Cornwall Rivers Project

Independent Economic Evaluation

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Summary

This report assess the economic impacts of the Cornwall Rivers Project. Run by the Westcountry Rivers Trust, the Cornwall Rivers Project provided advice and grants to farmers and landowners in support of environmentally sensitive farming practice and enterprise diversification. In addition, riparian projects sought to directly improve environmental quality and access to fisheries, leading to increased economic benefits to the region.

1. The quantifiable annual economic benefits to the regional economy as a consequence of the implementation of the Cornwall Rivers Project (CRP) total £1,077,000 with a net present value of £9,224,000. In addition to these quantified economic benefits, the CRP will generate very significant additional economic benefits, principally through an improvement in water quality.

2. The total cost of the project was £1,940,000, including £309,000 in contributions from farm businesses. These costs compare exceptionally favourably with the benefits of the project. The margin of the benefits to the costs points unambiguously to the merits of the CRP approach.

3. The increased tourism and the improved quality and quantity of available angling resulting from the scheme will result in the generation of over 5 full time job equivalents and 18 part time job equivalents in the region. In addition, the implementation of the recommendations will have generated over 50 agricultural part time job equivalents for the 3 year duration of the CRP.

4. The cost of delivery of each of over 600 integrated farm business and land management plans was only £1338 per plan. This compares very favourably with comparable initiatives, in particular those in the public sector, especially when the external environmental benefits of the integrated approach are considered.

5. Many of the most significant benefits from the project resulted from improved farm practice, leading to both improved farm profits and reduced environmental impact. This suggests that existing farm practice in Cornwall was not optimal.

6. Significant contributory elements to the success of the CRP include the integration of business advice with environmental advice; and the local organisational base for the delivery of the scheme.

The success of the Cornwall Rivers Project merits close inspection in the context of the current discussions over government provision of farm business and catchment sensitive farming advice.

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Preface

This report was commissioned and surveys carried out in 2004 as the original end date for the Cornwall Rivers Project was December 2004; however, the Project was extended for a further year to December 2005. All costings and targets are therefore for the original 3 year project and budget but should hold true for the full 4 year project. In the extension year, additional farm visits were undertaken and management plans written, bringing the total number of farms under revised management to 870.

1. Background – The Cornwall Rivers Project

The Cornwall Rivers Project was designed to respond to two, related, problems. Firstly, in common with the rest of the UK, the riverine environment in Cornwall continues to be threatened and often adversely impacted by a variety of activities that combine to reduce and degrade natural ecosystems. Damage to the mainly rural catchment areas in Cornwall has resulted largely from changing land use patterns over the past thirty years or so. Secondly, these changing land-use practices in Cornwall are failing to support a thriving agricultural sector. Pressures on UK agriculture, changing economic conditions, and changing subsidy regimes require adaptation and diversification by Cornwall's agricultural and rural economy.

The Cornwall Rivers Project (CRP) sought to address these problems in a linked and integrated catchment scale approach that simultaneously promoted environmental improvement and economic benefits. The CRP was based on the successful methods developed through the Westcountry Rivers Trust's *Tamar 2000 SUPPORT* and *Taw/Torridge Westcountry Rivers* Projects. The provision of advice and grants to farmers and landowners sought 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.

The CRP runs from 1st January 2002 to 31st December 2004 and is supported with 40% European Union Objective 1 funding, 40% match funding from DEFRA, with the remaining 20% from local private sources, principally private contributions from beneficiaries towards the capital grants made through the CRP.

Although the CRP was not fully completed at the time of data collection for this report (October 2004), it is on course to deliver its principle outputs, including over 650 integrated farm business and land use management plans, restoration works on over 100km of river corridor, the development and maintenance of Angling 2000 (a visiting angler access scheme), and the delivery of associated community projects (McClymont, 2004).

2. Purpose of the Economic Evaluation

One of the principal objectives of the Cornwall Rivers Project is the delivery of economic benefits, and a number of targeted economic benefits were indicated as key performance indicators for the project.[1] An independent economic evaluation of the impacts of the project was therefore required as part of the initial project contract. This independent evaluation is designed to evaluate both whether the CRP has delivered the targeted economic benefits and to provide an evaluation of the wider economic benefits of the project.

In addition, it is the intention of this evaluation to serve a wider purpose in guiding future policy interventions. The development of rural support schemes to provide both environmental and business advice to farm businesses are the subject of considerable scrutiny at the current time (NAO, 2004; DEFRA, 2004). Proposals are being considered both to extend current farm advice schemes and to develop catchment based farming advisory programmes. The current evaluation can provide important evidence on the successes of the innovative approach to these issues adopted by the Cornwall Rivers Project.

[1] See Appendix D for a list of the economic performance indicators for the project.

3. Methodology

Economic evaluations have been conducted of the two similar previous integrated catchment scale projects delivered by the Westcountry Rivers Trust (WRT) – the Tamar 2000 Project, and the Taw/Torridge Project (Tusa, 2000; Manning, 2001). These evaluations found very similar results, both with respect to specific variables and the overall benefits of the two projects more generally. The Tamar 2000 project was estimated to have delivered annual benefits of £5,000 per farm with an overall undiscounted project cost-benefit ratio of 8.2. The Taw/Torridge project was estimated as having generated £2,700 per farm in annual benefits with a cost-benefit ratio of 8.6.

While the current evaluation draws on the existing methodology, there are a number of reasons for the development of that methodology in the current evaluation. Specifically, a targeted and in-depth evaluation of a number of the key on-farm benefits is achieved through the conduct of three separate surveys to estimate soil loss, reduced fertiliser use, and improvements in tourist income. This provides considerably more robust estimates for these benefits than the use of a single sample to cover all of the estimated benefits as in previous evaluations. Given the similarities in approach between the CRP and the two previous projects, this economic evaluation follows a benefit-transfer approach in estimating the remaining on-farm economic benefits. The consistency of approach and findings between the benefits of the two previous projects and the CRP justifies such an approach.

In addition to the on-farm benefits, an evaluation is made of a number of additional economic impacts of the project, including an estimate of the costs and benefits of the Angling 2000 scheme, and an estimate of some of the benefits from the reduction of diffuse pollution as a result of the project. It is envisaged that these will prove of use in guiding future policy approaches. Given that the principle focus of the economic benefits of the project was on the rural Cornish economy, estimates are presented for increased net on-farm income, increased income to the Cornish economy, and increased employment.

