



Countryside and Community Research Institute

Estimating the Incidental Socio-economic Benefits of Environmental Stewardship Schemes

Final Report

by

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Executive Summary

1. Introduction

This report assesses the incidental socio-economic benefits of Environmental Stewardship (ES) schemes in England in order to identify their socio-economic impact on the wider local economy. In particular, it assesses the extent of local multiplier effects and employment creation as an indirect result of agri-environment expenditure. The three objectives of the research were:

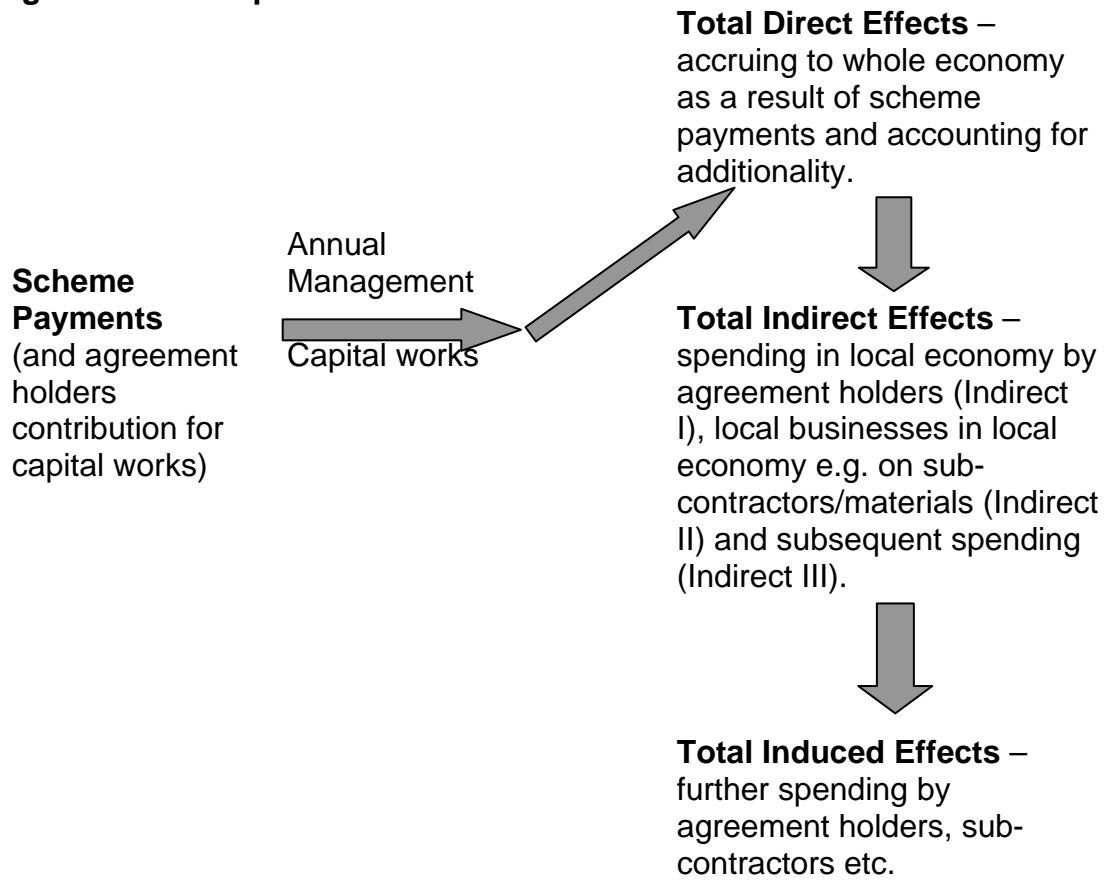
- *Farm Level Impacts* - to produce farm level estimates of the social and economic benefits of Entry Level Stewardship (ELS), Higher Level Stewardship (HLS), Organic Entry Level Stewardship (OELS) agreements, disaggregating estimates by value of agreement; farm type; and between organic and non-organic schemes.
- *Scheme Option Level Impacts* - to produce estimates of the relative social and economic benefits of different ES option groups (both capital and land management).
- *Aggregate Level Impacts* - to estimate the aggregate social and economic impact of ES differentiating between ELS/HLS/OELS agreements, to produce estimates at England and English Government Office Regions (GORs) levels; and by landscape typology.

The method used for estimating local economic impacts of ES schemes is the LM3 model, originally developed by the New Economics Foundation (NEF). The model measures the impact of the first three rounds of spending in the economy and estimates the magnitude of subsequent rounds to derive income and employment effects (in terms of £m and full-time equivalent (FTE) jobs¹) and multipliers (which indicate the pound for pound impact of the original investment).

Figure 1 illustrates the data input requirements for the NEF's LM3 model used in this study. The direct benefits relate to the initial scheme payment that can be regarded as additional and remains local; indirect benefits relate to the subsequent local expenditure of this income on inputs by agreement holders, contractors, suppliers and advisors; and induced benefits relate to the expenditure of wages, salaries and profits by local employees. In simple terms, the multiplier effect can be defined as: Multiplier = (Direct Effects + Indirect Effects + Induced Effects) / Direct Effects, wherein the direct effects are the initial investment into the economy and the indirect and induced effects are the subsequent spending resulting from that original investment. The multipliers calculated can be of differing magnitude because the direct injection is not always the scheme injection.

¹ This is the ratio of total paid hours during a period by the number of working hours during that period. An FTE of 1.0 means that the person is equivalent to a full-time worker, while an FTE of 0.5 indicates that the worker is only half-time.

Figure 1: Data input for LM3 model



2. Methodology

Literature review

The research initially undertook a critical review of studies which have explored the economic impacts of Agri-environment Schemes (AES) and in particular have employed the NEF's LM3 model. It also examined the evidence for the social and human capital benefits of AES. The review identified a number of issues which helped to inform both the direction and detail of the research project.

Study of agreement holders

Data required for LM3 models and the social assessment of ES were collected through face-to-face and telephone interviews. A sample of 360 agreement holders was selected for interview and stratified on the basis of scheme type, agricultural landscape type and agreement value. In total, 72 agreement holders were interviewed face-to face and 288 by telephone. The questionnaires were designed to ensure that sufficient data was collected to feed into the LM3 model, but also contained open questions to solicit qualitative responses that could provide an insight into other aspects of the scheme.

Study of suppliers, contractors and advisors

To provide further data for the LM3 model both telephone and face-to-face interviews were conducted with 85 local businesses, involving agricultural contractors, suppliers of agricultural goods and advisors. These interviews

identified the income and employment impacts of the ES schemes on the business and the spatial distribution of supply and employment expenditure.

Local Economic Impact Analysis

The quantitative data gathered during the interviews were used to calculate the income and employment effects of ES schemes and a total of 48 LM3 income and employment models were produced. The more qualitative data were analysed to identify trends that would indicate the social impact of the schemes and other important issues.

3. Key Results

The main results from the LM3 analysis are provided below. The multipliers presented are for a 40 minute drive time from the agreement holder, unless otherwise stated.

Local economic impact of ES

All schemes – As Table 1 shows, at the national level the derived income multiplier for all the ES schemes was 1.42. Thus, a £1 expenditure on ES activities could be said to result in a total output in the local economy (40 minutes drive time from agreement holder) area of £1.42. Extending the local boundary to a 60 minute drive time zone from agreement holders, the income multiplier for all ES schemes was 1.73. Going beyond the 60 minutes, the income multiplier for the ‘elsewhere’ category is 32.3. The ‘scheme’ multiplier for all ES schemes, which divides the total income effect by the total scheme payment, is 0.26. This shows that for every £1 of ES scheme payment that goes to the agreement holder, 0.26 is generated off-farm in the local economy through direct expenditure and indirect and induced effects.

Table 1: Income Multipliers: National level, by Scheme

Scheme	40 Minute Drive time		60 Minute Drive time		Elsewhere	
	Income Multiplier	‘Scheme’ multiplier	Income Multiplier	‘Scheme’ multiplier	Income Multiplier	‘Scheme’ multiplier
HLS	2.23	1.43	2.67	1.72	53.11	34.18
ELS	1.29	0.16	1.61	0.19	26.62	3.19
All Schemes	1.42	0.26	1.73	0.32	32.3	5.87

The survey found that a high percentage (80%) of all ES expenditure by agreement holders is spent locally. The same is true for the purchases made by the contractors, suppliers and advisors sampled.

The direct employment effect was calculated from the number of additional jobs created on the holding as a direct result of ES activities, taking into account displacement effects in the local labour market. On average over the sample, 0.015 additional direct FTE jobs were created per agreement holder, which suggests farms were able to absorb much of the additional workload generated by the scheme without recruiting additional staff. Upland agreement holders, in particular, saw any increase in workload as a positive

impact in that it created work for underemployed farm workers and family members. Thus it appears that ES is more important on the agreement holdings for job retention rather than job creation.

Assumed co-efficients were applied to calculate the indirect and induced employment effects. As Table 2 shows the employment multiplier calculated for all ES schemes was 1.25 (FTE) jobs. Thus for every 1 FTE job created as a direct result of scheme expenditure, 0.25 FTE jobs are created in the local economy. Also 1.32 FTE jobs were created for every £m of initial scheme injection.

Table 2: Employment Multipliers: National level, by Scheme

Scheme	40 Minute Drive time		60 Minute Drive time		Elsewhere	
	Employ. multiplier	FTE jobs/£m injection	Employ. multiplier	FTE jobs/£m injection	Employ. multiplier	FTE jobs/£m injection
HLS	2.14	2.21	2.23	2.30	2.60	2.69
ELS	1.16	1.38	1.17	1.39	1.18	1.41
All Schemes	1.25	1.32	1.28	1.34	1.32	1.39

HLS - Comparing HLS and ELS schemes, HLS generated the highest income multiplier of 2.23 in the local economy (40 mins). These schemes are more demanding than ELS schemes and contain capital works, which require greater expenditure in the local economy. Also the additionality benefits of HLS schemes are high. In the absence of HLS scheme payments 79% of the scheme work would not have been undertaken. Extending the local boundary to 60 minutes drive time increases the HLS income multiplier to 2.67.

