currently no ground water monitoring. Monitoring of phosphorous in the Upper Ure is taking place, but it is in relation to sewage works discharges.

Ground truthing of risk mapping work has been carried out with regards to land management changes.

Engagement with Farmers:**Evaluation****Project Achievements****Project Set Up:****Funding:****Engagement with Stakeholders:****Engagement with Farmers:****Monitoring:****Lessons Learnt****Project Set Up:****Funding:****Engagement with Stakeholders:****Engagement with Farmers:****Monitoring:****Key Outcomes:****Benefits to Farmers:****Benefits to the Environment:**

Whittle Dene

Project website:

www.whittledene.org

Duration of project:

Site Description:

The project is located in Northumberland, in an area of 3.9km² (micro catchment) and c. 500 km² (wider catchment). The land use is a mixture of various agricultural sectors.

Evidence of DWPA impact:

Pesticides, pathogens, nutrients (N and P) and sediment are the main problem in the area. Pesticides have been found in the drinking water reservoir.

Project Overview

Aims and Objectives:

The main aim is to develop an integrated catchment management plan for a rural semi-upland catchment. The plan should incorporate multiple objectives (including water quality) and the methodology employed may be used as a model to benefit the implementation of the WFD.

Stages in Project Activity:

A catchment management plan has been designed and the project is in the early stages of introducing the plan.

Funding and Resources:

Cost of project:

c.£580K is required for detailed monitoring, catchment characterisation, modelling, implementation of catchment options etc. DEFRA is a primary funder for this project. The project is being funded over 3 years.

Monitoring:

There is currently no ground water monitoring. With regards to surface water, there is flow proportional monitoring and telemetry for pesticides, pathogens, N, P and sediment.

Land use changes will be monitored mainly through ELS uptake. Also, additional work on drainage, biobeds, grazing etc.

There has been a positive change in farmer attitude due to farm advice and promotion of soil, fertiliser, pesticide planning and 1:1 advice.

Engagement with Farmers:

There are currently 6 farmers involved in the project, working in arable, beef and sheep sectors. Initially meetings were used to target farmers, now the project is concentrating on 1:1 advice.

Evaluation**Project Achievements****Project Set Up:**

Scoping the study before commencement eased the implementation. A local advisor was used for all farm communications, which proved successful for engagement.

Funding:

There was sufficient funding for detailed water quality monitoring and catchment characterisation, which is very rare. Planned examination of the wider area around the micro catchment revealed issues were widespread.

Engagement with Stakeholders:**Engagement with Farmers:****Monitoring:****Lessons Learnt****Project Set Up:**

It has been concluded that, local, known, trusted and practical advisors are necessary.

Funding:

Some unique data and results have been recorded as a result of the project. Due to a good understanding of water quality problems, this allowed a response to be drafted. It is important to ensure that results from a micro catchment are representative of wider areas.

Engagement with Stakeholders:**Engagement with Farmers:****Monitoring:****Key Outcomes:****Benefits to Farmers:****Benefits to the Environment:**

Yorkshire Dales Rivers Trust

Project website:

www.yorkshiredalesrivertrust.org.uk

Duration of project:

November 2004 – present.

Site Description:

North Yorkshire, Rivers Wharfe, Nidd, Ure and Swale.

Evidence of DWPA impact:

Flooding is notorious in towns such as Ripon, Boroughbridge and York due to sedimentation in river beds. Soil and nutrients (N and P) in wet weather run-off from agriculture is a particular problem, causing eutrophication of the Upper Ure. The increase in nutrients causes excess algal growth during the summer months. There has also been a decline in river biology, including fish populations, and poor aquatic growth.

Project Overview

Aims and Objectives:

YDRT is committed to address problems based on scientific knowledge or through research. A small project in collaboration with University of Durham aims at assessing eutrophication of the Upper Ure.

Stages in Project Activity:

YDRT benefit from the participation of individual trustees participatory work with the Environment Agency, Yorkshire Water Services plc and Yorkshire Dales National Park Authority. A survey of current problems has been reported for the River Ure.

Funding and Resources:

Cost of project:

YDRT is entirely managed by volunteer trustees. Estimates and sources for Project Director and office accommodation have not yet been attempted. Durham University eutrophication project is costing £18,800.

Monitoring:

There is currently no monitoring of ground water or surface water.

There is a link however, to the Upper Ure project. Farmer acceptance of advice to reduce diffuse pollution, and reductions in eutrophication will be studied.

Engagement with Farmers:

All farming sectors have been targeted, ranging from upland sheep grazing to Vale of York intensive arable. YDRT have early experience of engaging with

farmers through FWAG channels. The number of farms involved has not been confirmed.

Evaluation

Project Achievements

Project Set Up:

Project establishment was driven by volunteer enthusiasm and inspiration from the Rivers Trusts movements. Support from the community is building progressively (there are currently 85 subscribing members).

Funding:

Subscriptions and donations provide volunteer staff with their core needs only. A foundation grant from Yorkshire Dales Millennium Trust (£18,800) is funding the first year of research and basic office equipment.

Engagement with Stakeholders:

Trustees were appointed from a range of community stakeholders, including agriculture and riparian landowners. Newsletters were distributed widely to central and local government, angling, land management, business organisations. YDRT has yet to establish complete local confidence, that can only come from the delivery of results.

Engagement with Farmers:

FWAG currently provide the main channel of communication.

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

North West

Bassenthwaite

Project website:

For information:

http://www.lake-district.gov.uk/bassenthwaite/geomorph_final_text.pdf

Duration of project:

Site Description:

The catchment is located within a National Park, a grade 1 SSSI and is a candidate for SAC. The catchment area is 350km².

Evidence of DWPA impact:

Bassenthwaite Lake has an issue with silted waters invading fish and plant species. During storms, the wind churns the water causing the silt to be deposited on the beds where the fish are spawning and blankets them. Phosphates are decreasing the oxygen content in the water and encouraging algal blooms.

Project Overview

Aims and Objectives:

In line with the multi-agency catchment sensitive farming pilot project, the broad objectives are:

- To directly contribute to a reduction in diffuse pollution in the Bassenthwaite catchment;
- To inform the development of more effective joint working practices between project partners, for the delivery of a reduction in diffuse water pollution within the Bassenthwaite catchment and catchments at a national level.

Stages in Project Activity:

The intention is to deliver focused advice and support to targeted high risk farmers on CSF. Around 100 farms will be visited to engage in 1:1 discussions with farmers. Risk will be assessed through a combination of PSYCHIC level 1 catchment appraisal, farm based risk assessment (including discussions with the farmer), reference to soil sampling of circa 60 farms already undertaken by Bassenthwaite Lake Restoration Project (BLRP) and local knowledge within the partner organisations. Funding options will be investigated so that the recommendations can be tailored to specific farms. Existing and new agri-environment schemes will be signposted through the farm visits, as well as other grant aid. There will be liaison with the RDS Regional Farm Advice Coordinator to make best use of the DEFRA farm advice contracts, such as the ADAS advice contract on Environmentally Sensitive Farming.

Funding and Resources:

Cost of project:

Year 1 will cost a total of £80K.