Recent UK Government approaches to evaluation and cost-benefit analysis caution against the dangers of spurious accuracy (HM Treasury, 2003). Nowhere is this more of a hazard than with the evaluation of projects of the current type, with the many complex benefits. In the light of this, this evaluation does not offer an estimate of a definitive cost-benefit ratio. Instead, it attempts to indicate the level of benefits from the project that can be quantified, with the total economic benefits of the project indicated as being in excess of this figure.

A number of estimates for the economic values associated with the performance indicators for the project were given in the project contract. In some cases the evaluation is based on these existing figures. However, where these figures are felt to be unrealistic or where improved figures exist, these are used. In particular, the detailed data collection associated with the Angling 2000 scheme allows for a new estimate of the benefits of increased salmon catches.

While the delivery of the farm business and environmental aspects of the CRP were integrated, an attempt is made to break down the costs into the component elements of the

delivery of farm business plans, grants for riparian improvement, the establishment and administration of Angling 2000, and the delivery of community projects. While recognising the limitations in this division, it nonetheless provides the possibility for comparison of the costs and benefits of each of the constituent elements of the CRP.

The current value of future savings is calculated over a 10 year horizon in line with previous WRT evaluation methodology. A discount rate of 3.5% is used in line with the latest government advice (HM Treasury, 2003).

4. Cost of the project

The total cost of delivery of the component elements of the Cornwall Rivers Project is £1,940,000. The breakdown of these costs among the different elements of the project is given in table 4.1:[2]

Table 4.1: Costs of the Component Elements of the Cornwall Rivers Project

Preparation of 612 integrated land management and farm business plans, including the preparation of comprehensive farm practice information sheets	£819,000
Farm business contributions towards the implementation of farm business plans	£309,000
The contribution of £176,000 and administration of 239 grants to farmers for riparian improvement works	£609,000
Establishment and maintenance of Angling 2000 scheme	£67,000
Delivery of Community projects including demonstration sites, education etc.	£136,000
Total	**£1,940,000**

Table 4.1 reveals that the average cost of the delivery of each of the 612 – as of October 2004 – individually tailored integrated land management and farm business plans was £1338. This represents considerable value in the delivery of a high-quality service. The preparation of a typical plan in the CRP involves half a day of advisor time on an initial farm visit, two days of time devoted to writing the integrated land management and farm business plan, and further time spent in delivering the conclusions of the plan to the farm business.

The customer satisfaction survey conducted for the project WRT indicated 97% of customers and 100% of other stakeholders rated the team's overall quality of service positively, and the benefits calculated below indicate the success of the farm plans in delivering beneficial change to the rural economy, with an estimated annual on-farm income increase in excess of £1,369 per farm.

This average cost of the delivery of each of the farm plans in the CRP compares favourably with the costs of delivery of comparable government services. The government sponsored Farm Business Advisory Scheme (FBAS) delivered advice to 15,000 farmers on the basis of expenditure of £27,000,000 (Martin Popplewell, National Audit Office, personal comment). While this works out at a broadly comparable figure of £1,800 per farm business advised, the

[2] Details of the basis on which this calculation is made is given in Appendix A.

time and detail devoted to each farm business within the FBAS is considerably lower than the time devoted to each farm business within the CRP. In addition, the benefits generated by the CRP farm business plans are not confined to the farm alone, but include highly significant external environmental impacts.

It is likely that the cost-efficiency of the CRP reflects the greater cost-efficiency that can be delivered by smaller, independent organisations with low bureaucratic and overhead costs and strong information on local circumstances. This is a significant finding in the context of the current consideration of the possible extension of environmental and business advice schemes to the agricultural and rural sector.

5. Summary of the Principle Economic Benefits

The evaluation of the economic benefits of the CRP divides the benefits into three principle categories: direct, on-farm benefits; the benefits from improved quality and access to angling; and indirect, off-farm benefits. As the majority of the benefits of the project must remain unquantified, this evaluation does not offer a cost-benefit ratio. The evaluation assesses the quantifiable economic benefits of the project as having a net present value of £9,224,000. The costs of the project and on-farm contribution to riparian improvement costs by comparison total £1,940,000 by comparison. Table 5 summaries the evaluation of these benefits:

Table 5.1: Summary of Quantifiable Economic Impacts of the Cornwall Rivers Project

Agricultural benefits, on-farm	
- Reduced soil loss, annual saving	£145,260
- Improved fertiliser use, annual benefit	£337,095
- On-farm tourist income, annual benefit	£68,010
- Additional annual on-farm benefits	£287,640
Total annual on-farm benefits	£838,005
On-farm benefits, net present value	**£7,176,142**
Cost to CRP of delivery of farm plans and farm improvement grants	£819,070
Cost to farm businesses of implementing recommendations	£309,000
Total Cost of On-farm benefits	**£1,128,070**
Angling 2000 benefits, local economy	
Net annual benefit from Angling 2000	£13,636
Net present value of Angling 2000 benefits	**£116,770**
Cost to CRP of establishment of Angling 2000	**£33,318**
Benefits of increased numbers of salmon and sea-trout, local economy	
Annual benefit of increased salmon and sea-trout catches	£223,824
Net present value of increase in salmon and sea-trout catches	**£1,916,686**
Cost to CRP of generating increased salmon and sea-trout populations	**£608,848**
Benefits of reduced diffuse pollution	
Annual reduction in dredging costs, Fowey Harbour	£1,665
Net present value of annual reduction in dredging costs, Fowey Harbour	**£14,258**

In addition to these quantifiable economic benefits, significant economic benefits of the project have not been quantified. These include reduced external costs from soil loss, and reduced N and P pollution. An indication of the costs of diffuse N and P pollution from agriculture are discussed below, although not indicated in table 5.1.

6. Direct Economic benefits (1): Estimated direct farm benefits

One of the principal goals of the CRP was the delivery of increased net farm incomes through improved – and environmentally less harmful – farm practice, and through farm enterprise diversification, principally tourism expansion. A wide range of recommendations have been taken up by farmers on the basis of advice contained in the integrated farm business plans delivered by the CRP, and only the principal elements of these can be evaluated.

This evaluation has conducted three separate surveys of three of the principal direct benefits to farms – reduced soil loss, reduction and increased efficiency of fertiliser inputs, and increased tourist income. These surveys were carried out for farms visited in 2002 and 2003, and scaled up across the remaining farms who have received farm plans in the last year of the project. Further farm benefits are calculated on the basis of the recommendations contained in the farm business plans and the findings of the previous economic evaluations of WRT projects.