The ‘scheme’ multiplier for HLS is 1.43. This indicates that for every £1 of HLS scheme payment that goes to the agreement holder, £1.43 is generated off-farm in the local economy through direct expenditure and indirect and induced effects

HLS schemes generated the highest employment multiplier of 2.14 and the highest FTE jobs created/£m scheme injection of 2.21, reflecting the more demanding nature of these schemes and the greater requirement for the use of contractors and supplies compared to ELS.

ELS - The ELS income multiplier of 1.29 and the ‘scheme’ multiplier of 0.16 were lower than HLS as significantly less is spent on ELS scheme-related work in the local economy. The employment multiplier for ELS of 1.16 and the FTE jobs created/£m of scheme injection of 1.38 were also lower than HLS.

Options level analysis – As Table 3 shows the HLS boundary group (HB) generated both the highest income multiplier and employment multiplier of 2.28 and 2.28, respectively. This option group contains a high proportion of capital items, such as those associated with fencing and hedgerows which are popular options and require the use of contractors and the purchase of

materials. The lowest income multiplier of 1.21 was for the ELS grassland option group (EK) which mainly required land management changes, rather than the purchase of additional inputs and services.

Table 3: Income and Employment Multipliers by Option Group

Option group	Income Multiplier (40)	Income Multiplier (60)	Employment Multiplier (40)	Employment Multiplier (60)
HB	2.28	2.75	2.28	2.41
EK	1.21	1.52	1.15	1.16

Analysis by farm type – The lowland livestock farms generated the highest income multiplier of 1.50. The livestock schemes contain a high proportion of boundary options which produce a high income multiplier. Also more income has been retained in the local economy for these farms through sourcing a greater proportion of supplies and contractors locally.

Agricultural landscape analysis - The Upland Fringe and Western Mixed landscape types generated the highest multipliers of 1.50 and 1.49, respectively. This largely reflects the predominance of livestock options in these areas which produce higher income multiplier effects.

Regional level analysis: - The highest multiplier impacts on the local economy were for the mainly livestock dominated North West and West Midlands regions, with income multipliers of 1.48, whilst the arable dominated East of England produced the lowest income multiplier of 1.33.

Analysis by agreement value: - The highest value agreements produced the highest employment multiplier of 2.63. These larger schemes are likely to have more complex options and a significant amount of capital works and there will require more outside help in implementing the agreement.

Income effect on local businesses - Seventy per cent of the surveyed businesses reported some increase in turnover as a result of the schemes. For about a quarter of these businesses, mainly stone wall contractors, tree nurseries and advisors, the impact on turnover was high (more than 50%). This suggests that some businesses are far more engaged with supplying ES goods and services and are more dependent on the continuation of ES to remain viable. The demise of such schemes may mean that such businesses cease trading and traditional rural skills are lost

Employment effect on local businesses - The advisors and contractors created an average of 0.13 and 0.10 new FTE jobs per business in the local economy, respectively, to meet the demands of the ES schemes. These existing businesses were able to absorb much of the additional demand for their services without recruiting additional staff.

Social benefits of ES

Human capital: attitudes, knowledge and farm practice changes – The survey found that ES schemes have contributed positively to the management

skills base of farmers and increased their environmental knowledge, and general awareness of the environment when managing the farm. This increased awareness has translated into wider attitudinal and farm practice changes most notably the environmental impact of management actions across the whole farm. In particular, HLS agreement holders who have had to make changes to their established management practices have benefitted in this way.

Attitudes also extended to a sense of pride and recognition of the wider benefits in participation in the schemes from engaging with the public, helping with marketing or maintaining a level of income.

Human capital: skills and training benefits - ES has had the greatest positive impact in terms of skills and knowledge development on arable agreement holders, and these agreement holders were also more likely to have attended a training course. This may reflect the more demanding nature of the arable options where agreement holders are required to do more than their usual farming practices.

Forty-four per cent of agreement holders reported a transferability of skills from ES schemes to other projects/areas of farm work. They tended to apply the scheme management principles when carrying out other tasks around the farm, this applied particularly to field operations, such as cultivation of field edges, spraying and chemical usage, drilling and the timing of field operations.

A third of the sampled HLS agreement holders had attended training courses or open days as a result of ES scheme membership. Courses attended included hedge laying, dry-stone walling and management skills for specific habitats. The educational access options, in particular, had prompted some farmers to attend courses specifically designed for dealing with the public. In addition, a number of contractors and advisors also sought new knowledge and skills through training courses.

Social interaction benefits – The survey found that ES can play an important part in developing new social contacts and networks. Of the advisors used by agreement holders, 40% were not known to them previously, which indicates that these agreement holders had to reach out beyond the established social networks around their farm or business for this expertise. This was particularly the case for HLS agreement holders and for the lowland dairy and livestock farms. These new linkages and flows of information can potentially lead to profound changes in social and business activity.

The survey found that ES schemes and particularly HLS schemes have also brought agreement holders in contact with more farmers and the general public. It appears that in a period of increased isolation the social contact prompted by scheme membership (hosting or attending farm walks, meetings to discuss options, advisor visits) is greatly valued.

4. Implications for policy change

The study findings have a number of implications for policy concerned with delivering value from AES.

- The research confirms for the first time at a national scale that the incidental benefits of ES have a significant impact on the local economy. Due to the nature of ES requirements, much of the income and employment benefits are retained locally. This appears to be a particular characteristic of agri-environmental activities undertaken by the agricultural community.
- The research found that in the absence of ES scheme payments a large proportion of the scheme work would not have been undertaken. The contribution of ES scheme funding to ensuring that wildlife, landscape and historical features are created, restored and maintained is therefore vital.
- The uptake of capital works options within HLS schemes produces the highest income and multiplier effects in the local economy. Consideration needs to be given to this when contemplating future policy change.
- In some areas where farm underemployment is widespread, ES appears to have been important in retaining family members and farm employees on the farm. This has important policy implications at a time when farm employment is contracting.
- ES schemes under-pin employment for some local businesses, including stone walling and hedge restoration contractors and some advisors. The demise of such schemes may mean that some businesses cease trading and traditional rural skills are lost.
- ES schemes have resulted in a transferability of management skills to other areas of the farm, particularly in relation to field operations. This demonstrates that ES can produce wider environmental benefits across the farm, beyond the ES agreement.
- There are benefits of Natural England and other organisations continuing to promote such events as open days and farm walks as the increased social interaction they bring fills a social vacuum in the agricultural community and is greatly valued by many agreement holders.

Contents

1. INTRODUCTION	1
1.1 BACKGROUND TO STUDY	1
1.2 BACKGROUND TO ENVIRONMENTAL STEWARDSHIP	4
1.3 REPORT STRUCTURE	6
2. LITERATURE REVIEW.....	7
2.1 ECONOMIC IMPACT STUDIES OF AGRI-ENVIRONMENT ACTIVITIES	7
2.2 SOCIAL AND HUMAN CAPITAL BENEFITS OF AGRI-ENVIRONMENT SCHEME PARTICIPATION	16
2.3 INFORMING THE METHODOLOGICAL APPROACH TO THE CURRENT STUDY	19
2.4 CONCLUSIONS	20
3. METHODOLOGY	21
3.1 DEVELOPMENT OF THE METHODOLOGY	21
3.2 SAMPLING FRAMEWORK	21
3.3 STUDY OF AGREEMENT HOLDERS	25
3.4 STUDY OF CONTRACTORS SUPPLIERS AND ADVISORS	27
3.5 LOCAL ECONOMIC IMPACT ANALYSIS	28
4. LOCAL INCOME AND EMPLOYMENT IMPACTS.....	30
4.1 RESPONSE RATES	30
4.2 SCHEME COVERAGE	31
4.3 BACKGROUND INFORMATION ON RESPONDENTS.....	32
4.4 ESTIMATION OF LOCAL INCOME AND EMPLOYMENT EFFECTS	37
4.5 INCOME EFFECTS AT THE FARM LEVEL	49
4.6 EMPLOYMENT IMPACTS AT FARM LEVEL	50
4.7 OPTION LEVEL ANALYSIS.....	52
4.8 AGGREGATE LEVEL ANALYSIS	57
5. SOCIAL IMPACTS	61
5.1 SKILLS AND KNOWLEDGE DEVELOPMENT	61
5.2 TRAINING	64
5.3 SOCIAL INTERACTION.....	66
5.4 OTHER BENEFITS OF ES	72
6. CONCLUSION AND IMPLICATIONS FOR POLICY CHANGE.....	74
6.1 LOCAL INCOME EFFECTS OF ES	74
6.2 LOCAL EMPLOYMENT EFFECTS OF ES	76
6.3 COMPARISON OF ES MULTIPLIERS WITH OTHER STUDIES.....	77
6.4 SOCIAL BENEFITS OF ES	79
7. REFERENCES	81
APPENDIX 1: LITERATURE REVIEW	85
APPENDIX 2: AGREEMENT HOLDER QUESTIONNAIRE	114
APPENDIX 3 EXAMPLE OF AGREEMENT HOLDER RECORD SHEET.....	131
APPENDIX 4 OPTION GROUPINGS	132
APPENDIX 5: CONTRACTOR, SUPPLIER AND ADVISOR QUESTIONNAIRES	164
APPENDIX 6: LM3 MODEL FOR AGGREGATE ELS SCHEMES	190
APPENDIX 7: SUMMARY OF MULTIPLIERS FOR AGGREGATE LEVEL ANALYSIS	193
APPENDIX 8: SCHEME CASE STUDIES.....	199