Monitoring:

There is currently no groundwater monitoring. The surface water is being monitored at the inflow to the lake, where suspended solids and dissolved and total phosphorous will be measured. There will also be an assessment of EA and BLRP Science Group monitoring programme, particularly with respect to the locations of the monitoring stations, frequency of sampling, determinants analysed and coverage of storm events.

Engagement with Farmers:

A total of 100 farms are involved in the project.

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

ICREW Project

Project website:

www.icrew.info

Duration of project:

September 2003 – March 2006

Site Description:

Cumbria and Lancashire. The land use in the area is predominately agricultural.

Evidence of DWPA impact:

There have been intermittent failures of the Bathing Water Directive at certain sites and failure to achieve guideline compliance.

Project Overview

Aims and Objectives:

To improve water quality in streams which impact on bathing water sites.

Stages in Project Activity:

- The main focus of the project has been to carry out pollution prevention visits to farms in targeted catchments. This has been supported by increasing awareness and sharing information through stakeholder meetings.
- In addition, a farmer group is being set up in the Haverigg area in conjunction with ADAS.

Funding and Resources:

Cost of project:

The project requires 4 full time staff, which is being funded by the Interregg IIIB funding, 1.2 million for PA2 over a duration of 3 years. Funding has also been given to contractors studying the Windermere catchment.

Monitoring:

There is currently no groundwater or surface water monitoring.

Response to the project as a whole has been positive, with a pragmatic approach having been taken.

Engagement with Farmers:

It is estimated that 500 farm visits will be made over the next 3 years. These visits will be to all agricultural sectors, with the exception of very small beef and sheep farms. In the future, it is hoped that champion farmers will be used, which will be developed through the farmer group.

Evaluation

Project Achievements

Project Set Up:

The project is one of the 7 mini-projects or Pilot Actions which work as an integrated project with European partners looking at a number of issues relating to Bathing Water quality.

Funding:

The 4 full time staff allowed work to be undertaken on the ground.

Engagement with Stakeholders:

Involving a variety of stakeholders helped increase awareness of the project. Information, advice and ideas were shared between the partners involved.

Engagement with Farmers:

A pragmatic approach during farm visits helped to gain the respect of farmers.

Monitoring:

There has been no specific monitoring undertaken, but routine monitoring will be assessed to demonstrate improvement.

Lessons Learnt

Project Set Up:

The approach of trying to tackle the whole picture and involving partner countries has been successful.

Funding:

Funding was limited for water quality monitoring, limiting the duration of the project. Insufficient data limits the reliability of conclusions drawn from the project.

Engagement with Stakeholders:

Meetings needed to be structured in order to focus outcomes.

Engagement with Farmers:

There is a need to ensure knowledge of all farming issues is up to date, to ensure competent responses are given on site.

Monitoring:

Specific monitoring on certain rivers would have been beneficial to the project.

Key Outcomes:

Benefits to Farmers:

Where possible benefits to the farmer were used to bring about changes on the farm, e.g. increased storage leading to more nutrient benefits.

Benefits to the Environment:

Due to the nature of diffuse pollution, major water quality improvements will be difficult to demonstrate as it will take long term changes and investment in farm and land management.

Meres and Mosses

Project website:

Duration of project:

2000 - March 2005

Site Description:

NW Region. Cheshire, Shropshire and Staffordshire. Numerous SSSI's and SBI's plus cSACs and Ramsar sites are located in the region.

Evidence of DWPA impact:

Eutrophication of standing waters is occurring due to agricultural run-off which, is increasing nutrient levels in the regions rivers. Protected sites are failing to make favourable condition. There has been an increase in nutrient levels in the Meres and Mosses. Changes to vegetation structure and composition are also occurring in the area. Increased nutrients are reaching the rivers due to changes in agricultural practices.

Project Overview

Aims and Objectives:

To encourage farmers to enter into agri - environment schemes to reduce the amount of nutrient run-off and change farming practices for the benefit of wildlife.

Stages in Project Activity:

The project has now finished.

Funding and Resources:

The project received £22k from English Nature and £10k from EA. All EA money was spent in the Cheshire/South Area. Funding was supplied on a year to year basis.

Cost of project:

Monitoring:

Groundwater: The Agency is looking to spend approximately £25k in 2005 (possibly extending to c£70k over three years) on monitoring the success of the project.

Surface water: The Agency is looking to spend approximately £25k in 2005 (possibly extending to c£70k over three years) on monitoring the success of the project.

Land Management Changes: The Agency is looking to spend approximately £25k in 2005 (possibly extending to c£70k over three years) on monitoring the success of the project.

Engagement with Farmers:

The project used methods of farm visits, farm walks and road shows to engage with farmers. Champion farmers were used to deliver key messages.

Evaluation**Project Achievements****Project Set Up:**

With regards to the project management side of things, EN as the budget holders, with the EA advising on where money (in Cheshire) should be spent worked well.

Funding:

A partnership approach made it easier to secure funding.

Engagement with Stakeholders:**Engagement with Farmers:**

The use of farm walks and workshops to introduce farmers to the schemes, followed up with farm visits by the advisors was successful. FWAG officers undertaking face to face meetings with farmers on an individual basis paid dividends.

Monitoring:**Lessons Learnt****Project Set Up:**

Farmers seemed to appreciate a 'hands on' individual approach.

Funding:**Engagement with Stakeholders:****Engagement with Farmers:****Monitoring:**

Key Outcomes:

Benefits to Farmers:

Through the project, farmers receive assistance with producing applications. There are possible economic benefits on the farm through changing agricultural practices, but the level is dependant on the type of farming undertaken.

Benefits to the Environment:

There are improvements to water quality where inputs (chemical and solids) are reduced. There will be increased space for wildlife through habitat creation. Soil erosion will be reduced due to better farming practices. Aesthetic appeal in the area will be higher as a result of the project.

Ribble Pilot River Basin Project

Project website:

Duration of project:

July 2004 – March 2008.

Site Description:

The Ribble basin sits within the proposed North West River Basin District and includes the Ribble, Douglas and Crossens catchments. Although the basin is predominantly rural, there are a number of urban areas, including Preston, Blackburn, Wigan and Blackpool. There are numerous areas protected for their conservation value and many of the rivers provide a good habitat for salmon. The upper catchment is heavily farmed and diffuse pollution is regarded as one of the main environmental issues. The pilot will cover the whole catchment and estuary.

Evidence of DWPA impact:

The main issues in the catchment are related to upland sheep grazing, intensive dairy and lowland horticultural production polluting the watercourses through diffuse water pollution.

Project Overview

Aims and Objectives:

- To investigate how effectively the England Rural Development Programme and the introduction of the Single Payment Scheme can reduce DWPA and help meet WFD requirements in the Ribble catchment;
- To raise awareness among stakeholders of existing regulations, advisory services and grant schemes for tackling DWPA;
- Seek comment from local Government agencies and stakeholders on mechanisms for tackling DWPA;
- Analyse and report on the implementation or targeting of existing measures.
- Identify gaps in delivery, related to farming practices, agri-environment scheme structure, geographical location or advisory services;
- Propose a new scheme or policy requirements required to reduce DWPA in the Ribble and Derwent river basins to reach WFD targets.