The evaluation finds an average increase in net income of £1369 per farm per annum. Once implementation costs of £505 per farm are considered, the average net present value of the scheme is £11,223 per farm. An attempt has been made throughout to err on the side of caution in estimating benefits, and the likely economic benefits will be in excess of this figure.[3] Average annual farm savings of £838,005 with a net present value of £7,176,142 compares favourably with a total cost of £1,128,070 for the delivery and implementation of the farm plans. It should be noted that the benefits are private – in terms of increased farm incomes – while the costs are public, in terms of EU and DEFRA funding of the CRP. This therefore represents a transfer of benefit to the rural Cornish economy.

a. Benefits of reduced soil loss

Soil loss from inefficient farming practice reduces farm incomes through reduced productivity and increased costs, for example increased ditch clearing and increased ploughing time. It is also responsible for significant external environmental and economic costs. While highly significant, quantification of the external economic costs of diffuse pollution, including soil loss, remains a challenge to economic assessment, and is not attempted significantly in the current study. Calculations are based on advice on improved farm practice to reduce soil loss and soil erosion given to 306 of the 408 farms who received farm business plans in 2002 and 2003.

Table 6.1: Total on-farm benefits of reduced soil loss

Annual reduction in soil loss	9698 tonnes
Annual savings (@ £15/t)	£145,260
Net Present Value	£1,243,914

[3] A detailed explanation of the basis on which the calculations were made is contained in Annex B.

Case-study: Soil erosion in the Tressilian Catchment

Two fields in a 340 acre arable and dairy farm in the upper Tressilian catchment visited by CRP farm advisors were found to be suffering from major soil loss. The loss was caused by a seasonal spring which rose at the top of the fields, causing a series of rills and gullies in the field. The farm was losing over 200 tonnes of soil annually as a consequence.

To address the problem, a 50% grant from the CRP was used by the farmer to lay a land drainage pipe to carry the spring to a neighbouring ditch. Benefits to the farmer included the saving of 240 tonnes of soil per year, reduction in the need for field operations such as ploughing rills, and the reduced need for ditch clearing. On the basis of a saving of £15/ton of soil and reduced annual costs of £100 for ploughing and ditch clearing, the annual saving to the farmer is £3700. There will also be a significant reduction in external costs. The improvement works cost a total of £1,343, to which must be added a proportion of the cost of the delivery of the farm plan by CRP, here evaluated at 10%, and the £1811 cost of the administration of the grant.

The total cost to the CRP and the farm business of the remedial action was therefore £3,288, for annual savings of £3,700 with a net present value of £31,684.

b. Improved efficiency of fertiliser use

Cost savings and increased yields for farms can be generated through improved efficiency of fertiliser use. This includes both reduced utilisation of fertiliser where it is unnecessary, and improved targeting of application – both in terms of location and timing. This evaluation follows this distinction by attempting to evaluate both reduced total usage and increased yields from more efficient use. Reductions in use on dairy farms were evaluated on the basis of a phone survey, while increased efficiency is based on the take-up of CRP advice to farm-businesses.

Table 6.2: Total on-farm benefits of improved fertiliser use

Annual reduction in use, dairy farms	£54,963
Annual efficiency increases, arable and livestock	£282,132
Total annual saving	£337,095
Net Present Value	£2,886,667

Improved Efficiency of Fertiliser use in the Camel catchment

One of the recommendations to a 202 ha farm in the Camel catchment area was that the farmer start soil testing to determine the exact nutrient requirements, therefore avoiding fertiliser over-application. Soil testing was carried out on 12.9 ha of arable ground used for spring cereals. Prior to testing, a total of over 150 kg of compound fertiliser and ammonium nitrate was being applied at an average cost of £47.57/ha.

Soil testing revealed that this was an excessive application, and use has now declined to £25.21/ha, resulting in a saving of £284.57 per year for the farmer.

c. On-farm Tourism Benefits

A central component of the CRP was advice to farm businesses on how they could either establish or improve tourist businesses. Central components of advice included how to improve facilities and how to diversify attractions (particularly where there were opportunities to capitalise on fishing as an attraction), and how to access assistance grants for expansion of facilities. 144 farm businesses received advice in 2002 and 2003.

Table 6.3: Total on-farm benefits of increased tourism

Total increased bed nights	14,111
Total increased bed nights attributable to CRP advice	7,055
Increased annual on-farm tourist income (@£19.28 per bed night, minus 50% costs)	£68,010
Net Present Value	£582,394

d. Additional Farm Advice

In order to provide more detailed estimates, the phone surveys undertaken for this evaluation focused on soil loss savings, fertiliser savings, and increased on-farm tourism. However, a number of other significant on-farm economic savings result from implementation of CRP advice, in particular from fencing livestock out of rivers and wetlands, water savings and separation, rotational ditch clearing, a range of water savings measures, and reduced pesticide use.

Table 6.4: Additional on-farm benefits

Annual saving per farm	£470
Total annual saving on 612 farms	£287,640
Net Present Value	£2,463,166

Case-study: fencing stock out of streams in the Camel catchment

Open access by stock to streams and water-courses on a 47ha dairy farm in the Camel catchment had led to significant environmental problems, in particular shallower stream channels and compacted soils leading to greater run-off into rivers of both sediment and phosphates from manure and fertiliser.

In addition, the access of stock to the stream resulted in increased costs for the farmer due to mastitis, the need to clean stock prior to cleaning, lameness, cut udders, and time spent retrieving animals. Fencing was erected in 2003 to keep stock out of watercourses at a cost of £2,672, 40% of which was covered by a CRP grant, with the remainder covered by the farmer. Including the cost of the administration of the grant and 10% of the cost of the provision of the farm plan, the total cost of the fencing was £3,661. Annual savings of £300 per year for the farmer are achieved as a result of this work, with a net present value of £2,569.

Over 70% of the cost of the work can therefore be justified on the basis of benefits to the farmer before the considerable benefits of improved water quality are included.

e. Costs to Farmers

In addition to the delivery of farm business plans, the CRP identified significant interventions that could be undertaken to improve the riparian environment. The total cost of these interventions was £485,000, met through a combination of grants from the CRP and direct payments by farmers. The benefits from these interventions will have included both on-farm benefits and improvements to riparian habitat – the fencing of stock out of streams being a good example of an intervention with a dual benefit. It is evaluated that farmers would only be likely to contribute in so far as they stood to benefit from interventions, while CRP grants were used where benefits were primarily to the riparian environment. The total cost to farm businesses of contributions to grant-aided work is therefore taken as a contributing to on-farm benefits, while the remaining costs of work carried out on 132km of riparian habitat is considered as contributing to improved riparian quality. Farm businesses contributed at total of £309,000 to grant-aided improvement work at an average of £505 per farm.