List of Tables

TABLE 1.1: COMPOSITION OF THE LM3 MODEL.....	2
TABLE 2.1: MAIN FEATURES OF ECONOMIC IMPACT STUDIES.....	9
TABLE 2.2: COMPARISON OF INCOME EFFECTS OF AGRI-ENVIRONMENT ACTIVITIES PER £M OF INITIAL INJECTION	12
TABLE 2.3: COMPARISON OF EMPLOYMENT EFFECTS OF AGRI-ENVIRONMENT ACTIVITIES PER £M OF INITIAL INJECTION	13
TABLE 3.1: ALLOCATION OF SAMPLE (NO. OF AGREEMENTS).....	24
TABLE 3.2: TELEPHONE AND FACE-TO-FACE INTERVIEW SAMPLE NUMBERS	24
TABLE 3.3 OPTION GROUPS USED IN ANALYSIS	26
TABLE 3.4: FARM LEVEL MODELS: ENGLAND; BY SCHEME.....	28
TABLE 3.5: OPTION GROUPS IN OPTION LEVEL ANALYSIS	28
TABLE 3.6: AGGREGATE LEVEL: ENGLAND; ALL FARMS; BY SCHEME.....	29
TABLE 4.1: AGREEMENT HOLDER SURVEY SAMPLE.....	30
TABLE 4.2: LOCAL BUSINESS SURVEY SAMPLE	30
TABLE 4.3: RANGE OF AGREEMENT VALUES	32
TABLE 4.4: SOURCES OF BUSINESS INCOME	32
TABLE 4.5: HOLDING TENURE.....	32
TABLE 4.6: DISTRIBUTION OF LOCAL BUSINESSES BY LANDSCAPE TYPE.....	33
TABLE 4.7: IMPACT OF ES ON LOCAL BUSINESS TURNOVER	34
TABLE 4.8: CONTRACTORS ES ACTIVITIES	34
TABLE 4.9: MAIN ES MATERIALS SUPPLIED	35
TABLE 4.10: MAIN ES ADVISORY ACTIVITIES	36
TABLE 4.11: PAYMENT DATA RELATING TO ES SCHEMES OVER STUDY PERIOD	37
TABLE 4.12: PROPORTION OF WORK THAT WOULD HAVE BEEN UNDERTAKEN IN THE ABSENCE OF THE SCHEME	38
TABLE 4.13: MEAN FTES EMPLOYED AS A DIRECT RESULT OF THE SCHEME	39
TABLE 4.14: PROPORTION OF ES-RELATED WORKS ACCRUING TO THE LOCAL AND WIDER LOCAL ECONOMY (%)	39
TABLE 4.15: BREAKDOWN AND DISTRIBUTION OF MAIN EXPENDITURE BY CONTRACTORS, SUPPLIERS AND ADVISORS USED TO ESTIMATE INDIRECT EFFECTS	40
TABLE 4.16 : DISTRIBUTION OF HOUSEHOLD EXPENDITURE USED TO ESTIMATE INDUCED EFFECTS	40
TABLE 4.17: SUMMARY OF MULTIPLIER CALCULATION FOR ELS MODEL	45
TABLE 4.18: EMPLOYMENT EFFECT MODEL FOR THE ELS SCHEME	49
TABLE 4.19: INCOME MULTIPLIER EFFECTS AT BY FARM TYPE AND TOTAL AGREEMENT VALUE	49
TABLE 4.20: PROPORTION OF ES-RELATED ACTIVITIES CARRIED OUT BY THE FARM AND CONTRACTORS	51
TABLE 4.21: EMPLOYMENT MULTIPLIERS: ALL SCHEMES, BY FARM TYPE AND AGREEMENT VALUE.	52
TABLE 4.22: PERCENTAGE OF WORK POTENTIALLY UNDERTAKEN IN ABSENCE OF ELS	53
TABLE 4.23: PERCENTAGE OF WORK POTENTIALLY UNDERTAKEN IN ABSENCE OF HLS.....	54

TABLE 4.24: PERCENTAGE OF WORK POTENTIALLY UNDERTAKEN IN ABSENCE OF OELS AND OHLS.....	54
TABLE 4.25: INCOME MULTIPLIERS: ELS NON-ORGANIC SCHEMES, BY OPTION GROUP	54
TABLE 4.26: INCOME MULTIPLIERS: HLS NON-ORGANIC SCHEMES, BY OPTION GROUP	55
TABLE 4.27: INCOME MULTIPLIERS: ORGANIC SCHEMES (OELS AND OHLS), BY OPTION GROUP	55
TABLE 4.28: EMPLOYMENT MULTIPLIERS: ELS NON-ORGANIC SCHEMES, BY OPTION GROUP	56
TABLE 4.29: EMPLOYMENT MULTIPLIERS: HLS NON-ORGANIC SCHEMES, BY OPTION GROUP	56
TABLE 4.30: EMPLOYMENT MULTIPLIERS: ORGANIC SCHEMES (OELS AND OHLS), BY OPTION GROUP	57
TABLE 4.31: INCOME MULTIPLIERS: NATIONAL LEVEL, BY SCHEME	57
TABLE 4.32: EMPLOYMENT MULTIPLIERS: NATIONAL LEVEL, BY SCHEME.....	58
TABLE 4.33: INCOME MULTIPLIERS: ALL SCHEMES, BY REGION	59
TABLE 4.34: EMPLOYMENT MULTIPLIERS: ALL SCHEMES, BY REGION.....	59
TABLE 4.35: INCOME MULTIPLIERS: ALL SCHEMES, BY LANDSCAPE TYPE	60
TABLE 4.36: EMPLOYMENT MULTIPLIERS: ALL SCHEMES, BY LANDSCAPE TYPE	60
TABLE 5.1: CONTRACTORS AND ADVISORS KNOWN TO AGREEMENT HOLDERS BEFORE ES BY SCHEME	67
TABLE 5.2: ADVISORS KNOWN TO AGREEMENT HOLDERS BEFORE ES BY FARM TYPE.....	67
TABLE 6.1: COMPARISON OF ES INCOME MULTIPLIERS WITH OTHER STUDIES	78
TABLE 6.2: COMPARISON OF ES EMPLOYMENT MULTIPLIERS WITH OTHER STUDIES.....	79

List of Figures

FIGURE 1.1: DATA INPUT FOR LM3 MODEL	3
FIGURE 3.1: AGRICULTURAL LANDSCAPE TYPES.....	23
FIGURE 4.1: SCHEME USE FOR CORE AND SURVEY DATA	31
FIGURE 4.2: PROPORTION OF FARM PURCHASES MADE LOCALLY (40 MINS) BY SCHEME.....	33
FIGURE 4.3: CALCULATION OF ELS INCOME MULTIPLIERS (40 MINS).....	43
FIGURE 4.4: CALCULATION OF HLS INCOME MULTIPLIERS (40 MINS)	44
FIGURE: 4.5 CALCULATION OF EMPLOYMENT MULTIPLIER	48
FIGURE 4.6: CHANGES IN FARM WORKLOAD DUE TO ES SCHEMES (%)	50
FIGURE 4.7: NUMBER OF OPTION GROUPS WITHIN 75% OF THE TOTAL NUMBER	53
FIGURE 5.1: IMPACT OF ES ON SKILLS AND KNOWLEDGE DEVELOPMENT BY SCHEME (%)	61
FIGURE 5.2: IMPACT OF ES ON SKILLS AND KNOWLEDGE DEVELOPMENT BY LANDSCAPE TYPE (%)	63
FIGURE 5.3: ATTENDED TRAINING COURSE OR OPEN DAY AS A RESULT OF ES BY SCHEME	65
FIGURE 5.4: ATTENDED TRAINING COURSE OR OPEN DAY AS A RESULT OF ES BY LANDSCAPE TYPE	66
FIGURE 5.5: JOINED DISCUSSION GROUP AS RESULT OF ES, BY SCHEME	68
FIGURE 5.6: JOINED DISCUSSION GROUP AS RESULT OF ES, BY LANDSCAPE TYPE	69
FIGURE 5.7: INCREASED CONTACT WITH OTHER FARMERS OR GENERAL PUBLIC DUE TO ES.....	70
FIGURE 5.8: GENERAL PUBLICS' INCREASED AWARENESS OF FARMER'S ROLE IN ES	71

1. Introduction

1.1 Background to Study

The Countryside and Community Research Institute (CCRI) was commissioned by Defra and Natural England in March 2007 to undertake an assessment of the incidental socio-economic benefits of Environmental Stewardship (ES) schemes in England in order to identify their socio-economic impact on the wider local economy. In particular, Defra was interested in the extent of local multiplier effects and employment creation as an indirect result of agri-environment expenditure. The three objectives of the research were:

- Objective 1: Farm Level Impacts.**

To produce farm level estimates of the social and economic benefits of ES, differentiating between direct, indirect and induced benefits of Entry Level Stewardship (ELS), Higher Level Stewardship (HLS), Organic Entry Level Stewardship (OELS) agreements and disaggregating estimates by value of agreement; farm type; and between organic and non-organic schemes.

- Objective 2: Scheme Option Level Impacts.**

To produce estimates of the relative social and economic benefits of different ES options/groups of options (both capital and land management) differentiating between direct, indirect and induced benefits and the geographical footprint of these benefits.

- Objective 3: Aggregate Impacts.**

To estimate the aggregate social and economic impact of ES differentiating between direct, indirect and induced benefits and ELS/HLS/OELS agreements, producing estimates at England and English Government Office Regions (GORs) levels; and by landscape typology.