The objectives will be considered at the river basin scale, but in view of the large size of the Ribble and Derwent catchments, some aspects of the study will be focused on selected representative waterbodies within each river basin.

Stages in Project Activity:

Technical reports will be produced to the timescale set out by the Action Plan. Delivery of targeted support and advice on DWPA mitigation will take place. Information on farmer attitudes to DWPA in the Ribble will be collected and analysed. Delivery of a programme of dissemination events throughout the project will be undertaken. Historical and current appraisal of land use within the River Basins will take place using Environment Agency and Rural Development Service existing datasets. Management monitoring will aim to summarise details of existing farm management practice and complementing land management analysis with information on farm management relevant to DWPA. This might include changes in use or amounts of chemical inputs, fertilisers, livestock type or stocking density, cropping patterns etc. Land use changes arising from entry into agri-environment schemes will also be collated and where possible, the effect of agri-environment management on DWPA will be assessed. There will also be a farm best practice advice service. The impact of regulatory activities will be reviewed to determine the effect on water quality targets in the River Basin. Perception surveys will take place to assess farmer attitude to DWPA issues, including problem awareness, ownership and response to regulatory or supportive measures aimed at addressing the problem. Interim project reports will be produced on a 6 monthly basis.

Funding and Resources:

Cost of project:

The total cost of the project over the whole period has been estimated at £267.5K. (This figure includes the Yorkshire Derwent Basin project.)

Monitoring:

There is collation of data in written and / or electronic format relating to DWPA within the River basins. This monitoring focuses on the effects of agricultural activities and impacts on water nutrient levels in surface waters, invertebrate biology, structural diversity and sediment loadings. All stakeholders will be consulted on sources of available data, but particular emphasis will be given to results from Environment Agency monitoring stations and surveys, English Nature site condition statements and published literature.

Engagement with Farmers:

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

United Utilities Sustainable Catchment Management Programme (SCaMP)

Project website:

Duration of project:

2005 – 2010.

Site Description:

United Utilities (UU) owns 59,500 ha of land of which 58,000 ha is catchment land. 45% of the total catchment land holding is 3 part of National Parks and 30% is designated SSSIs. 23% of land is in unfavourable condition and is declining, 29% is in unfavourable condition with no change in condition and 36% is in an unfavourable but recovering condition.

Evidence of DWPA impact:

There has been a deterioration in water quality in the area which is evident through water discoloration and an increase in suspended solids and nutrients. There has also been alarming declines of birds such as twites and hen harriers in the area.

Project Overview

Aims and Objectives:

The overall aim of the Catchment Management Project (CMP) is to improve the way in which the land owned by UU is managed. In doing so, it is thought the project will encourage an integrated approach to catchment management that will deliver safe and secure water supplies whilst facilitating improvements in upland farming techniques leading to enhanced biodiversity.

Stages in Project Activity:

Management plans will be created which will allow UUs upland estates to be farmed and managed to improve raw water quality and benefits wildlife, and are likely to include techniques such as:

- Reducing grazing density and excluding cattle from land undergoing restoration
- Manipulating grazing regimes both spatially and temporally
- Restoring wetlands through blocking grips and drains
- Tackling moorland erosion and restoring degraded moor to active blanket bog
- Creating buffer zones around watercourses and abstraction points
- Restoring walls and hedges
- Converting silage to hay meadows
- Where appropriate introducing small scale arable rotation to facilitate traditional mixed farming
- Providing new farm buildings for indoor wintering of livestock and for lambing
- Providing new waste management facilities to reduce run-off pollution of water courses

- Fencing to keep livestock away from areas such as rivers and streams and from special habitats

By spring 2006, the aim is for all farms entering the project to have innovative long-term plans to support the implementation of the SCaMP ideals. RSPB and UU employees, with the help of officers from Lancashire Rural Futures and the Peak District National Park Authority, will draw up these plans.

Funding and Resources:

Cost of project:

The total project costs are estimated at just over £24 million. 60% will be invested in achieving the SSSI improvements, or slowing the deteriorations. 5% will be incurred in achieving specific UU Biodiversity Action Plans for 19 species and habitats. 35% will be accounted for through investment on non-SSSI designated land associated with hill farming and SSSI land currently in favourable condition.

Monitoring:

Detailed monitoring will be carried out between 2005-2010 to assess the impact of applying different management and restoration techniques. This will be carried out intensively using automatic monitoring equipment and also manually with up to weekly monitoring scheduled. Vegetation monitoring through approved EN techniques will take place, as well as bird populations monitoring annually.

Engagement with Farmers:

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

East Anglia

Wensum Project

Project website:

N/A

Duration of project:

April 2005 – March 2008

Site Description:

Norfolk. The area covered is 636km² and is mainly agricultural land. The river corridor in the catchment is a designated SSSI.

Evidence of DWPA impact:

Soil and nutrients (N and P) during in wet weather run-off into the nearby river due to problems caused by farming practices. There has been a decline in the river biology, including fish populations. Levels of sediments have increased and there has been a noticeable discolouration of the river.

Project Overview

Aims and Objectives:

This project is part of the national multi-agency catchment sensitive farming pilot project.

- The main aim is to work collaboratively on actions to help farmers reduce diffuse water pollution from agriculture.
- To demonstrate new and effective working between DEFRA agencies in achieving a common objective and to cascade lessons on best practice within partner organisations (EA, EN, RDS, CA).

Stages in Project Activity:

Funding and Resources:

Cost of project:

Staff costs RDS, year 1 EA £9K, EN £6K plus National EA £15K for a duration of 3 years.

Monitoring:

There is currently no ground water monitoring, but there is surface water monitoring.

Engagement with Farmers:

800 farmers are involved in the project.

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

Midlands

Cutlers Catchment, Derbyshire

Inappropriate land management practices such as ploughing up and down gradients, ploughing close to river banks, cultivating on too steep a gradient, ploughing across gateways on slopes next to roads and poor slurry containment, have led to an increase in the amount of sediment and runoff washing into nearby lakes. Silt levels in lakes are rising and affecting flood storage ponds, significantly reducing Derby's flood storage capacity. The National Trust has played a lead role in establishing a catchment partnership to tackle the problems at source and develop integrated solutions. The following measures are being considered:

- Development of willow and alder carr to trap silts and remove eutrophic inputs.
- Establish an area of permanent pasture as a buffer for the Upper Mercaston Brook.
- Ensure a change of farming practices to reduce soil erosion e.g. contour ploughing, buffer strips, under-sowing, uncultivated zones around gateways, reduced grazing pressure.

A catchment plan is being developed to implement these measures at the most appropriate points. This will help with targeting of public investment through Environmental Stewardship, the Single Farm Payment (Cross Compliance), the flood defence budget and any future expenditure on preventing diffuse water pollution from agriculture and meeting Water Framework Directive requirements.

Mercaston and Markeaton Brooks

Part of Cutlers catchment

Project website:

Duration of project:

Site Description:

Derby. The area covered by the project is 53km², 50% of the land is arable and 50% is grassland, with both mixed and dairy farming. In the north end of the catchment lies the Mercaston Marsh and Muggington Bottoms SSSI through which runs the Black Brook tributary of the Mercaston Brook.