7. Direct Economic benefits (2): Angling 2000 scheme and angling improvement

a. Increased access to Angling in Cornwall: The Angling 2000 Scheme

One of the targets of the CRP was an improvement in the quality of, and improved access to, freshwater angling in Cornwall. The focus of the increase in access to angling has been through the Angling 2000 scheme, a scheme designed to make fishing beats available to the public through a token system. By the autumn of 2004, 15 stretches of river had been made available in Cornwall through the Angling 2000 scheme, with an anticipated further 5 available from 2005. A total of 295 visits to the Cornish Angling 2000 beats were made in 2004, with numbers increasing year-on-year to an anticipated plateau of at least 350 per year.[4]

Table 7. 1: Increased income as a result of Angling 2000

Income from sale of Angling 2000 tokens (@ 350 visits per year)	£3080
Income from increased bed nights (@£52 per night)	£10,556
Increased Annual Regional Income as a result of Angling 2000	£13,636
Net Present Value	£116,770

This net annual benefit can be set against the cost of establishment and operation of the Angling 2000 scheme of £66,636. As the Angling 2000 scheme covers both Devon and Cornwall and this evaluation examines only figures for Cornwall, the CRP figure should be halved to £33, 318 to provide comparison. This evaluation suggests that the net present value of £116,770 alone justifies the investment in Angling 2000 through the CRP, without consideration of the considerable social benefits that are likely to be associated with this increase in angling opportunity.

Unlike the other economic benefits from the CRP, Angling 2000 will require on-going administration costs. On the basis of current practice, these are evaluated at £16,000 per year, including advertising, mailing, and part-time employment in support of the scheme. The Angling 2000 scheme is divided equally between Devon and Cornwall, so half of the costs of the scheme should be attributed to the administration of the scheme in Cornwall. Total annual running costs of £8,000 can be justified on the basis of the annual increase in income to the area.

b. Increase in salmon and sea-trout catches

Among the primary aims of the CRP was the improvement and restoration of the Cornish riparian environment. An increase in numbers of salmon and sea-trout as a result of these improvements will in turn have economic benefits. In addition to the considerable increase in water quality as a consequence of the integrated farm business plans, 132 km of riparian improvements have been delivered by the CRP.

[4] See Appendix C for details of the basis of the calculations.

Case-study: Treguddick Water, River Inny

Treguddick Water, approximately 1 mile west of Launcestion, is situated in the middle reaches of the River Inny, a Cornish tributary of the Tamar. It supports good populations of Brown Trout, Sea Trout, Atlantic Salmon and Grayling.

During the 1990s, Treguddick Water was privately owned and virtually unfishable as a consequence of being overgrown due to long term abandoned bankside coppice. Launceston Anglers Association (LAA) purchased the water in late 1998. During the next two winters selected coppicing along the Treguddick beat was undertaken with recommendations and supervision by the Westcountry Rivers Trust.

Fishing by Launceston Anglers the following season confirmed the beat to be a good salmonid fishery. In 2003 a section of Treguddick Water was entered into the Angling 2000 scheme within Cornwall Rivers Project. 61 visits through Angling 2000 generated £732 for Launceston Angling Association, and a total of £1840 for the local economy.

The benefits in terms of an increase in salmon and sea-trout numbers as a result of these improvements are estimated on the basis of past methodology as agreed in the performance contract for the CRP, a methodology based on international research (Manning, 2001). The improvement of the 132 km of riparian habitat will lead to an increase of 152 in annual salmon catches and an increase in sea-trout catches of 83. These figures are based entirely on the improved stretches of river, and do not take account of water quality improvements.[5]

Estimates of the improvement in economic benefits as a result of improved angling catches are notoriously difficult. However, the detailed data available from the Angling 2000 scheme provides an unusual opportunity for an accurate local estimation to be made in the current case. These suggest that the value of an extra salmon to the local economy is £1,348, and a sea-trout £385.[6]

[5] See Appendix C for details of calculation of increased numbers.
[6] See Appendix C for details of calculation of benefits.

Table 7.3: Estimated local economic benefits from increased salmon and sea-trout catches

Annual benefits from an increase in the salmon rod catch	£204,896
Annual benefits from an increase in the sea-trout rod catch	£31,955
Annual economic benefit (-5% for Angling 2000)	£223,824
Net present value	£1,916,686

A total of £485,000 was spent on riparian improvement works, at a total cost, including the preparation of plans and administration, of £918,000. Of this, £309,000 was in the form of the contribution of farmers towards grant-aided work, and has been considered above as contributing towards on-farm income improvements. The remaining £609,000 is therefore taken as the cost of the delivery of the increased benefits from salmon and sea-trout catches.

8. Indirect Economic benefits (3): Reduced diffuse costs – Dredging and water treatment

While the CRP shows considerable economic benefits in terms of increased net on-farm income and increased economic benefits from angling, the majority of the economic benefits of the project will typically result from the reduced external impacts of agricultural practice as a result of shifts to more environmentally sensitive farming practices. The most significant of these external impacts will be the impacts of diffuse water pollution, in particular impacts on water quality.

However, the estimation of these indirect, external economic benefits is complex, and is not typically quantified in economic evaluations. While many of these benefits can only be evaluated qualitatively, an attempt is made here to quantify one of the external impacts. Costs associated with diffuse pollution on water treatment are also discussed to provide indications of the types of benefits that will result from reductions in diffuse pollution as a consequence of the CRP.

a. Dredging of Fowey harbour

Fowey harbour is a deep-water harbour of considerable importance to the South West, being the largest handler of cargo by tonnage in the South West, and one of the top 12 non-oil product exporting harbours in the UK. The problem of dredging silt and sands carried into the Fowey estuary by the River Fowey is not a new one – Henry VIII banned tin-panning on Bodmin Moor in order to prevent suspended solids silting up the then nationally important harbour at Lostwithiel, further up the Fowey estuary, and now accessible only to shallow craft as a consequence of siltation from the river.

Fowey Harbour Commissioners currently dredge between 35,000 and 50,000 tonnes per year from Fowey harbour, at an annual cost of £90,000 (Jane Smith, Environmental Officer, Fowey Harbour Commissioners, personal comment). Investigations have shown that the majority of this material comes from the river. As the dredging is carried out by contractors, a marginal decrease in material deposited in Fowey harbour results in an equal decrease in costs in dredging. The cost of an extra ton of material deposited in the harbour from the River Fowey is therefore £2.1 per ton.