The research brief emphasised that the work should not attempt to develop the wider social and economic valuation of ES, for example through the delivery of the schemes' primary objectives of biodiversity, landscape, historic environment, access and resource protection. Instead, this work is solely concerned with the incidental social and economic benefits that accrue as a direct result of scheme expenditure.

The method used for estimating local economic impacts of ES schemes in this report is the LM3 model, originally developed by the New Economics Foundation (NEF). The model measures the impact of the first three rounds of spending in the economy and estimates the magnitude of subsequent rounds to derive income and employment effects (in terms of £m and full-time equivalent (FTE) jobs) and multipliers (which indicate the pound for pound impact of the original investment). Thus, in the case of ES, the first round derives from scheme payments to the agreement holder, this comprises the direct effect. The agreement holder then spends some of this on goods and

services to carry out scheme-related works and contracts some of the work out to local businesses; this is the second round of expenditure and makes up indirect effects in the model. The third round then results from expenditure by contractors and suppliers, making up further indirect effects. At each stage, some income is leaked out of the local economy, and some stays within it to generate further impacts through multiplier effects. An additional round of expenditure is also captured by the model, that being an estimate of the expenditure of wages, salaries and profits by agreement holders and contractors. The resulting impacts are termed induced effects. The main indicator of economic impact, the multiplier, is derived by dividing the sum of the direct, indirect and induced effects by the original direct effect. The composition of the LM3 model is detailed in Table 1.1.

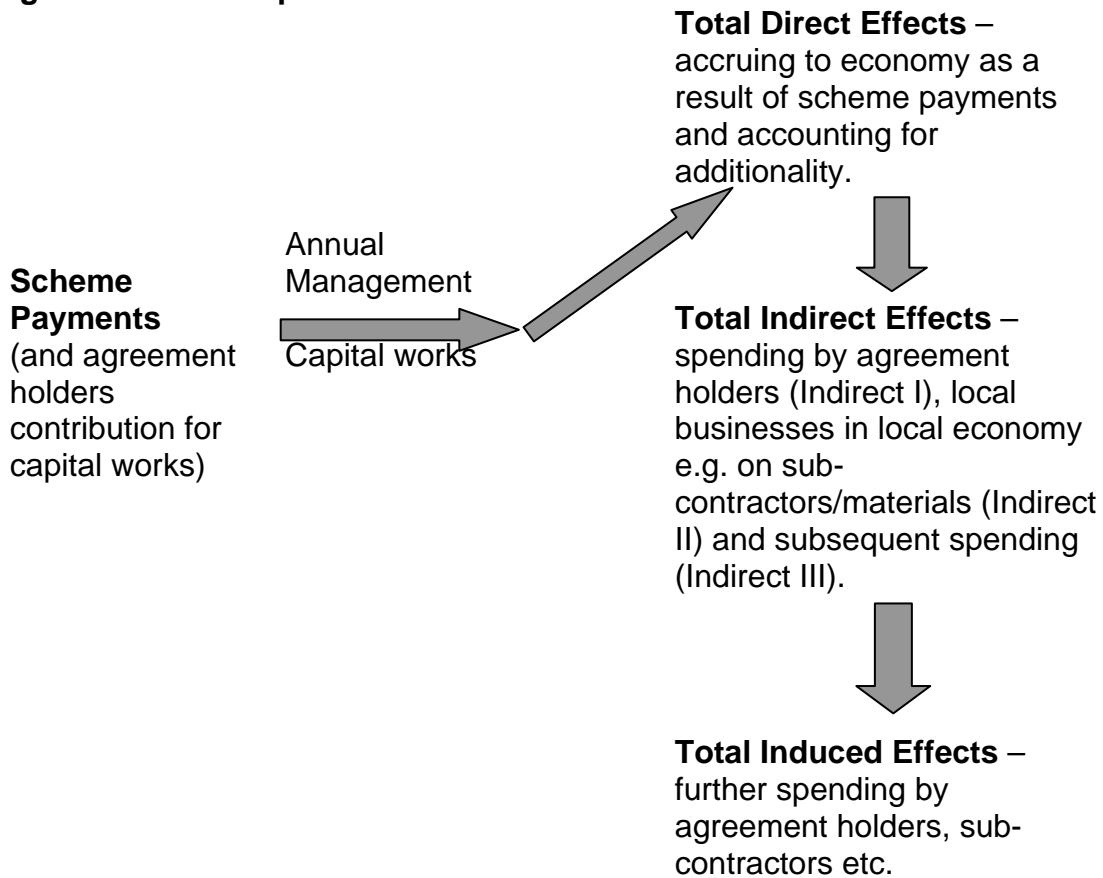
Table 1.1: Composition of the LM3 model

Effect	Description of effect
Direct	Initial injection of scheme funds into the economy that can be regarded as being additional
Indirect I	Second round expenditure on goods and services by agreement holders accrued to the local economy
Indirect II	Third and subsequent rounds of expenditure by contractors and suppliers accrued to the local economy
Induced	Consumption expenditure of wages and profits of agreement holders and local businesses accrued to the local economy

Figure 1.1 further clarifies the data input requirements for the NEF LM3 model for this study. The direct benefits relate to the initial scheme payment that can be regarded as additional and accrues to the economy; indirect benefits relate to the subsequent local expenditure of this income on inputs by agreement holders, contractors, suppliers and advisors; and induced benefits relate to the expenditure of wages, salaries and profits by local employees.

The Multiplier Effect, (originally developed by John Maynard Keynes) of an investment represents the number of times that it is spent and re-spent within a particular economy, before eventually leaving that economy. Understanding the multiplier effect, therefore, allows for a more accurate calculation of the total value of a particular input/investment to the economy being investigated. In simple terms, the multiplier effect can be defined as: Multiplier = (Direct Effects + Indirect Effects + Induced Effects) / Direct Injection, wherein the direct effects are the initial investment into the economy and the indirect and induced effects are the subsequent spending resulting from that original investment.

Figure 1.1: Data input for LM3 model



In acknowledging the benefits of the multiplier effect as a tool to better understand the impact of spending patterns within particular areas, but also recognising its complexity in implementation, the New Economics Foundation (NEF), in partnership with The Countryside Agency, developed the LM3 model. LM3 is intended to be a simplified version of Keynes' original model, which restricts the focus to three exchanges (or rounds of spending), of which the first round is the initial economic input. This is primarily for simplicity and usability, but also because it is estimated that the first three rounds of spending in an economy accounts for 85% of the total effects. The LM3 is particularly suitable for estimating impacts at the sub-regional and local level, providing that sufficient primary data can be collected. LM3 models are not as comprehensive as Input-Output models or Social Accounting Matrices (SAMs)² in that they fail to give a complete, consistent and comprehensive picture of how all the various actors in an economy interact at a certain point in time and do not capture the full circular flow of income around the economy. However, they benefit greatly from their relative simplicity and lower implementation costs. They are also less reliant on the need for complex secondary data, which can prove unreliable or problematic when disaggregated to the required spatial level.

² Regional I-O models trace the interactions of local industries with each other, with industries outside the region and with final demand sectors. A SAM is a general equilibrium data system of income and expenditure accounts which links the production activities, factors of production and institutions in an economy.

Despite its usefulness as a tool for estimating local multiplier effects, it is important to acknowledge that it is only an *indicator* and that there is the potential for inaccuracy at various stages of its estimation. These provisos are discussed, where necessary, throughout this report, but a number of general issues need to be born in mind when interpreting the figures:

- Third round consumption/household expenditure is likely, in many cases, to take place in supermarkets. Although these may well be physically ‘local’ to the consumer concerned, they are less embedded within the local economy and are likely to lead to larger leakages from the local economy than money spent in independent local shops.
- Similar issues are relevant where agreement holders buy their supplies from local merchants. Again, it is significant that money is spent in these local outlets, but at the same time many of the items purchased may well have come from outside the local economy.
- The quality of data sourced will be variable, with some respondents supplying better quality data than others.

The most important limitation of the LM3 approach relates to the ability of the models to account for additionality and displacement in the local economy. Additionality is defined as the extent to which economic activity takes place at all, on a larger scale, earlier or within a specific designated area or target group, as a result of an intervention or sector. For example, some works, such as hedge management, may have been undertaken in the absence of grant payments, and therefore cannot strictly be counted as additional.

Displacement occurs when an initiative or sector takes market share, labour or other forms of capital from other businesses or organisations in a local geographic area. It is defined as the proportion of impacts accounted for by reduced impacts elsewhere in local economy. For example, someone taking up a job generated by the scheme may have left a previous job in the area, thus displacing activity from elsewhere in the economy.

Any assessment of economic impacts therefore really needs to take account of any potential loss of trade or staff by one firm as a result of increased market share of another, or any adverse effects on the local labour market as a result of increased demand for skilled labour in the area.

1.2 Background to Environmental Stewardship

Environmental Stewardship (ES) was launched by Defra in early 2005. The introduction of ES marked a new approach to the delivery of agri-environmental policy in England bringing together the separate approaches of Countryside Stewardship (CSS), Environmentally Sensitive Areas (ESA) and extending the potential for environmental management to the entire farmed landscape through the introduction of an entry level tier of ES.

The primary objectives of ES are to:

- conserve wildlife (biodiversity);

- maintain and enhance landscape quality and character;
- protect the historic environment and natural resources;
- promote public access and understanding of the countryside; and
- protect natural resources.

ES also has the secondary objectives of:

- genetic conservation; and
- flood management.

The schemes available under ES are:

Entry Level Stewardship (ELS) offers payments for simple and effective land management going beyond the Single Payment Scheme (SPS) requirement to maintain land in good agricultural and environmental condition.