Evidence of DWPA impact:

Sediment deposits in the lakes at Kedleston Park where it reduces the water depth and volume of the lakes causing deterioration in the landscape quality. The silt deposits over the gravel on the bed may be reducing the quality of the globally threatened white-clawed clayfish which are found in the area. Sampling by the EA has shown the water is eutrophic being high in both nitrates and phosphorous. There are extensive algal mats during the summer due to fertiliser input into the lakes.

Project Overview

Aims and Objectives:

The overall aim of the project is to protect the soil, water, landscape and biodiversity of the Mercaston and Markeaton Brooks (MMB) catchment and reduce the risk of flooding in Derby through improved natural resource management.

Stages in Project Activity:

Develop a vulnerability model and risk map for the catchment. Commence a programme of awareness raising. Assist farmers with applications for ELS and HLS. Seek additional resources e.g. grants. Design and implement a project monitoring scheme. Employ specialist advice on soils, water and feasibility.

Funding and Resources:

Cost of project:

Monitoring:

There is currently no groundwater monitoring. With regards to surface water monitoring, periodic lake / silt depth measurements are taken from the lake. EA record annual water quality sampling data. There is an invertebrate monitoring scheme. The Derby CC flood recording scheme is monitored.

Engagement with Farmers:

FWAG has visited farms to monitor the aim of encouraging 50% of farmers in the MMB catchment to join the ELS scheme.

Evaluation

Project Achievements

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Lessons Learnt

Project Set Up:

Funding:

Engagement with Stakeholders:

Engagement with Farmers:

Monitoring:

Key Outcomes:

Benefits to Farmers:

Benefits to the Environment:

Teme Catchment

Project website:

Duration of project:

Site Description:

The River Teme has been designated a SSSI for a number of protected species, such as otter, fish and invertebrates e.g. the freshwater pearl mussel, in addition to vegetation species. The land use in the area is mainly arable and grassland.

Evidence of DWPA impact:

Many of the Teme's key species are vulnerable to declines in water quality, e.g. the fresh water pearl mussel. The main problems in the catchment are siltation of the river and elevated nutrient (P) levels. There is evidence of sheep dip chemicals in upland rivers and occurrences of organic pollution incidents.

Project Overview

Aims and Objectives:

This project is part of the national multi-agency catchment sensitive farming pilot project.

- The main aim is to improve water quality in the Teme and enhance associated river corridor habitats.

The objectives of the project are:

- To ensure sustainable land use within the catchment;
- To minimise the impact of agricultural practices on the environment;
- To ensure the adoption of Best Farming Practices that benefit both the farmer and the environment.

Stages in Project Activity:

The targets of the project are to raise awareness of the causes and impacts of diffuse water pollution and best farming practices to deal with these impacts. To provide advice to farmers and signpost ELS and HLS. Demonstrate win-wins. Signposting of other related organisations, including grant aid.

Funding and Resources:

Cost of project:

Year 1, the total requirement is £85K.

Monitoring:

In Herefordshire, 4 of the farms wanted to join ELS as soon as possible as a result of farm visits and 2 farms wanted to receive information on HLS. In Worcestershire, 2 farms were considering ELS positively as a result of the visits.

Engagement with Farmers:

The sectors targeted were predominantly stock farms, 2 mixed and 1 dairy and arable. 2 farms let out land for potatoes. 3 farms were already in the CSS. There were 2 awareness raising events. Advisory work, 15 farm visits and reports. 6/8 soil management, nutrient management, farm waste management plans and risk awareness maps were drawn up.

Evaluation**Project Achievements****Project Set Up:****Funding:****Engagement with Stakeholders:****Engagement with Farmers:**

The main reason farmers invited FWAG onto their farms, was because they wanted to learn more about the new grant schemes. All farmers intend to join the ELS or HLS as a result, which has obvious benefits to water quality. Advice on river catchment issues was received with interest. Awareness is greater and farmers will make efforts to improve in weak areas. Emphasis on grants and key wildlife species helped to keep discussions positive.

Monitoring:**Lessons Learnt****Project Set Up:****Funding:****Engagement with Stakeholders:****Engagement with Farmers:****Monitoring:**

The life of the project is not sufficiently long enough to assess whether the objective of reducing diffuse water pollution from agriculture has been achieved.

Key Outcomes:**Benefits to Farmers:****Benefits to the Environment:**

Initiatives Covering Numerous Areas

Voluntary Initiative

Project website:

www.voluntaryinitiative.org.uk

Duration of project:

The project began in March 2001. It was originally scheduled to end in 2006, but is likely to continue for at least two more years.

Site Description:

The six water 'pilot' water protection catchment areas are:

<p>Upper Cherwell, Oxfordshire/Northamptonshire A surface water river catchment with an area of 199km² on predominantly clay soils. The land use in the catchment is principally mixed farming, arable and grassland, plus some amenity use with 306 farms in the catchment.</p>	<p>Boston Park, South Yorkshire A groundwater catchment of 40km² with water abstracted from a Triassic Sherwood sandstone aquifer. The catchment area has 61 farms composed of mixed farming and small holdings.</p>
<p>River Leam, Warwickshire A surface water river catchment with an area 373km². The land use is mixed farming with both arable and grassland plus some amenity use with 730 farms in the catchment.</p>	<p>Ingbirchworth, Yorkshire An upland reservoir surface water Catchment with an area of 8km². Land use is mainly grassland, both for grazing and silage and there are 32 farms in the catchment.</p>
<p>River Ugie, NE Scotland A surface water river catchment that covers 155km². The two tributaries, the North and the South Ugie, flow through predominantly lowland mixed farmland and there are 277 farms within the catchment. The water is abstracted close to the coast at Balmoor, Peterhead where there is a raw water reservoir.</p>	<p>River Blythe, South Staffordshire A surface water catchment of 150km² with the abstraction point at Blithfield Reservoir near Abbots Bromley. The Number of farms in the catchment is 470.</p>

Evidence of DWPA impact:

A selection process for the pilot catchments was devised, to give a representative range of water resource conditions and catchments which, were compact enough to enable changes to be seen within the lifetime of the project. All sites had to be those where there was a historical record where levels of the pesticide were a problem, exceeding EU drinking water standards of 0.1ppb. They also needed to have the commitment of the local water company to continue, and in most cases increase the level of pesticide monitoring.

Project Overview

In each of the six catchments a Catchment Management Team has been established, made up of representatives from local stakeholder groups. A team is usually led by a farmer with up to four other farmers, an agronomist and representatives from the local water company and from pesticide manufacturers. The teams have had a free hand to identify the most appropriate local actions and see that they are implemented in the most effective ways.

The project was designed so that practical methods of managing pesticide use in each of the pilot areas can be added to a 'toolkit' of measures. This '*toolkit*' is periodically updated so that elements of it can be applied, where appropriate, in other catchments across the UK.