In 2002 and 2003, 42 farm plans were conducted in the Fowey catchment by the CRP, giving advice on soil loss reductions for a total of 1009 ha. In the whole of the CRP area, a reduction of 6465 tonnes/year of soil loss on the basis of 6166 ha of soil loss advice was achieved in the farms who received advice in 2002 and 2003. Including figures for 2004 on a proportionate scale and working on the basis that soil loss reduction has been as successful per ha in the Fowey as elsewhere within the CRP, 1586 tonnes per year of soil loss will have been saved as a result of the CRP.[7] On the basis that 50%[8] of this soil would eventually end up in Fowey

[7] This figure does not include the very significant single farm within the catchment where CRP advice contributed to the cessation of 1000 tonnes per year of soil loss. This farm was excluded from the survey as it was considered anomalous.

harbour and require dredging, annual dredge savings of 793 tonnes will result from CRP advice.

Table 8.1: Benefits of reduced dredge costs, Fowey Harbour

Annual reduction in dredge material	793 tonnes
Annual reduction in costs	£1,665
Net present value	£14,258

These savings will have been delivered as a consequence of 97 farm plans in the Fowey catchment. On the basis that each farm plan cost £1338 to deliver, over 10% of the total cost of the farm plans in the Fowey catchment can be justified on the basis of savings to the Fowey Harbour Commissioners in reduced dredging costs. In the absence of more extensive research, this figure is best considered to be indicative.

b. Water treatment costs

Reduced diffuse pollution from improved farm practice holds out the possibility of reduced water treatment costs. In the course of undertaking the current study, South West Water (SWW) were approached for data on the marginal benefits of diffuse agricultural pollution. According to SWW, it would take between 8 and 25 years for rivers to return to their 'natural' state if the application of nutrients and other chemicals ceased immediately.[9] As a consequence, the calculation of marginal economic benefits as a result of reduced diffuse pollution is not straight-forward.

Nevertheless, figures provided by SWW provide a useful indication of the scale of the problem. Cost comparison can be made between two reservoir-fed treatment works, one an upland reservoir with little land management activity within the catchment; the other a lowland reservoir with a small catchment that supports high intensity agriculture and a number of other activities. According to SWW, the differences in cost are attributable to the differences in raw water quality, primarily the presence of algal blooms.

Table 8.2: Water treatment cost comparison

Treatment Works A
Upland Moorland reservoir source
Raw water quality very good, highly coloured from peat extracts
Low nutrient (N and P) levels
Low pesticide/herbicide residuals
Little or no algal growth

Treatment works B
Lowland reservoir

[8] Dr. C. Von Der Heyden, personal comment. The estimate is considered as indicative.
[9] Dr. S. Bird, personal communication, 4th November 2004.

Raw water quality poor, high turbidity
Appreciable nutrient levels
Positive herbicide/pesticide detections
Algal blooms

	Works A	**Works B**	**% Difference**
Annual Output Ml	4447	2488	
Chemical costs £/Ml	37.50	55.80	49
Sludge costs £/Ml	15.50	25.90	67

Because of the difficulties associated with estimating the marginal savings in water treatment costs from improved farm practice, it is not possible to estimate the economic benefits of reduced treatment costs that can be attributed directly to the CRP. These figures are therefore included as a guide to the extent of the problem which the CRP sought to alleviate.

9. Economic benefits (4): Increased Employment

In addition to the generation of increased local incomes, one of the objectives of the CRP was the creation of local employment. This is divided between the increased employment as a consequence of increased tourism and angling visitors, and increased employment in the implementation of the scheme.

a. Increased tourist and angling visitors

Total increases in on-farm tourism and angling are evaluated as bringing an increased income of £381,510 to Cornwall per annum as a result of the implementation of the CRP. Data for Cornwall indicates that one full time job is created for every £35,600 spent by tourists, with a part time job created for each £10,300 spent (The Tourist Company, 2004).[10] Visitor expenditure is typically seasonal, so dividing the increased visitor expenditure equally between full and part time job equivalents, the increased expenditure as a result of the CRP will lead to an increase of 5.3 full-time job equivalents and 18.5 part time job equivalents.

b. Increased agricultural income

It is not envisaged that the changed agricultural practices as a result of the CRP will lead to significant net impacts on local employment. Many of the savings as a result of the CRP flow from reduced costs and therefore reduced labour time, for example reduced time spent clearing ditches and ploughing rills. Set against this, the increase in net local income will lead to multiplier employment effects in the local economy.

However, the implementation of the project has resulted in an increase in employment in implementing the recommendations. The total cost of the implementation of the recommendations including grants and farmer contributions was £485,000, or £161,660 for each of the three years of the project. On the basis of survey data, the previous evaluations of WRT projects have assessed that 40% of this expenditure was spent on labour. At a current agricultural Standard Wage rate of £200.85 per week, this equates to the generation of 15.5 FTJEs or 53.7 PTJEs for the duration of the project.

[10] On the basis that a full-time job constitutes a 35 hour week for 52 weeks of the year and a part-time job a 17.5 hour week for 30 weeks of the year.

10. Conclusions

1. Well-targeted, locally sensitive and well-informed advice can lead to improved farm practice that benefits both farm businesses and environmental quality. A number of the most important changes as a result of the project resulted from increased efficiency at no additional cost, for example reduced fertiliser use. While some of these improvements in farm practice and business development might have occurred in due course in the absence of the CRP, the project undoubtedly improved both the *time-scale* and the *quality* of such changes, leading to significant benefits.

2. The integration of business, improved farm practice and environmental advice contributed significantly to the success of the CRP. Such integrated advice represents an innovative approach to the improvement of both environmental quality and increased local income. Importantly, the success of each of these two main goals of the CRP could not have been possible independently of each other.

3. The cost-efficiency of the project compares favourably with comparable schemes in the public sector, for example the Farm Business Advice Scheme. This efficiency derives in large measure from the delivery of the project by a local organisation, the Westcountry Rivers Trust. The delivery by a local body also contributed significantly to the quality and take-up of the recommendations of the project.

4. Comparison of the evaluated economic benefits of the project indicates that the contracted performance indicators have been exceeded.[11]

The delivery of catchment sensitive farming and improved business advice to farm businesses is currently the subject of considerable public scrutiny. The National Audit Office recently completed an extensive review of the Government's advice to farmers, and came to a number of important conclusions. Among these was the recommendation that there should be encouragement for the use of "local partnerships to join up agri-environmental initiatives and farm based business development". The CRP represents an example of the advantages and successes of precisely such an approach, and it deserves close scrutiny in the design of any future farm advice or environmental improvement schemes.

[11] See Appendix D. It is not clear whether the performance contract indicated the generation of permanent or temporary agricultural employment. In the case of the former, the CRP did not meet this indicator, although it is felt that this such an indicator would have been unrealistic given the nature of recommended farm practice changes.