Participants can choose from a wide range of more than 50 management options covering all farming types, including hedgerow management, stone wall maintenance, low input grassland management, buffer strips, and arable options. Each year participants receive a payment of £30/ha (except in extensively grazed upland areas³) for all the land entered into the scheme. In return participants are required to deliver 30 points worth of options per ha of land in the scheme. Five-year agreements are available, with monthly start dates and automatic payments sent out every six months. The application involves completing a Farm Environmental Record, which is designed to capture all that is environmentally significant on the holding.

Organic Entry Level Stewardship (OELS) is similar to ELS, but is only open to landowners with land registered as fully organic or under conversion to organic farming, with a Defra-approved Organic Inspection Body. In addition, payment on organic land eligible for the OELS is at a higher rate of £60/ha.

Higher Level Stewardship (HLS) or OHLS (for the organic tier) can contain ELS options and capital works and involve more complex types of management, where land managers need advice and support, and agreements are tailored to local circumstances. HLS applications are assessed against specific local targets and agreements are offered where they meet these targets and represent good value for money. These agreements run for a period of 10 years.

In summary, ELS offers payments solely for land management practices, whereas HLS payments are offered for more complex land management activities and also capital works.

ES forms a major part of the Rural Development Programme for England (RDPE) 2007-13 and is part-funded by the European Union. It is an England wide scheme which is delivered on behalf of Defra by Natural England. The

³ In July 2010, under the new Upland Entry Level Stewardship scheme (UELS) large areas of extensively grazed upland land will receive £23/ha and other upland areas will receive £62/ha. UELS was not included within the scope of this research.

total spend on agri-environment schemes (AES) (including closed schemes) under the RDPE is forecast to be about £400 million per year. In October 2009, the uptake of ELS/OELS was 5.2 million ha (39,400 agreements) with a further 415,000 ha under HLS/OHLS (4,000 agreements) and a further 850,000 ha under closed ESA/CSS agreements⁴.

1.3 Report Structure

The remainder of this report is divided into four sections. Section 2 presents a summary of the main findings from the literature review and highlights issues to consider in this study. Section 3 provides details of the methodological approach adopted. The output from the interviews are analysed in a systematic way in Section 4 and the results of the LM3 analysis are presented. Section 5 focuses on the social impacts of ES, particularly in relation to training, skills and knowledge development and benefits arising from increased social interaction. The final section presents some conclusions and implications for policy change.

⁴ Source: Environmental Stewardship Update. November 2009, Issue 6. Natural England.

2. Literature Review

The literature search encompassed two main types of publication: journal articles and specialist research. Within these the review aimed to critically examine relevant work relating to the socio-economic benefits of AES in terms of approach, methods and findings; the ultimate aim being to inform the current research project which is estimating the incidental socio-economic benefits of ES schemes.

The review is divided into two sections. The first focuses on studies which have explored the economic impacts of AES and in particular the use of the NEF's LM3 model. The second section examines the evidence for the social and human capital benefits of AES. A summary of the literature review is presented here. The full text of the literature review is available as Appendix 1 to this report.

2.1 Economic Impact Studies of Agri-Environment Activities

This section reviews the methodological approaches used by previous economic impact studies of agri-environmental activities. The review concentrates on studies that investigate local economic impacts and particular those that have employed the (NEF) LM3 model to identify the multiplier effect of AES funding. The LM3 approach will be discussed in more detail in Section 4.

Economic Impact Studies

Economic impact studies are designed to investigate the effect of particular investment and spending activities on a spatially defined economy (usually at a local or regional level) (Courtney *et al.*, 2008). The assumption is that the flow of economic activity multiplies the benefits of the initial investment, producing positive externalities⁵ (Mason, 2005). Such studies focus on two major types of benefit: income and employment. Jenkins and Midmore (1992) note that AES can have a significant effect on farm incomes and agricultural activity, which may in turn affect income and employment elsewhere in the economy.

Midmore *et al.* (2008) state that the multiplier effects from the spending and investment activities of the Rural Development Programme (Pillar II)⁶ of the Common Agricultural Policy (CAP) are positive for rural economies, although it is often difficult to disentangle the effects of Pillar II from other government rural development measures without detailed monitoring. A number of studies

⁵ Externalities are third party (or spill-over) effects arising from the production and/or consumption of goods and services for which no appropriate compensation is paid. In the present context negative externalities (or external costs) might include water pollution due to agricultural practices, whereby economic activity imposes a cost on the whole of society; positive externalities (or external benefits) include things like the maintenance of hedgerows in the landscape, which aesthetically is of benefit to wider society.

⁶ Pillar II measures are aimed at supporting rural communities to develop and diversify and environmental protection and conservation measures.

have attempted to determine the economic impacts of agri-environment investment and spending on local and regional economies. Some of these studies have investigated the impacts associated with entire AES (see ADAS 1997, 2004; Harrison-Mayfield *et al.*, 1998; Crabtree, 2000; Agra CEAS Consulting, 2005), whilst others have focused on a limited number of components within schemes (see Hewitt and Robins, 2001; Edwards *et al.*, 2005; Courtney *et al.*, 2007). Further studies, whilst not specifically concerned with AES, are nonetheless of interest from a methodological perspective (see for example, Mills *et al.*, 2000; Lobley *et al.*, 2005; Courtney *et al.*, 2006). The main features of all these studies are presented in Table 2.1 and are discussed in more detail in Appendix 1.

Review of research: Methods and findings

There are two main methodological approaches used to estimate income and employment generation resulting from agri-environment scheme funding. The first uses Keynesian multiplier models whilst the second uses input-output⁷ analysis. Both approaches allow the calculation of the value of the multipliers as the ratio between the income and employment generated and the initial input/investment. Input-output models go further than the Keynesian multiplier method as they provide estimates of the multiplier values for economic sectors, other than those directly involved in agri-environmental activity. These models not only estimate the income and employment directly stemming from the initial round of expenditure, but also that arising from indirect and induced effects (Courtney *et al.*, 2008).

The LM3 method was developed to quantify the multiplier effect by tracing three rounds of spending (in this case expenditure by farmers; by sub-contractors and advisors; and by suppliers) and determining the proportion of each round of expenditure that leaks from a defined 'local economy'.

⁷ Input-output (I-O) tables form part of a nation's national accounts and comprise a matrix representing a nation's (or a region's) economy to predict the effect of changes in one industry on others and by consumers, government, and foreign suppliers on the economy. Each column of the input-output matrix reports the monetary value of an industry's inputs and each row represents the value of an industry's outputs. While input-output tables represent a more comprehensive picture of an economy than basic multiplier models they are extremely data hungry and do not readily lend themselves to sub-regional analysis. Construction of regional I-O tables is possible, but this usually requires disaggregation of national data, which is a drawback in itself.

Table 2.1: Main features of economic impact studies

Agri-environment: Whole schemes						
Study	Method	Duration	Scale	Sample	Data collection	Findings
The socio-economic effects of the Countryside Stewardship scheme Harrison-Mayfield <i>et al.</i> (1998)	Input-Output modelling for income and employment; Spatial tracking. 6 case-study farms to determine local effects: Within 15km Settlements <10,000	Survey date: 1995 Period covered: 1991-1995 Comment: Activity since entering the scheme	Country: England Regions: 8	Unit: CSS agreement holders Frame: Live CSS agreements Selection: Stratified by geographic area, total value and type of payment Size: 1,000 Response: 460	Postal questionnaire; Case study interviews; Farm accounts	- 27% change in household income with 60% indicating a positive change - Net increase of 31 FTE farm-related jobs - A total of 479 FTEs jobs nationally, including direct and induced effect - Little change in input purchasing and output sales patterns
Evaluation of the Hedgerow Renovation Scheme ADAS (1997)	Qualitative assessment	Survey date: 1996 Period 1992-1997 Comment: Activity 1 year prior to the scheme and 1 year post entry	Country: Wales	Unit: Agreement holders Frame: Agreement holders with completed works Selection: Simple random Size: 100 Response: 100	Face-to-face interviews	- 232% increase in hedging operation days using farm labour. - Additional jobs created on 12 holdings - Supplies and services purchased from 50 businesses, mostly small, local businesses.
Socio-Economic Assessment Of Countryside Council for Wales' (CCW) Management Agreements ADAS (2004)	General income and employment questions with limited spatial zoning: From same region as farm Elsewhere in Wales From outside Wales but local From elsewhere outside Wales	Survey date: 2003-2004 Period covered: Extant agreements in 2002-2003 Comment: Activity since entering the scheme	Country: Wales	Unit: Sites of Special Scientific Interest (SSSI) agreement holders Frame: SSSI agreement holders Selection: Stratified by geographic area and farm enterprise type Size: 65 Response: 57	Face-to-face interviews	- Payments contributed £1.8m to the Welsh economy in 2002/3. - 67% felt the impact on the local economy was neutral - 390 days of on-farm employment was generated by SSSI management agreements - 55 FTE contracting jobs created, most local - Management changes resulted in greater use of local suppliers for capital expenditure
Socio-Economic Evaluation of Tir Gofal Agra CEAS Consulting. (2005)	Input-Output model of the Welsh economy to consider the impact of Tir Gofal in the wider economy. Analysis of total business expenditure	Survey date: 2004 Period covered: 2000-2003 Comment: Total business expenditure over 1 year	Country: Wales	Unit: Tir Gofal agreement holders Frame: Tir Gofal agreement holders Selection: Simple random Size: Not given Response: 251	Face-to-face interviews	-£4.2m additional expenditure in 2003 resulted in £6.3m spend and creation of 112 FTE jobs - 73% of spend went to Welsh industries 23% to Welsh households - During 2000 to 2003 capital payments increased expenditure in Welsh economy by £21m and created 385 FTE jobs - Impact on isolated rural communities likely to be significant
Socio-economic and agricultural impacts of the Environmentally Sensitive Areas Scheme in Scotland Crabtree <i>et al.</i> . (1999)	Multiplier analysis and spatial tracking. 10 ESAs for 2 spatial zones: Within ESA Within 50km of ESA	Survey date: 1998 Period covered: 1997 Comment: Activity over 1 year.	Country: Scotland ESA	Unit: Farms Frame: SOAEFD database Selection: Stratified by ESA, scheme/non scheme Size: Target of 500 Response: 505	Face-to-face interviews	- Over one year agreement holder household incomes increased by an average of £3,359 - Local income multipliers for ESAs ranged from 1.37 to 1.54 and creation of off-farm jobs ranged from 19 to 110 FTEs. - In 1997 payments generated 500 FTE jobs, 67% from impact on farm incomes and 33% from conservation activities.