The toolkit includes:

- "Best practice" messages to be conveyed;
- Identifying and using people and expertise;
- Setting up a database of farmer contacts;
- Communicating by text messaging or email or both;
- Publishing newsletters;
- Setting up local meetings;
- Setting up farm advisor visits and farm walks;
- Detailed water monitoring providing advice on individual pesticide use in the form of decision trees.

Aims and Objectives:

After establishing the six pilot catchments and setting up local catchment groups, the aims of the project are:

- Identify those practical approaches which local people consider of use locally.
- Identify those approaches that can be transferred for widespread adoption in both general water protection activity and selected catchments in the UK.
- Identify measures that will demonstrably reduce pesticide residues in water and, importantly, those which are of lesser utility and can be rejected.
- Develop 'toolbox' of solutions that can be used to 'roll out' lessons learnt to other catchments.
- Establish a limited number of further catchments

Stages in Project Activity:

Information on the catchments themselves is available on relevant catchment pages on the VI website. This includes information on the water resource type, catchment land use, its water quality problems, the local project team contacts and their specific activities to achieve water quality improvements. In addition a predictive model for forecasting the suitability of field conditions for product use has been tested in some of these catchments. This early warning model is designed to be used in association with the decision trees, which

have been developed for some pesticides Isoproturon, Chlorotoluron, Simazine, Mecoprop - p (CMPP) and atrazine.

Funding and Resources:

The project is funded equally by the Crop Protection Association and UK Water Industry Research Ltd (UKWIR). As with most pilot studies, the project had relatively high initial set-up and running costs, amounting to £60,000 for each year of the project. Note that these costs do not include the costs of water sampling and pesticide analysis carried out by the individual water companies at significant cost to themselves. Having established a basic toolkit of measures, it is hoped that the cost of rolling out the approach to additional catchments will be considerably reduced.

Monitoring:

Intensive monitoring by water companies has been necessary to help understand what is happening in the catchments. Information on monitoring can be found on the VI web-site. This includes newsletters containing graphs showing the seasonality of the problems, and updates on water quality monitoring. At the request of agronomists working in the Blythe, Vherwell and Leam catchments, weekly updates are now sent by email during the autumn, winter and spring spraying season.

Engagement with Farmers:

So far the project has confirmed that winning the hearts and minds of farmers and agronomists by education, information and training is the key to successfully applying a voluntary approach to managing pesticides. Modern communication techniques, such as text messaging and emails, can give free weekly advice on the suitability of spraying. Issuing newsletters and holding local meetings help to reinforce these messages. Important to the future success of any catchment based initiative, is identifying exactly who farms in specific catchments. This has proven to be a significant problem and even with the full cooperation of local and national agencies, has by no means been done satisfactorily. Feedback from parts of the Cherwell and Leam catchments suggest that available data, otherwise believed to be the best available, are probably not more than 30% accurate.

Evaluation

An interim report on the all project is on the VI web-site:
<http://www.voluntaryinitiative.org.uk/Content/Reports.asp>

Project Achievements

Many of the core lessons learnt in the water catchments are already being used to influence farmer behaviour across the UK as part of the VI H2OK? Think water campaign. See :
http://www.voluntaryinitiative.org.uk/Content/Water_BP.asp

Lessons Learnt

The interim report published in 2005 highlighted that the main lessons were:

- Farmer-lead approach works – with continuing support/involvement of farmer groups
- For most of the pesticides of concern, it is vital to have the active engagement of agronomists
- Early results in some catchments show – up to 60% reductions possible
- Identifying farmers/users/advisors vital – Government support essential, but even their data is flawed.
- Practical toolkits continuously updated – focus on farmyard important. Learn from successes and setbacks
- Parallel programmes essential with non-agricultural users, e.g. local authorities
- Voluntary measures have key role as part of a broader strategy, including right mix of economic and regulatory incentives
- Integration and co-ordination with national initiatives on pesticides and agri-environment measures essential to embed best practice
- Stakeholder/voluntary approach relevant to diffuse pollution initiatives, e.g. EU Water Framework Directive.

Key Outcomes:

Overall the results from the project convey a genuine optimism that progress is being made, but also a realisation that further refinement of measures may need to be devised. There are catchments where levels of pesticides have significantly reduced and have remained low. However this has not occurred in all of the catchments and more work is in progress to understand why.

It is also becoming very clear that wet weather conditions can provide major challenges to minimising pesticide leaching. This results in occasional events where a high level of pesticide has entered the water system. However, with local co-operation between stakeholders and proper monitoring, it has proved possible to identify the underlying causes of such an event and use this evidence to devise better practice.

Appendix 1 – Other Projects In Brief

Blythe Anker and Tame Rivers Project

This project ran from 2001 – 2004 through FWAG officers. The main aim of the project was to enhance the river and riparian habitat, by reducing fragmentation, pollution and nutrient levels, encouraging wildlife and encouraging the uptake of agri-environment schemes. Funds were mainly from the Environment Agency, and covered farm visits, training and awareness, and small capital projects.

Cam Catchment, Cambridge

The whole catchment is a nitrate vulnerable zone. The project aims to enable farmers to provide suitable habitat for such species – best practice management advice is an essential step to enhance and restore biodiversity. Some farming operations can result in diffuse pollution, soil erosion and poor management of the river corridor, which in turn have a negative impact on water quality and the biodiversity interest of wetland and riverside habitats. FWAG can offer a free visit and /or impartial advice on: managing bankside habitats, including pollarding of willows. The responsible use of pesticides and fertilisers, especially in proximity to watercourses. Farm waste management and reducing soil erosion. Agri-environmental grant aid. There will also be an ongoing programme of events, including farms walks, practical workshops, demonstrations and a regular Cam Catchment newsletter.

Camel Valley Catchment

The main problem at this site is soil erosion and diffuse pollution from farmland having an adverse effect on Marazion Marsh SSSI and SPA. The advice is specially awareness raising via a general advisor.

Chichester Coastal Plain Sustainable Farming Partnership

This project ran from 2001 – 2003, and it's total expenditure is £63,000. The project involved Whole Farm Conservation Plans which provided advice on a range of issues such as livestock and grassland management, arable margins and buffer strip management, ditch management, hedge management and creation, wetland management and creation, farm operation and resource management. A best practice demonstration area of 42 different farm holdings totalling 8,400 ha was established to illustrate sustainable farming and biodiversity enhancements. The project has established the following achievements:

- 61km of 6 metre grass margins along watercourses;
- 4,556 ha have entered into Environmental Stewardship;
- 7km of fencing has been installed to protect watercourses from grazing and poaching from cattle.

Coquet Catchment Pesticides Study

Northumberland. The River Coquet is a SSSI, with another 10 SSSIs located within the Coquet Catchment.

Concentrations of the herbicide isoprouon (IPU) were detected during 2002 on a number of separate occasions within the River Coquet. The concentration of IPU detected exceeded the Regulatory standard for drinking water.

There are 3 main stages in the project:

- 1) Water quality data;
- 2) Undertake a desk study and modelling – to identify areas considered to be most at risk of diffuse pollution;
- 3) Farm visits – meetings with agronomists.