Appendix A: Calculation of costs of component parts of the project

A breakdown of the principle elements of expenditure is given in Table A.1:

Table A.1: Expenditure of the Cornwall Rivers Project, 2002-2004

Angling 2000	£42,000
Direct grants to farmers for riparian improvement works	£176,000
Farm advisors salaries	£412,000
Travel	£77,000
Community projects	£86,000
Financial control	£114,000
Farm practice information sheets	£121,000
Joint expenditure and overheads (including training, management, stationery, office space, preparation of a GIS scheme, publicity, audits)	£603,000
Farm business contributions to riparian works	£309,000
Total	**£1,940,000**

Estimation of costs by output allows for comparative assessment of the returns to different aspects of the project. 75% of the cost for financial administration is attributed to the administration of the CRP grant schemes to reflect the proportion of the financial administrative resources of the project devoted to these activities. 75% of travel expenditure and advisors salaries is attributed to the delivery of the farm business plans, with the remainder attributed to grant administration. By distributing the overhead costs proportionately among the different activities undertaken as part of the CRP, costs can be estimated for each of the different elements. Joint expenditure and overheads are divided between the five areas of output in proportion to expenditure on each area once financial administration, travel and farm advisor salaries have been included.

Table A.2: Costs to the Component Elements of the Cornwall Rivers Project

Preparation of 612 integrated land management and farm business plans, including the preparation of comprehensive farm practice information sheets	£819,000
The contribution of £176,000 and administration of 239 grants to farmers for riparian improvement works	£609,000
Establishment and maintenance of Angling 2000 scheme	£67,000
Delivery of Community projects including demonstration sites, education etc.	£136,000
Total	**£1,631,000**

Appendix B: Basis for calculation of on-farm benefits

Total Farm Population, 2002 to 2003 farm business plans

The characteristics of the farm businesses who received plans in 2002 and 2003 are given in tables B.1 - B.3.

Table B.1: Distribution of farm-businesses by catchment

Catchment	Plans, 2002-3, number	%
Lynher and Tiddy	92	23
Camel and Allan	91	22
Fowey and Lerryn	65	16
Fal and Tresilian	46	11
Neet and Strat	37	9
Looe	24	6
Inny	20	5
Ottery	19	5
Seaton	10	2
Coker	3	1
Total	**408**	**100**

Table B.2: Distribution of farm-business by size[12]

Farm size	Number, 2002-3	%
Small (<40ha)	155	38
Medium (40-80 ha)	115	28
Large (>80ha)	138	34
Total	**408**	**100**

Table B.3: Distribution of farm-business by principal enterprise

Enterprise	Number	%
Dairy	86	21
Arable	67	16
Arable and livestock[13]	55	13
Livestock	120	29
Other (mainly tourism)	80	20
Total	**408**	**100**

Soil Loss savings

Advice on improved farm practice to reduce soil loss and soil erosion was given to 306 of the 408 farms who received farm business plans in 2002 and 2003. Of these, 50 farm businesses received

[12] Summation of owned and rented land.
[13] Arable and livestock farm are taken as those with more than 300 stock of beef, sheep, pigs or poultry

advice relating to greater than 50ha of land and a further 50 received advice on improved practice on between 12 and 50 ha.

A survey of 24 of the 50 farms who received advice on areas of land greater than 50 ha was undertaken, with annual soil savings calculated on the basis of the internationally recognised RUSLE approach. Such a focused sample is able to evaluate very nearly half of the farms which received the most significant advice, providing a highly robust estimate of the soil savings yielded by the project.

The distribution of the sample among the differing catchments is given in table B.4, illustrating the close similarity in the distribution of key farms for soil loss distribution with the distribution of farm advice plans prepared.

Table B.4: Distribution of soil loss sample and total farm population

Catchment	**sample**	**Population**
Fal and Tresilian	8 (32%)	11%
Fowey and Lerryn	4 (17%)	16%
Neet and Strat	3 (13%)	9%
Camel	4 (17%)	22%
Lynher and Tiddy	3 (13%)	23%
Looe	1 (4%)	6%
Inny	1 (4%)	5%
Total	**24 (100%)**	**100%**

The survey found that a total of 2744 tonnes per annum was saved across 23 of the farms in the survey. This represents an average of 119 tonnes per farm per year, ranging from as low as 1 ton to as high as 600.[14] On this basis, it is estimated that the next 50 farms – who received advice on land between 12 and 48 ha – will save on average 10 tonnes per year. On the basis of these figures, the 100 farms who received the most significant soil loss advice will see savings of 6465 tonnes per annum. Including the farms visited in 2004 on a proportionate basis, it is estimated that 9698 tonnes of soil per year are saved as a result of the CRP farm plans.

Estimating the economic cost of soil loss to farmers is a difficult and complex task, and one that it is acknowledged requires further research (EFTEC, 2004). The performance contract for the CRP indicated an estimate of slightly over £40/ton. This is considered here to be probably unrealistically high. The current price of topsoil in rural Cornwall is £15 ton, and this figure is used as a proxy value

[14] The 24th farm in the survey was an exceptional case, where wild boar farming had led to the loss of an estimated 6000 tonnes of soil in the previous 5 years. While the wild boar farming had ceased prior to advice through the project, the farm plan was able to offer recommendations on soil stabilisation and rehabilitation. Due to the exceptional nature of this case, it has been excluded from the sample. It is important to note the case, however, as it represents a significant saving in soil loss.

for the cost of the loss of a ton of soil. Cross-reference with detailed calculations made as part of the preparation of the information sheets for the CRP indicate this to be a realistic estimate (EA, 2001).[15]

Table B.5: Economic benefits of reduced soil loss

Annual reduction in soil loss	9698 tonnes
Annual savings (@ £15/t)	£145,260
Net Present Value	£1,243,914

Improved efficiency of fertiliser use

The principle enterprise in which reduced usage was a significant factor was in dairy farming. In line with the approach taken in this evaluation of targeting the surveys undertaken, 28 phone surveys were undertaken of fertiliser savings on a random sample of farms drawn from the 86 dairy farms who received farm plans in 2002 and 2003. Table B.6 illustrates the distribution of the sample as being in proportion with the population as a whole.