Table 2.1 cont.: Main features of economic impact studies

Agri-environment: Individual components						
Study	Method	Duration	Scale	Sample	Data collection	Findings
The financial, social and management effects of Countryside Stewardship Cirl Bunting agreements on South Devon farms Hewitt and Robins (2001)	General measurement of farm inputs and outputs	Survey date: 1999-2000 Period covered: 1992-1999 Comment: Activity since entering the scheme	Sub-county: South Devon	Unit: Agreement holders Frame: Agreement holder with Cirl Bunting option Selection: Census Size: 63 Response: 53	Face- to-face interviews	- 89% of agreement holders reported a positive effect on profitability - Average value of capital payments was £1,500 - 3 on-farm FTE jobs had been created. - Positive effect on the use of contractors was reported but not quantified.
Measuring the social and economic impacts of Lake District ESA grants for the repair of traditional farm buildings Edwards <i>et al.</i> (2005)	Adapted LM3 model for 3 spatial zones: Within the ESA boundary Within the wider area Elsewhere	Survey date: 2005 Period covered: 1998-2004 Comment: Completed conservation plans 1998-2004	Five study areas were identified within the Lake District ESA	Unit: ESA agreement holders Frame: ESA agreement holders with completed conservation plans Selection: Stratified by geographic area, grant value and number of traditional buildings renovated Size: 44 Response: 42	Face-to-face interviews; Conservation plan file analysis	- Between 1998-2004 scheme resulted in a minimum direct injection of £3.41m to the local economy - Scheme generated between £8.5m and £13.1m for the local economy, with minimum multiplier of 2.49 - 30 contractors had worked on grant-funded building restoration projects. - Nature of contracting businesses meant most indirect and induced expenditure remained in the local economy. - Viability of contracting businesses increased, with 8 out of 9 contractors citing an increase in turnover of at least 16%. - Scheme had created between 25 and 30 FTE jobs in the local economy.
A socio-economic study of grant-funded traditional drystone wall and farm building restoration in the Yorkshire Dales National Park Courtney <i>et al.</i> (2007)	Adapted LM3 model for 3 spatial zones: Within the National Park Within the wider area Elsewhere	Survey date: 2006 Period covered: 1998-2004 Comment: Completed projects 1998-2004	Yorkshire Dales National Park	Unit: Scheme agreement holders Frame: Agreement holders with completed works Selection: Stratified by scheme and value Size: 60 Response: 53	Face- to face interviews; File analysis	- Between 1998-2004 building schemes generated between £4.27m and £4.74m for the local economy. - Walling schemes generated between £2.81m and £4.38m for the local economy. - Income multiplier for building schemes was 1.65 and for the walling schemes was 1.92. - Income effects accrued on the wider area for all buildings schemes were between £6.42m and £7.10m and for walling schemes were between £3.46m and £5.41m. - 74 FTE jobs were created in the National Park and its wider local area, 41 FTE jobs by building schemes and up to 33 FTE jobs through walling schemes.

Table 2.1 cont.: Main features of economic impact studies

Other studies						
Study	Method	Duration	Scale	Sample	Data collection	Findings
Estimating the potential economic impact of implementing the UK Biodiversity Action Plan (BAP) for species rich hedgerows in Devon Mills <i>et al.</i> (2000)	Multiplier analysis	Survey date: 2000 Period covered: 2000-2005 Comment: 5 year period	County: Devon	Unit: Hedge contractors Frame: Compiled list from various sources Selection: Stratified by protected area Size: 40 Response: 30	Telephone interviews; Key informant interviews	- A hypothetical injection of £1m per year for 5 years for hedge restoration work would generate 2.17m for the Devon economy. - The employment impact would be 27 FTE jobs or 32 FTE jobs once indirect and induced impacts were taken into account and the employment multiplier was 1.2. - Most jobs would go to local contractors who work within a small radius
Measuring the local economic connectivity of organic and non-organic farms Lobley and Reed (2005)	Measurement of farm level sales and purchases by value and proportion within 5 spatial zones: Within 10 miles Within rest of county Within rest of region Elsewhere in UK Beyond UK	Survey date: 2004 Period covered: 2003-2004 Comment: Sales and purchases over 1 year	Three study areas were defined by the study for comparative purposes: Devon, Northern region and Eastern region	Unit: agricultural holdings Frame: Defra annual census Selection: Stratified by geographic area and farm type Size: 1,684 Response: 462	Postal questionnaire	- Organic farms generated a higher sales value when expressed on a per hectare basis than non-organic farms. - There was little difference between organic and non-organic farm businesses in the economic connectivity with the local area.
The role of natural heritage in rural development Courtney <i>et al.</i> (2006)	Multiplier analysis of income and employment	Survey date: 2001 Period covered: Not stated Comment: Not stated	Four case study areas in Scotland	Unit: Businesses Frame: Commercial database and key contacts Selection: Census Size: 2,454 Response: 464	Postal questionnaire	- Natural heritage 'reliant' activities had the greatest potential for generating local economic benefits through their propensity to source locally. -These activities also contribute more significantly to the economic base of the study areas through sales of goods and services to visitors.

Tables 2.2 and 2.3 summarise the evidence from those studies in Table 2.1 where the figures were available, of the income and employment effects per injection of £1m of AES spend. Caution should be exercised when comparing these studies as in some cases, different methodological approaches were used to calculate the multipliers. For example, some do not calculate induced effects and others do not measure additionality.

Table 2.2: Comparison of income effects of agri-environment activities per £m of initial injection

Source	Area	Initial injection (£m)	Income effects (£m)					Scheme Multiplier
			Direct	Indirect	Induced	Total	Multiplier	
Edwards, R. et al. (2005) ESA Traditional Farm Building repair agreements	Lake District	6.46	3.41	3.64	1.45	8.5	2.49	1.32
Courtney, P. et al. (2007) Grant-funded farm building restoration	Yorkshire Dales	2.81	2.18	1.3	0.11	3.58	1.65	1.28
Courtney, P. et al. (2007) Grant-funded traditional drystone wall restoration	Yorkshire Dales	1.9	1.89	1.6	0.15	3.63	1.92	1.91
Mills, J (2001) Hedge restoration schemes	Devon	1	1.06	0.31	n/a	1.36	1.29	1.36
Harrison-Mayfield et al. (1998) Countryside Stewardship scheme	England	13.8	5.7	n/a	n/a	n/a	n/a	n/a
Agra CEAS Consulting. (2005) Tir Gofal - whole scheme (2003)	Wales	11.29	4.20	2.09	n/a	6.29	1.50	0.56
Agra CEAS Consulting. (2005) Tir Gofal - capital works only 2000-2003	Wales	8.27	14.25	7.03	n/a	21.28	1.49	2.57
Crabtree et al. (2000) Environmentally Sensitive Areas Scheme in Scotland	Scotland	4.97	n/a	n/a	n/a	4.36	1.54	0.88

n/a – denotes where data not available

Table 2.2 includes a ‘scheme multiplier’, an unconventional measure showing the ratio of total income to the initial grant injection (as opposed to the direct effect which takes account of the agreement holder contribution and any income which cannot be described as additional). Not surprisingly, the highest scheme multipliers relate to those studies which only measured the income effect of capital works, such as drystone walling in the Yorkshire Dales and capital works in Tir Gofal. This would be expected as capital works require the purchase of more supplies and contracting services than land management options and thus result in a greater expenditure in the local economy. Most of the studies

presented here focused solely on capital works, rather than management agreements. As this study considers both land management options and capital works in the ES schemes, the income scheme multiplier is likely to be towards the lower end of the range of multipliers presented here. Also, because the HLS schemes incorporate capital works, they are likely to produce larger income multipliers than ELS schemes.

Table 2.3: Comparison of employment effects of agri-environment activities per £m of initial injection

Source	Area	Initial injection (£m)	Employment effects (FTEs)					FTE jobs supported per £m initial injection
			Direct		Indirect	Induced	Total	
			Direct	Indirect	Induced	Total	Multiplier	
Edwards, R. et al. (2005) ESA Traditional Farm Building repair agreements	Lake District	6.46	15.0	8.4	2.3	25.7	1.71	3.98
Courtney, P. et al. (2007) Grant-funded farm building restoration	Yorkshire Dales	3.16	7.0	2.9	1	11.0	1.56	3.48
Courtney, P. et al. (2007) Grant-funded traditional drystone wall restoration	Yorkshire Dales	2.74	13.1	1.2	1.4	15.7	1.2	5.73
Mills, J (2001) Hedge restoration schemes	Devon	1	14.6	3.3	n/a	17.9	1.22	17.90
Hewitt, N., and Robins, M. (2001). Countryside Stewardship Cirl Bunting agreements	South Devon	0.39	n/a	n/a	n/a	6.0	n/a	15.38
Harrison-Mayfield et al. (1998) Countryside Stewardship scheme	England	13.8	n/a	n/a	n/a	479.0	n/a	34.71
Agra CEAS Consulting. (2005) Tir Gofal - whole scheme (2003 only)	Wales	11.29	n/a	n/a	n/a	112.0	n/a	9.92
Agra CEAS Consulting. (2005) Tir Gofal - capital works only 2000-2003	Wales	8.27	n/a	n/a	n/a	385.0	n/a	46.55
Crabtree et al. (2000) Environmentally Sensitive Areas Scheme in Scotland	Scotland	4.97	103.4	n/a	n/a	n/a	n/a	n/a

Table 2.3 compares the employment effects of the studies presented in Table 2.1. The final column presents the approximate number of full-time equivalent (FTE)⁸ jobs that would be supported by £1m of initial injection and is calculated by dividing the total FTE jobs by the initial injection. As with the income multiplier effects, it would be expected that the FTE jobs supported per £m initial injection for ELS and HLS would be lower than those studies which focused solely on capital items, such as Edwards *et al* (2005), Courtney *et al* (2007).