DESPRAL Project

(Research)

www.despral.org.uk

The main objective of this project is to develop an environmental soil test to determine the potential for sediment and phosphorous transfer in run-off from agricultural land. The contribution of P loss from natural geographical and agricultural management factors will be quantified and risk assessments carried out. Management options and guidelines will also be produced. The focus is on developing methodologies suitable for routine use, to enable stakeholders and regulators to better determine the agricultural contribution to eutrophication and identify practical land management solutions.

East Glos Rivers Project

This project is run in partnership with FWAG, the Environment Agency, English Nature and District Councils. The main problem is, there has been an increase in phosphorus and silt levels from arable areas. The project is aimed purely at raising awareness of the issues. Advisors undertake farm visits and organise demonstration days.

Fal and Cober Catchments, Cornwall

The main issue in these catchments is soil erosion under field vegetables, potatoes, bulbs and maize. Compaction in arable fields and grassland, and the over application of slurry at the wrong time of year is also an concern. The project consists of awareness raising and focused advice by a FWAG, FACTS trained catchment project officer. There have been 70 farm visits and whole farm plans produced over the last 3 years, as well as demonstration days, (such as explaining the benefits of slurry injection). As a result of the project, there has been an increase in slurry-nutrient testing on dairy farms and a greater awareness of difference soil cultivation techniques. Slurry injection has been taken on, on one farm in the area as a result of the slurry workshop.

High Peak Partnership, Derbyshire

The Ashop catchment in the Southern Pennines of Derbyshire covers about 125km² of blanket peat bog of national and European importance. Most of the peat has been subject to erosion and degradation from the combined effects of drought, fire, overgrazing and atmospheric pollution. The designated SSSI and cSAC blanket peat is now in unfavourable condition. The drinking water is discoloured and needs expensive treatment. Peat erosion has led to sedimentation of reservoirs. Dealing with these issues “end of pipe” and in isolation is proving expensive. There is significant potential for creative policy and delivery measures to pay farmers for providing clean water services through direct contracts with the water company, which would be far more profitable than subsidised sheep production.

Marazion Marsh Catchment, Cornwall

The main problem in this catchment is soil erosion and diffuse pollution from farmland having an adverse effect on Marazion Marsh SSSI and SPA. The project consists of mainly awareness raising and focused advice. Field by field soil risk assessments have been carried out in the area. The primary vehicle of delivery is via a general advisor and backup from a FWAG specialist. 9 farm visits covering over 1,000 ha have been undertaken and farmer meetings have been held. A number of silt traps have also been installed as a result of the project.

North Pennines AONB Peatscapes Project

This project aims to conserve and enhance the blanket bog resource within the North Pennines AONB, by increasing understanding and appreciation of the area, promoting best management practices, supporting and promoting new research, and restoration through existing agri-environment schemes and wildlife enhancement grants.

The project aims to unite all stakeholders in the AONB area, and provide a co-ordinated front for approaching landowners and influencing land management practices. Due to the Environment Agency being a major funding partner, the initial focus will be on grip-blocking, which could have benefits in terms of water colour.

Northumbrian Water Sustainable Solutions Project

This project is aimed at addressing a colouration problem arising from peat moorland erosion. Northumbrian Water's Broken Scar Treatment Works in Darlington receives most of its water from the Upper Tees catchment, much of which is an area of blanket bog with heather and grass moorland, of which some 29,000 hectares are in SSSIs. Research by Durham University has shown a consistent increase in colour levels in the raw water of the river Tees, leading to doubling of concentration in the last 30 years. Colour removal is

one of the major costs of the treatment. Therefore, rather than dealing with this problem downstream at the point of abstraction, this project deals with the problem upstream in the catchment. The project proposes introducing voluntary changes in land management which are known to influence water colour, i.e. drainage, burning regimes, sheep stocking density, in selected pilot areas. Landowners will be offered some non-financial incentives, i.e. free and confidential advice on how changing land practices could result in cost savings for the land owner as well as improvements in water quality. The cost of the project is £200,000.

Pang and Kennet Valleys Countryside Projects

The Pang and Kennet Valleys Countryside Projects covers 510km². This FWAG Initiative includes the Farm Waste Management Project, which looks at issues surrounding diffuse pollution from agricultural inputs and soil erosion caused by land use change and tillage techniques. All farmers within the project area are offered a free visit and report looking into these issues and are encouraged to undertake a Whole Farm Plan. The techniques of Nutrient Budgeting as a management tool are promoted, which can help to account for the flow of nutrients through the farm system and calculates how much is lost to the environment through wastage. Farmers are provided with information on agri-environment schemes and other initiatives. The project also aims to raise awareness in the farming community of diffuse pollution issues. This is typically done through farmer groups and farmer networks, large landowners, links with farmer representative bodies and interest groups and through established networks such as the fisheries interests, conservation organisations and parish and district councils.

Phosphorus and Sediment Yield Characterisation in Catchments (PSYCHIC)

www.psychic-project.org.uk

PSYCHIC is a tool which aims to address the need for a risk assessment and decision making tool for reducing diffuse water pollution. The Decision Support System (DSS) operates by combining hydrological and land management information, together with source fingerprinting technology, to identify specific areas of land at risk of silt and phosphorus loss. High-risk areas can then be targeted with control measures such as improved farm management practices, in order to reduce diffuse water pollution in sensitive river catchments such as the Hampshire Avon and the Herefordshire Wye. Monitoring of several sites throughout the Hampshire Avon and the Wye river catchments is underway to help better understand the process of phosphorus transfer from land to water. This information will be used to develop and validate the PSYCHIC DSS. The Avon and Wye have been selected because they are typical of UK farmland in sensitive natural environments. Research and development is being lead by ADAS.

Rosemaund Pesticide Runoff Study

The main objective of the project is to monitor the water-borne transfer of pesticides from agricultural fields into the stream draining the Rosemaund catchment in order to provide a better understanding of pesticide translocation, and to allow the development and validation of improved computerised models of translocation processes and environmental pesticide exposure.

Rother Valley

The Western Rother Valley project was established in 1999 and ran until March 2005. The main focus of the project was to work in partnership with farmers, private landowners, fishery and nature conservation interests to address catchment-wide issues such as soil erosion and run-off. Aerial photographs commissioned in 2001 highlighted the extent of soil erosion across the catchment, and have been used to promote best practice and soil conservation.

The main objective of this study was to investigate the impacts of agricultural operations and the extent to which they contribute to siltation in the river environment. Solutions are found through development of crop management plans, incorporating soil risk assessments, awareness, and best farming practices. A demonstration project, to facilitate workshops for farmers advisors and environment officers was established in the area. During these demonstrations comparisons of specific in-field cultivation techniques, timing of cultivation and cultivation technique benefits of best farming practice is demonstrated and evaluated in terms of cost benefit. Ready solutions are then offered to the diffuse pollution demonstrations. Crop management plans are used by farm advisors, to show how they can further contribute to reducing DWPA. Agri-environment schemes offer a key mechanism for promoting sympathetic management of the riverine environment, delivering both landscape and BAP targets for the Sussex Downs area of outstanding natural beauty.