Table B.6: Distribution of fertiliser saving sample and total population

Catchment	**Sample**	**population**
Fal and Tresilian	4 (14%)	11%
Fowey and Lerryn	4 (14%)	16%
Neet and Strat	5 (18%)	9%
Camel	7 (25%)	22%
Lynher and Tiddy	2 (7%)	23%
Looe	3 (11%)	6%
Ottery	2 (7%)	5%
Seaton	1 (4%)	5%
Total	**28 (100%)**	**100%**

A total of £11,930 reduction in fertiliser use was recorded across the 28 sampled farms. In addition, several farms reported reductions in fertiliser use that could not be quantified. Across the 86 dairy farms who received farm plans in 2002 and 2003, this gives total savings of £36,642 per year. Including the farms visited in 2004 on a proportionate basis, it is estimated that a total of £54,963 is saved in reduced fertiliser use per year.

In addition to reductions in fertiliser use, almost all farms received advice on improving the efficiency with which fertilisers are used. The estimation of efficiency increases as a consequence of improved practice is hard to quantify, but the savings can be considerable. For example, nitrogen can be lost as gas if fertiliser is misapplied such as under wet conditions, with estimates of this loss alone ranging from 25% to 40%. Taken together, it is estimated here that 30% overall efficiency gains can be

[15] The EA estimates on the basis of national research that a switch to soil conservation practices for arable in the South West could save in the region of £29/ha per annum for winter wheat. Across the 6577ha of arable land in the farms of the CRP, this would give a total annual saving of £190,733

achieved through the range of improved fertiliser application techniques, with evaluation of CRP benefits based on a 50% take up and success rate of farm plan fertiliser efficiency recommendations.

Table B.7 Estimated fertiliser usage, farms who have received CRP plans, 2002-3

Land usage	**Area (ha)**	**Application/ha (Nix, 2005)**	**Total cost per year**
Arable	6577	£90	£591,930
Livestock	9457	£70	£661,990

Dairy farms are not included in this estimate, as yield and efficiency savings will be reflected in the survey results. On the basis of a 15% improvement in efficiency, the CRP will lead to annual benefits of £188,088 for the farms who received farm plans in 2002 and 2003, and £282,132 across the whole of the project once the 2004 farms are included on a proportionate basis.

Table B.8: Economic benefits of improved fertiliser use

Annual reduction in use, dairy farms	£54,963
Annual efficiency increases, arable and livestock	£282,132
Total annual saving	£337,095
Net Present Value	£2,886,667

On-farm Tourism Benefits

A survey of 30 farm businesses out of the 144 who had received advice in 2002 and 2003 was undertaken. Farm businesses were asked to evaluate the number of increased bed nights as a result of CRP advice. Discussions with WRT staff indicated that farm advice varied considerably dependent on whether a farm business already had tourism facilities or not, and the evaluation of the results therefore distinguishes between these two categories.

Of the 76 farm businesses with existing tourism enterprises, the 22 included in the survey indicated that they had increased bed nights by 1862 per year as a result of CRP advice. Of the 68 farm businesses who had not previously had tourism enterprises, the 8 farm businesses included in the survey indicated that they now had 350 bed nights. On the basis of these figures, the 144 farms who received advice in 2002 and 2003 generated an increase of 9407 bed nights. Averaged up across the three years of the project, the survey indicates an increase of 14,111 bed nights.

The Cornish rural economy is in a state of transition, and many farm businesses are undertaking tourist developments independent of the CRP. Some of the initiatives undertaken by farm businesses subsequent to CRP advice are likely to have taken place anyhow. Nevertheless, the experience of the CRP and the opinion of South West Tourism, the regional industry representative body, suggests that many of these changes would not have happened so soon, and would not have been conducted so well, without CRP advice (Annette Cole, South West Tourism, personal comment). Given this, the current evaluation attributes 50% of the increased bed nights to the advice given by the CRP.

In addition, the costs associated with the development of additional facilities have not been included in the survey. The cost of implementing recommendations varied from improved advertising and

provision of farm walks to conversions of barns. In order to include these costs in the estimate of increased farm business income, it is evaluated that 50% of increased income should be attributed to costs over the course of the 10-year evaluation period. The performance indicators for the CRP evaluated the income from an increased bed night at £19.28, and this realistic figure is used here.

Table B.9: On-farm benefits of increased tourism

Total increased bed nights	14,111
Total increased bed nights attributable to CRP advice	7,055
Increased annual on-farm income (@£19.28 per bed night, minus 50% costs)	£68,010
Net Present Value	£582,394

In addition to on-farm benefits, the increase in tourist visitors will have increased income to the Cornish economy. Local multipliers indicate an income of £43 in Cornwall for every bed-night (The Tourism Company, 2004). Increased on-farm income must be removed from this estimate. However, as the majority of costs associated with on-farm tourism will accrue to the local economy, the increased costs associated with improvements to tourism facilities are included in benefits to the economy of Cornwall, giving an increase in external benefits of £33.36 to the Cornish economy from the increased on-farm tourist bed nights attributable to the CRP.

Table B.10: External benefits of increased on-farm tourism

Total increased bed nights attributable to CRP advice	7,055
Increased off-farm income to the Cornish economy (@ £33.36/bed night)	£235,355
Net Present Value	£2,015,430

Additional Farm Advice

A number of other significant on-farm economic savings result from implementation of CRP advice, in particular from fencing livestock out of rivers and wetlands, water savings and separation, rotational ditch clearing, a range of water savings measures, and reduced pesticide use. The benefits of the first three of these were evaluated in both of the two previous economic surveys, and a similar quantity of advice was included in CRP farm plans (for example, over 300 farm plans included advice on water savings). The lower of the two estimates from the two previous economic studies is used as the basis for the calculations of per farm saving for the CRP. In addition, pesticide reduction advice was given in over 200 of the CRP farm plans, covering an area of 8000ha. The value given in the performance contract is therefore taken as a conservative estimate of the value of spray savings:

Table B.11: Estimated annual savings from additional farm advice, per farm

Fencing	£97
Ditch clearing	£9
Water savings	£314
Spray savings	£50
Total	**£470**

Table B.12: Additional on-farm benefits

Annual saving per farm	£470
Total annual saving	£287,640
Net Present Value	£2,463,166

Appendix C : Basis for calculation of benefits of increased availability of angling and increased salmon and sea-trout numbers

Increased Availability of Angling

A total of 203 visits were made to Angling 2000 beats in Cornwall in 2002, 250 in 203, and 295 in 2004.[16] It is estimated that this number will plateau off at around 350 visits per year. The total income taken on the Cornish beats for Angling 2000 was £2595. Of the 1609 anglers now registered with the Angling 2000 scheme, 940 live outside Devon and Cornwall, with visits to Angling 2000 beats proportionate among visiting and local anglers.[17] It is evaluated that for each visit these anglers make they must stay at least on night in Cornwall, with the total likely to be higher as some anglers will be accompanied by non-fishing partners.