Informing the methodological approach to the current study

As a result of the review of methodological approaches used by previous economic impact studies of agri-environmental activities a number of key issues have been identified and used to inform the methodological approach to the current study.

Measuring income and employment impacts

The studies outlined in Table 2.1 clearly identified positive income and employment impacts accruing to the local economy from funding agri-environmental activities. A number of different approaches to measuring the socio-economic impact were employed, such as input-output tables and spatial tracking⁹. For the purposes of the current study the multiplier method will be adopted, using an adapted LM3 model. This method was successfully utilised by Edwards *et al.* (2005) and Courtney *et al.* (2007) and is particularly suitable for estimating impacts at the sub-regional and local level. It is also less reliant on the need for complex secondary data, than input-output methods which can prove un-reliable or problematic when disaggregated to the required spatial level and is less resource-intensive than other methods.

Inconsistency between studies

Courtney *et al.* (2008) note that the methodologies used by economic impact studies have been subject to a considerable degree of variation. This in turn makes it difficult to compare results and to make informed judgements about the effects of investment and spending in different areas of the economy between studies. There are also difficulties in generating consistent data and in avoiding the ‘double counting’ of statistics. It is, therefore, important to provide a detailed explanation of methods used and the nature of any underlying assumptions during all stages of the multiplier calculations.

⁸ This is the ratio of total paid hours during a period by the number of working hours during that period. An FTE of 1.0 means that the person is equivalent to a full-time worker, while an FTE of 0.5 indicates that the worker is only half-time

⁹ Spatial tracking is a technique developed by Harrison-Mayfield (1998) which uses the postcodes on invoices and receipts obtained from farm accounts to accurately identify the location of purchases and sales of goods and services over a period of time.

Measuring additionality

As mentioned in Section 1, one of the difficulties with economic impact studies is to ensure that the impact measured is genuinely additional (Courtney *et al.*, 2008). English Partnerships has produced a guide to assist with assessing the additional impact of projects (English Partnerships, 2004). As well as considering the economic multiplier effects they suggest that the assessment should also consider:

- **Leakage effect:** Number or proportion of outputs which benefit people or businesses outside the study area and are therefore deducted from gross local direct benefits;
- **Displacement:** Number or proportion of outputs accounted for by reduced outputs elsewhere, for example attracting jobs which would have been located inside or outside the study area; and
- **Substitution effects:** the effect where one activity is substituted for a similar one, for example when arable seed on field margins is substituted for a nectar flower seed mix.

In line with previous studies by Edwards *et al.* (2005) and Courtney *et al.* (2007) the current study will take account of leakage, displacement and substitution effects. All interviews will include tailored questions to examine the additionality of the grants to the business, and potential displacement effects of the grants on the local economy, in terms of both income and employment. Further information about how this will be achieved is contained in Section 3.

Scheme payments

A key issue in gathering data on the effects of scheme options is to be able to group the options in such a way that the agreement holders can easily relate the groups to their land management practices. The ES options for this study have been grouped in a suitable way with guidance from the project Steering Group (see Section 3.3).

Capital grants

Edwards *et al.* (2005) and Courtney *et al.* (2007) confined their studies of capital grants to completed conservation plans where all monies had been claimed and all works completed. They reasoned that live conservation plans were likely to have some works and some payments outstanding and that it would be very difficult to identify exactly how much money had been received and expended. This in turn would introduce uncertainties into the economic evaluation. The findings of these studies indicate that it is important when collecting data on the higher level schemes (HLS and OHLS) to identify which capital works have been completed and the money claimed.

Defining boundaries

A major methodological consideration for all LM3 models is how to define the boundaries of the ‘local economy’ because the LM3 model demands a clear demarcation of what is within the economy of interest and what is not (Sellick and Sumberg, 2008). This is an important consideration because where the boundary of the ‘local economy’ is drawn can affect the size of

the LM3 figure. If the boundary is tightly drawn the LM3 figure may be small as most of the economic activity may take place outside the boundary. Conversely, if the boundary encapsulates a large economic space the LM3 figure may be large and indicate that most of the economic activity takes place within the boundary. Crabtree *et al.* (2000), Lobley *et al.* (2005), Courtney *et al.* (2006) and Sellick and Sumberg (2008) all note that there are difficulties in placing boundaries on local economies, as there is no widely accepted definition of what constitutes a local economy, and that very much depends on the purpose of the study.

In an attempt to move away from arbitrary boundaries, such as distance in miles or political areas, Courtney *et al.* (2006) used isochrones to provide a standardised boundary within which to compare the strength of economic linkages across contrasting areas. It was argued that using travel (drive) time from the agreement holders farm business to demarcate the boundary would to a large degree take into account the relative differences between the study areas in terms of their accessibility to urban areas, travel times and topography. The advantage of using this boundary definition is that it can be calculated for each of the agreement holder holdings for the current study. The problem remains, however, as to how long agreement holders have to drive before leaving their ‘local economy’. Other studies have used administrative or designation boundaries to define the local boundary, such as county (Mills *et al.*, 2000) or ESA or National Park boundaries (Edwards *et al.*, 2005; Crabtree *et al.*, 1999; Courtney *et al.*, 2007), whilst others have used set distances, for example Harrison-Mayfield (1998) determined the local effects of CSS within 15 km of 6 case study farms and Lobley and Reed (2005) used a 10 mile boundary from organic farms.

2.2 Social and human capital benefits of agri-environment scheme participation

It is argued that AES can become a vital ingredient in the pursuit of sustainable rural development and that the positive impact schemes have on jobs, local businesses, skills, and in sustaining family farms, helps to contribute to the social fabric of rural communities (Banks and Marsden, 2000; Dobbs and Pretty, 2001). Research has shown that Tir Cymen (Banks and Marsden, 2000) and Tir Gofal (Agra CEAS Consulting, 2005) in Wales have delivered wider socio-economic and cultural benefits.

AES are believed to have a positive impact on increasing human capital (the skills, knowledge and awareness of the environment), and on social capital (the social glue and connectedness of a community).

Human capital

A number of commentators have concluded that AES have contributed positively to the management skills base of farmers and increased their environmental knowledge, learning and awareness¹⁰ (Dwyer, 2001;

¹⁰ Increases in environmental awareness have been demonstrated for Tir Gofal (Welsh Audit Office, 2007); the Rural Stewardship Scheme and Countryside Premium Scheme in Scotland (Manley and Smith, 2007); the Rural Environment Protection Schemes in Ireland

Herzon and Mikk, 2007; Hodge and Reader, 2007). Indeed it is recognised that farmers who have been in schemes sometimes for 10 years or more represent a valuable reservoir of knowledge and experience (Dwyer, 2001). It is also recognised that schemes like ELS in England have a beneficial effect; by signing whole farms up to a basic level of environmental management they are introducing farmers to the idea of engaging with conservation (Hodge and Reader, 2007).

Studies have shown that AES participants appreciate that they have gained knowledge about the nature and management of their landscapes through schemes (Fish *et al.*, 2003; Manley and Smith, 2007). There is, however, little evidence of learning in situations where scheme participation merely facilitates a continuation of already established farming practices, which has been the case for some ESAs (Skerratt, 1994; Wilson, 1997; Agra CEAS Consulting, 2003), or where there is little incorporation of conservation-oriented options into the basic level schemes (Herzon and Mikk, 2007). There is limited evidence of any positive impact of training and farm days run by AES programmes.

Research by Lobley *et al.*, 2008 suggested that farmers under organic farming schemes have not only increased their knowledge and skills about organic farming, but also increased their capacity for gaining knowledge. It is argued that organic farming can foster innovation and, in some cases, social skills and entrepreneurship, as organic farmers need such skills to compete in the more specialist organic food-chain.

An appreciation of the environmental benefits that AES bring can, in some cases, encourage a positive attitudinal shift (Crabtree *et al.*, 2000), although there is less evidence of this when farmers join AES for financial or opportunistic reasons (Skerratt, 1994; Lobley and Potter, 1998; Wilson and Hart, 2000, 2001; Tranter, 2007). There is also evidence that some participants intend to continue farming in the same way even when the scheme finishes, suggesting that behavioural changes accompanying schemes have become embedded. Other studies support this, and some reveal a change in attitude following a change in behaviour, even when the behaviour is imposed or prescribed (Davies and Hodge, 2006; Dwyer *et al.*, 2007).

Although most studies report positive impacts of AES, there has been the suggestion that farmers do not benefit from new skills or knowledge where AES management prescriptions have been imposed and conflict with the farmers' own traditional local knowledge (Riley, 2006, 2008; Burgess *et al.*, 2000). Indeed it could be argued that such imposed management can lead to the erosion of traditional knowledge.