Slapton Ley, Cycleau

The area covered by the project is 48km². Since 1945, there has been rapid erosion potentially due to increased grazing pressure, intensive arable agriculture, cultivation of winter crops and increased extreme weather due to climate change. There has been an increase in pollution from agriculture due to more intensive use of nitrates and phosphates. Slapton Ley suffers from eutrophication every summer and this is getting worse every year. Agricultural soils in the catchment are prone to erosion, most notably in autumn and spring when they are wet and liable to poaching. Storm events are the main mechanism of dissolved and suspended sediment delivery to the streams and Slapton Ley. Local aims/actions are to set up a searchable web-based database of research, information and data about the catchment, using risk assessment to prioritise the delivery of small grants, encourage the

uptake of agri-environment schemes by farmers through free farm advice, workshops, guidance and ongoing support. Work to date has been with the farming community, primarily funding free farm visits, carried out by a local FWAG advisor. In addition, workshops and clinics have been set up to provide advice on ELS applications. There will be a limited service of free soil testing to aid nutrient management by landowners, and a small grant scheme directed at water quality issues such as fencing-off streams from livestock. The project ends in December 2006.

South Wessex Area Landcare

River Avon

See main text.

River Frome and Piddle

This Landcare project was set up in 2003 and was based on lessons learnt from the Avon Landcare project and catchment knowledge. It was thought that wet weather agricultural run-off events were the reason for a decline in fisheries. High sediment levels settle in the spawning beds, smothering and suffocating the developing fish eggs in the winter months. Then in the summer months, Phosphate, which is attached to the soils particles, causes excessive algae communities to develop, which has detrimental effects to the ecology of the river. The increase in sediment inputs is attributed to certain changes in farm practices, which exacerbated the run-off risk. Remedying fields run-off has a number of environmental benefits: improved water quality, reduction in localised flooding, increased groundwater recharge, improved fisheries and plant ecology. To combat excessive field run-off the projects main aim was to disseminate best practice techniques to the landowners in the catchment. Due to the size of the catchment and the limited resources the successful approach used in the Avon Landcare project was replicated. Catchment knowledge, soils maps and wet weather monitoring data was used to identify high-risk areas. Two demonstration farms were set up in the main high-risk sub-catchments in 2003. Each demonstration farm has field plots with carrying dates of harvest (September or October) and depth of cultivation plough or minimal cultivation. The plots clearly show the benefits of early (dry) and deep (removing compaction) cultivation. A series of workshops were then run with farmers and advisors to raise awareness, discuss good practices in relation to soil and nutrient management – recognising and remedying soil compaction and nutrient balancing. Advisors circulate newsletters to their farmer clients on timely good practice advice to reduce run-off. In 2005 workshops aimed at agri-environment schemes took place, wet weather surveys were undertaken and a training video / CD of how to undertake a full soil risk assessment plan was produced. A soil compaction survey has been undertaken providing a baseline and will be repeated in 3.5 years to measure success of reduction. There is also continuous turbidity monitoring to assess the catchment response to rainfall events.

River Fleet

This Landcare project was set up in 2003. The site is a candidate cSAC and SPA. The catchment drains to a saline lagoon, which suffers from excessive nutrient loading resulting in eutrophication. The principle source of nutrients is attributed to agricultural run-off. A demonstration farm with a major land owner in the catchment was established and workshops for catchment farmers and advisors took place. The demonstration farm had field plots with varying dates of harvest (September or October) and depths of cultivation plough or minimal cultivation. The plots showed the benefits of early (dry) cultivation and deep (removing compaction) cultivation. The workshops also promoted good soil and nutrient management. Advisors distribute newsletters and web site details. There is a possibility of a targeted NVZ campaign to lower levels of N loss (limiting nutrient in tidal lagoon as nitrogen based eutrophication is the main issue on this cSAC), advice and farm follow-up audits.

Soil and Water Protection (SOWAP), Somerset

www.sowap.org

This project is a R&D into the impact of different cultivation techniques on diffuse pollution and other factors. The main method of engagement is working with selected local farmers around a trial site in West Somerset. The delivery is achieved through a specialist agronomist. FWAG is involved with dissemination to local farmers and testing solutions with 10 local farmers.

Sustainable Agriculture and Rivers Project (SARP)

This project is a joint scheme by FWAG and the Chambre d'Agriculture in the Somme, France. The project was awarded over £300,000 from the Interreg IIIA fund at the higher 50% rate. The project started in Summer 2003 and is currently ongoing. The main objectives are:

- To deliver well-researched 'whole farm' advice to farmers and landowners within the major river catchments
- To review, exchange and develop a method to assess farm practices for resource management and biodiversity enhancement with our partners in the Pas de Calais
- To develop awareness of key 'Good Farm Practices' within the farming community with the aim of reducing flood risk, enhancing biodiversity and reducing pollution.

The first year focussed on the Coult stream in East Peckham, which suffers frequent flooding. 16 out of 18 local landowners have been successfully recruited into the scheme, which represents approximately 80% of the catchment area. Advice to farmers has been focussed on tillage timing. To measure the impact of the scheme, a post-graduate student is undertaking a research project in East Peckham. The project will investigate the catchment response to rainfall/flow rainfall/sediment (TSS) load and river habitat score.

In 2005 Hackinge Marsh was targeted due to a water quality problem bringing the SSSI into unfavourable condition. A farmer recruitment workshop was run with approximately 15 farmers and recruited roughly 80% of land in the area into the scheme.

Following the success of the project, the EA and FWAG are preparing a second phase. Phase II will build on the research and work carried out in Phase I, and though flood risk management benefits will still be delivered, emphasis will shift to water quality and diffuse pollution. The approach will be via workshops or training instead of 1:1 advice. This will be combined with exchange visits to a country focusing on a specific theme.

Sutton Bingham Reservoir, Somerset

This project is working in partnership with FWAG and Wessex Water to reduce pesticide residues in drinking water. This will be carried out through a specialist agronomist, sampling with Wessex Water to identify problem areas, risk assessments, cropping and soil plans, and review of fill up and spray procedures.

Tweed Rivers Heritage Project

www.tweedfoundation.org.uk

This is a partnership initiative with the aim to conserve, enhance and raise awareness of the natural, built and cultural heritage of the rivers and valleys of the Tweed catchment and develop the recreational opportunities and the quality of life in the region. The project consists of 50 initiatives and was developed over two phases.

- Phase 1 began in 1999, with a spend of £4 million
- Phase 2 began in 2002, with a spend of £5 million

Phase 1 Riparian Habitat Enhancements Project was completed by 31st March 2003. The project involved riparian fencing, river enhancement and planting. Many farmers / landowners allowed new fencing to be erected or moved up to 20m from the riverbank, back from the standard 5m. Incentives included agreeing to install watering points for livestock where needed and carry out all maintenance and repairs to the new fencing for the next 25 years.

Phase 2 Riparian Habitat Project to cover the period until mid 2005. Fencing and planting projects have been completed. The agreement during this phase was to carry out all maintenance and repairs to the new fencing for the next 10 years.

Upper Brue and Alham Catchment, Somerset

There is currently a problem with diffuse pollution from dairy farming in the catchment. The project aims at awareness raising, producing Nutrient and Farm Waste Management Plans and helping the EA to deliver on NVZs. This will be done by a specialist PO on Farm Waste Management Register and Soil Scientist, supported by a FWAG advisor from dairy farming background.