On this basis, a total of 203 overnight stays in Cornwall can be anticipated as a result of Angling 2000. A small proportion of these additional overnight stays will have been made to farms who received advice on tourism enterprises through the CRP, so 10% of these stays are deducted to avoid double-counting. The benefits to the local economy from an overnight visit by an angler are likely to be significantly greater than the average figure of £43 per night – a figure that includes children, longer term cottage lets etc. Anglers are likely to stay for a shorter time, eat out more, and also spend money locally on tackle and guides. It is therefore conservatively evaluated here that average expenditure per angler per overnight visit is 20% higher, giving an average figure of £52. On the basis of an additional £52 per night to the Cornish economy, a total value of £10,556 can be calculated for these additional bed nights.

Table C. 1: Increased income as a result of Angling 2000

Income from sale of Angling 2000 tokens (@ 350 visits per year)	£3080
Income from increased bed nights (@£52 per night)	£10,556

Increased Catches of salmon and sea-trout

Based on international research, an increase in juvenile numbers of 200% can be anticipated as a result of the types of intervention undertaken by the CRP. The channel width of the 132km of river on which improvements were carried out is evaluated at an average of 3m, giving a total of 396,000m^2 of improved area. The Fisheries Categorisation System used by the Environment Agency rates salmonid habitat from category A to category F. Category E (0.1 – 8.9 salmon parr/100 m^2) is considered an average category for Cornish tributary streams, although some tributaries are of considerably better quality. 2 salmon parr/100 m^2 is therefore taken as a conservative estimate for average existing populations prior to improvement works, a considerably lower figure than the 3.95 and 4.5 parr/100 m^2 used for the Taw and Torridge project evaluation.

[16] The total for 2004 will exceed 295 due to a few additional visits being made after the compilation of statistics for this report.

[17] Local anglers are typically members of clubs or have other arrangements that negate the need to utilise Angling 2000 beats

On the basis of the estimated survival and exploitation rates used in previous evaluations, the improvement of the 132 km of riparian habitat will lead to an increase of 15,840 in parr populations, leading to an increase in 152 in total salmon catches. An increase in sea-trout numbers of 83 can be anticipated in line with this.

Table C.2: Basis for calculation of increased salmon and sea-trout numbers, from Manning 2001

River	**Torridge 5B area**	**Taw 5B area**
1999 av. 1+	3.95/100m^2	4.50/100m^2
Av. Channel width of sections subject to habitat improvement works	4.1m	5.9m
Km fenced	38.507km	12.224km
Km coppiced	9.020km	10.455km
Parr population in affected sections 1999	7700	6100
Estimated Parr population in affected sections 2002 (200% increase)	23100	18300
Extra parr 2002	15400	12200
Extra smolt 2003(66.7% survival Farooqi et al (1995))	10300	8100
Extra returning adult 2004-05 (9% survival Harris (1995))	927	729
Extra rod caught salmon (16% EA (1996))	148	117

Benefits of Increased Catches

Estimates of the improvement in economic benefits as a result of improved angling catches are notoriously difficult. However, the detailed data available from the Angling 2000 scheme provides an unusual opportunity for an accurate local estimation to be made in the current case.

As part of the expansion of the Angling 2000 scheme, a new beat, Treguddick on the River Inny, became available in 2004 (see above). A considerable number of stretches of river were available through the Angling 2000 scheme prior to the introduction of Treguddick. However, this beat has better quality salmon and sea-trout angling potential than the previously available Angling 2000 beats. The benefits generated from this beat can therefore be taken as representative of the marginal increased benefits from improvements in available salmon and sea-trout fishing quality, a proxy for improvements in salmon and sea-trout populations and catches.

In 2004, there were 244 visits to the Treguddick beat at a total cost of £732. On the basis that 58% of these visits involved an overnight stay, the total economic benefits to the local economy of the introduction of Treguddick was £8090 in 2004.

Table 7.3: Benefits from Treguddick in 2004

Increased token sales	£732
Extra overnight stays (@52/night)	£7359

Total	£8090

A total of 2 salmon and 7 sea-trout were caught at Treguddick in 2004. It is assessed that 1/3rd of the visits to Treguddick will have been for trout fishing. Dividing the remaining £5393 equally between the salmon and sea-trout catches yields total economic benefits of £1,348 per salmon and £385 per sea-trout. These provide good estimates of the marginal benefits of increased salmon and sea-trout numbers. These estimates mirror closely the estimates in the performance contract of £1650 per salmon and £800 per sea-trout, based on average figures for income generation from angling in the South-West. The economic benefits from the improvements carried out by the CRP can be calculated on the basis of these figures. As some of these benefits are likely to accrue to the Angling 2000 beats, 5% is removed from the projected benefits to ensure that double-counting is avoided.

Table 7.3: Estimates local economic benefits from increased salmon and sea-trout catches

Benefits from increase in salmon rod catch	£204,896
Benefits from increase in sea-trout catch	£31,955
Annual economic benefit (-10% for Angling 2000)	£223,824
Net present value	£1,916,686

Appendix D: Cormwall Rivers Project Economic Performance Indicators

The evaluation presented in here suggests that the CRP has met each of the economic performance indicators specified in the original project contract

Table D.1: Contracted Performance Indicators

PERFORMANCE INDICATOR	CUMULATIVE ACHIEVEMENT TARGET
Agriculture	
Reduce soil loss, through erosion on 232 farms, saving a total of 2320 tonnes over 666 farms	£93,332 pa gross
Reduce losses of nitrogen and phosphate from applied farmyard manure and chemical fertilisers equivalent to 2 tonnes of 20.10.10 compound @ 15p/kg on 666 farms.	£200,000 pa gross
Saving in spray costs on 166 farms @ £50.00 per farm.	£8,300 pa gross
Water savings through eliminating leaks, providing alternative drinking facilities, maximising roof run-off, recycling of washing water and the separation of waste.	148,932m3 water saved
Increased Employment.	32 PTJE's
Angling	
Fencing degraded water courses leading to increase of salmon and sea trout in rivers.	52 salmon caught by rod = £86,000 32 sea trout caught by rod = £26,000
Stream habitat improvement.	58 extra salmon caught by rod = £96,332
Increased employment.	10 FTJE's
Provide access to 15 previously unfished beats via the Angling 2000 initiative.	Access to 15 previously unfished beats
Tourism	
Added visitors overnight	1332 @ £19.28 = £25,680 pa gross
Added visitors day	6,666 @ £5.37 = £35,796 pa gross
Increased employment	2 PTJE

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