Upper Wharfedale, Yorkshire

The National Trust own 9 farms in the area and has been a partner in a project to explore sustainable water and land management techniques in the catchment. A project office (funded through Objective 5b), has helped implement measures aimed at better water management, such as blocking the moorland grips, gill restoration, wetland creation and excluding livestock from riverbanks. Research was undertaken by the University of Leeds and the Natural Environment Research Council and findings suggest that land management has an important effect upon the way in which parts of the landscape that generate runoff connect to the drainage network. Location of a particular activity might be more important than its scale, as small changes in some parts of a catchment have a big effect on the timing and volume of water delivery to the main parts of the river.

Water4all Project

www.water4all.com

The surface area covered by the project is 40km², including the River Slea catchment in Lincolnshire. The groundwater area is estimated at 80km². The project is funded by the Interreg IIIB (North Sea Region) programme. The project addresses the issues of sustainable groundwater and surface water quality in intensely agricultural catchments, with particular emphasis on drinking water supplies. The overall project budget is approximately £1 million and lasts until December 2005.

The primary aim is to integrate ground water protection and management into the context of local and regional spatial planning. A second aim is to relate the activities to the WFD and its implementation.

In four separate pilot projects, Water4all is testing and analysing the effects of different land uses as well as collating existing information and data. All information is being amalgamated into a Guideline Handbook. Compensation payments and or selective land purchase may be a necessary option, and although the implementation of these is beyond the scope at this stage of the project, it is intended to pursue the outcomes as a pilot, either using further Interreg funding or through separate funding routes.

The project has 4 sub projects:

- 1) Data collection/collation on groundwater levels and quality, surface water flows and quality, existing landuse, soils data/groundwater vulnerability.

- 2) Modelling of the groundwater/surface water interaction issues.
- 3) Land use and vulnerability modelling to predict leaching rates and assess the equilibrium levels for nitrate in groundwater over whole catchment.
- 4) Developing options considering the extent of land use changes required and draw up options.

Wildcru

www.wildcru.org

This initiative runs from 2004 – 2008, and is a new Sustainable Farming Initiative which aims to restore biodiversity to the UK at a landscape scale. Although it aims at habitat enhancement, some of these measures will help to reduce diffuse water pollution from agriculture. The key to engagement with farmers in this project is, offering farmers free help including a Whole Farm Conservation Plan and advice on grants available. This costs the project £1,600 per farm. The success of the project relies on enlisting the support and co-operation of members of the farming community that are not already participating in agri-environment schemes. The project has built on the conclusions of the Chichester Coastal Plain pilot study, that financial assistance is a particularly important incentive. The Wildcru project involves identifying and approaching farmers whose position or features mean that they could contribute to improving habitat connectivity at a landscape level, e.g. farms adjacent to valuable habitat, or farms with important features, such as ponds. Provided the farmer is interested, we arrange a farm visit, at which we conduct an audit of biodiversity and, if required, of farm management practices. A Whole Farm Conservation Plan, including a laminated map showing sensitive habitats and suggesting where proactive enhancement should be targeted, is then produced. A free grant search service is then offered. As enhancements are carried out, their effectiveness will be tested.

Wye Care

This project is based in the catchment of the River Wye in Herefordshire. The main objective is to bring together key organisations to tackle agricultural diffuse pollution in the Wye catchment. The project aims to identify needs, and try to address these needs through influence at local and policy level. The project was triggered by poor water quality and PSYCHIC outputs, although is not yet fully operational. The project hopes to produce data that will drive policy change which is particularly important to change stocking density in the uplands. It is thought management change may help in lowlands, and information and advice will be provided by this project and through links to Farming Connect.

Appendix 2 – Contact Details

Bassenthwaite	David Brown david.j.brown@environment-agency.gov.uk
Blythe Anker and Tame Rivers Project	Bob Slater, Warwickshire FWAG 01926 318280
Cam Catchment Sustainable Farming Project	Cambridgeshire and Hertfordshire FWAG office on 01223 533643
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Helford Cycleau, Cornwall	Annabel Keast Annabel.keast@fwag.org.uk

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ICREW Project	Terry Hindle Terry.handle@environment-agency.gov.uk
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Meres and Mosses	Craig Higson Craig.higson@environment-agency.gov.uk
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Pang and Kennet Valleys Countryside Projects	Mike Shurmer mike.shurmer@rspb.org.uk
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PSYCHIC	Becky Humphrey Rebecca.Humphrey@adas.co.uk
Ribble Pilot River Basin Project	Chris Kaighan ribble@environment-agency.gov.uk
Rosemaund Pesticide Runoff Study	Richard Williams rjw@ceh.ac.uk
Rother Valley Project	John Blamire Jblamire@southdowns
Slapton Ley, Cycleau	Ed Parr Ferris 01548 581124
South Wessex Area, Landcare River Avon River Frome and Piddle River Fleet	Chris Westcott chris.Westcott@environment-agency.gov.uk
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Sustainable Agriculture and Rivers Project (SARP)	Neil Gunn neil.gunn@environment-agency.co.uk
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Upper Brue and Alham Catchment	Ben Thorne somerset@fwag.org.uk
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Ure Initiative	Liz Chalk Liz.chalk@environment-agency.gov.uk
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Voluntary Initiative	Nick Humphrey nick.humphrey@virgin.net
WAGRICO – Life Project	Mark Shepherd Mark.Shepherd@adas.co.uk
Water4all Project	Bob Harris Bob.harris@environment-agency.gov.uk
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Whittle Dene

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WildCRU

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Wye Care

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Rivers Trust

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Other Useful Sites

www.uk-adapt.org.uk

Appendix 3 – Case Study Template

File Ref No. (Defra Use)									
	Name	Organisation	Involvement	Contact Details	Telephone				
Project Leader(s):									
Other Organisations / Stakeholders Involved:									
Duration of Project:									
Project Website Address:									
	River Basin District	Region & County	Tributary	Area Covered (Km²)	Waterbody	Landuse	Nature of Conservation	Additional Information	
Site Description:									
	Nature of Problem (General Overview)	Evidence of Impact		Likely Causes of Impact		Additional Information			
Evidence:									
	Aims & Objectives		Stages in Project Activity			Additional Information			
Project Overview:									
	Requirements	Sources & Amount		Duration of Funding		Additional Information			
Funding & Resources:									
	Groundwater	Surface Water		Land Management Changes		Changes in Farmer Attitude / Perception / Understanding		Additional Information	
Monitoring:									
	Number Involved in Project		Sectors Targeted		How Were Farmers Involved		Were Champion Farmers Used		Additional Information
Engagement with Farmers:									
		What Worked Well? (Project Achievements)			Lessons Learnt?		Additional Information		
Evaluation:	Project Set Up								
	Funding								
	Engagement with Stakeholders								
	Engagement with Farmers								
	Monitoring								
	Benefits to Farmers (Economic, Land Management)			Benefits to the Environment (Water Quality, Soil Structure, Habitat)			Additional Information		
Key Outcomes:									