(Van Rensburg *et al.*, 2009) and the Environmental Farm Plan in Ontario (Smithers and Furman, 2003)

Social Capital

The local ties, connectivity or social ‘glue’ within a community are described as social capital. It is believed that good social capital is a prerequisite for a stronger rural economy (Winter and Rushbrook, 2003). In the context of sustainable land management, social capital refers to the links between: farmers and farmers (bonding social capital); farmers and society, particularly the local community (bridging social capital) and; farmers and institutions (linking social capital) (Putnam 1993).

The benefits of social capital are generally identified with its role in facilitating change by reducing transaction costs among actors and in helping to overcome collective action problems, as such, studies in relation to AES have tended to examine how social capital can lead to AES uptake, rather than looking at social capital as an outcome of AES participation (e.g. Magnani and Struffi, 2009). However, arguably, enhanced social capital in the form of the knowledge, skills and institutions, can also be an outcome of AES participation (Hodge and Reader, 2007). There is most evidence for this from studies of agri-environmental co-operatives. By linking people to achieve common objectives and networking, agri-environmental co-operatives are thought to contribute to social cohesion, and thus build social capital (Franks and Gloin, 2007; Mills *et al.*, 2008). The interaction between social capital and government support and funding has also been identified as important to scheme success, where the trigger of financial support has lead to positive social capital outcomes (Sobels *et al.*, 2001; Appleby *et al.*, 2004).

However, an individual’s participation in AES in itself does not create social capital benefits, it is their involvement in the schemes and the links that this creates that results in social capital benefits. Arguably, by linking AES participants to Project Officers, newsletters, training and farm visits, they have greater access to resources than non-participants, which is one measure of social capital. Participants in some conservation initiatives have also been found to develop good linking social capital, that is, the ability to engage with agencies and government (Hall and Pretty, 2009).

In the case of organic farming, a number of researchers have pointed to the propensity of organic farmers to cluster together and to the role of wider social networks (e.g. Padel and Lampkin, 1994). The practical, marketing, social and knowledge sharing benefits of organic farm clusters are well recognised (Rigby *et al.*, 2001).

Although there is evidence of positive impacts of AES on social capital, some negative impacts can accrue for the community when individual farmers join AES. Although these are rarely reported, it has been suggested that selective targeting in ESAs, for example, created a rift in the farming community, with those outside the boundaries of the scheme envying those who have made substantial profits from the ESA (Skerratt, 1994). It is also possible that some form of social exclusion can occur where farmers, who are unable to understand or have insufficient time to

deal with complexities and costs of AES applications, are excluded from their benefits.

2.3 Informing the methodological approach to the current study

The review of the literature on the potential social impact of AES has identified a number of key issues which have been used to inform the methodological approach to the current study.

Potential benefits to rural development

The literature has shown that agri-environment activities have the potential to produce rural development benefits that go beyond the primary aims of the scheme by creating employment opportunities and helping to sustain family farms. This can be particularly beneficial in rural areas where employment opportunities are limited. The research will aim to identify the impact of ES on rural development through face-to-face and telephone interviews. The research will identify the extent to which the schemes have created new jobs, both on-farm and more widely in the local rural economy for contracting, advisory and supply businesses. Also open-ended questions will be used to ascertain the extent to which schemes have helped maintain existing jobs and businesses. In addition, the interviews will identify any new business ventures indirectly related to ES schemes, such as development of product brands based on their environmental credential, or educational ventures.

Impact on human capital development

The literature suggests that AES can make a positive contribution to the skills base of farmers and increase their environmental knowledge. The face-to-face and telephone interviews in this study will specifically ask agreement holders to identify any training received as a result of signing up to ES. The interviews will also identify any impacts of the schemes on the agreement holders' skills and knowledge base, which in part will depend on the extent to which the farming system has changed under ES. Human capital development benefits may extend beyond the farm and also have a positive impact on local businesses. The contractor and advisor surveys will identify the extent to which these businesses have undertaken training to assist in providing for ES. The interviews will also ascertain the extent to which the agreement holders' awareness of environment has changed since joining the scheme, including their awareness of any environmental benefits. It will not be possible to identify any longer-term attitudinal shifts towards environmentally-friendly farming practices as this would require a more detailed behavioural study which is beyond the remit of this research.

Social capital benefits

The literature review highlighted the importance of social capital in binding rural communities and increasing farmer networks making them more adaptive to change. It identified a number of studies which showed that social capital was an important outcome of various schemes. The research will assess the extent to which improved social capital is a positive outcome of ES. The research will identify through interviews the

extent to which ES has developed bonding capital through increased interaction with other farmers and strengthening farmer networks.

Several studies have suggested that AES may also be important in developing bridging and linking social capital with organisations outside the farming community. To examine this impact the research will look to identify whether ES has increased civic participation, particularly if agreement holders join non-farming environmental groups. Also it will identify the extent to which as a result of the scheme networks have broadened beyond the local farming community with agreement holders employing contractors and advisors who are new to them. This can be important in giving farmers access to new information and is often instrumental in causing change.

2.4 Conclusions

The preceding review of literature has summarised the state of literature as regards to estimating the socio-economic benefits of agri-environment activities. The review has identified a number of issues that will help to inform both the direction and detail of the current research project. Specifically, the review has identified the following points:

- The need to ensure that the methodology and assumptions used within the current research project are clearly explained to enable comparison with other multiplier studies.
- The necessity of considering leakage, displacement and substitution effects to ensure that the impact measured is genuinely additional.
- The difficulties in assigning an appropriate ‘local economy’ boundary and the advantages of using isochrones to define these boundaries, enabling a standardised boundary for each agreement holder holding.
- The need to recognise that agri-environmental activities can improve social interaction and strengthen local ties, whilst being mindful that some agri-environmental schemes have created negative social impacts.
- The need to give consideration to the potentially positive contribution of agri-environment activities to rural development.
- The evidence that agri-environmental activities can increase awareness of the environment and offer opportunities for learning and skills development.

3. Methodology

3.1 Development of the Methodology

The basic framework for the methodology was outlined in the project brief, although this was subsequently refined and developed by CCRI as the study progressed. A Project Plan, identifying key stages in the research, and the methodology for completing each key stage, was prepared at the outset. The key stages were: devising the sampling framework; survey of agreement holders; survey of contractors, suppliers and advisors; and local economic impact analysis. Each of these stages is now described in more detail.

3.2 Sampling framework

The purpose of this study was to obtain a deeper understanding of the incidental socio-economic benefits of ES across the whole of England and the extent to which these benefits vary by scheme and at different geographical scales, including agricultural landscape type (ALT) and Government Office Regions (GORs).

Sample size

A sample of 360 ES schemes, drawn from the approximately 37,000 current agreements, was considered a practicable target for this study¹¹.

Sampled population

As one in six farms have both an ELS and a HLS agreement, and given the undesirability of including a farm twice in the sample, it was decided that interviews of dual scheme holders should concentrate on the HLS agreement. Thus for sampling purposes four types of scheme arrangement were recognised¹²:

- ELS only;
- HLS (dual scheme holders);
- Organic ELS only; and
- Organic ELS with HLS.

¹¹ With this sample size, assuming simple random sampling, and a coefficient of variation (standard deviation/mean) of one, it is more than 90% certain that the estimated level of expenditure initiated by ES schemes will be within 10% of the true mean. In the event that the coefficient of variation is closer to 1.5, the probability of an estimate being within 10% falls to 75% which is an acceptable risk for estimation purposes (see Farm Business Survey).

¹² There is a fifth group which comprises the 331 farms with an HLS agreement but without an ELS agreement. However, as data on agreement values are not available for this group it was excluded from the analysis.

Stratification factors

Stratification¹³ is an important means of improving the representativeness of the sample and thereby minimizing sampling error. In this context, it was important to ensure that the six agricultural landscape types and 4 types of scheme under investigation were each represented with known probability. The landscape typologies are derived from an agricultural landscape valuation scoping study (Swanwick *et al.*, 2007) with a few modifications based on Defra's Non-market benefits of environmental stewardship study (forthcoming)¹⁴. This study identified the following six landscape types based on their agricultural characteristics:

- Chalk and limestone mixed agricultural landscapes;
- Eastern arable agricultural landscapes;
- South eastern wooded mixed agricultural landscapes;
- Upland fringe dairying and stock rearing agricultural landscapes;
- Upland agricultural landscapes; and
- Western dairying and mixed agricultural landscapes.

These agricultural landscape types are visually presented in Figure 3.1. Note the Upland fringe and Upland ALTs shown in this diagram are combined. However, for the purpose of the study the two Upland ALTs were presented as separate categories. Also due to the small numbers of agreements in the Unclassified agricultural landscape type, this category was excluded from our sample.

Finally, it was felt that agreement value is a further factor that will significantly impact on expenditure patterns and should, therefore, also be used to order the population from which systematic samples were to be drawn.

Sample allocation

Given the need to provide subsample estimates it was important to ensure subsample sizes were sufficient. Sample size depends on three main factors --- population size, the variability of the item being measured and the selected level of confidence. A sample size of 30 is acceptable since it is adequate for significance testing and will produce estimates subject to no more than a 10% margin of error with 75% certainty irrespective of population size.. The preferred option was an allocation that selects samples of the same size from each stratum. However, in view of the relatively small numbers of organic scheme agreements (2,281), the

¹³ A method used to divide a population into homogeneous subgroups, which are then sampled individually.

¹⁴ Modifications to Swanwick *et al.*, 2007 included:

- Coastal areas were amalgamated with adjacent landscape types.
- Breckland was re-classified from other to Chalk and Limestone
- Broads was re-classified from other to Eastern Arable.
- The Forest of Dean and Lower Wye were re-classified from other to Upland and Upland Fringe
- New Forest was re-classified from other to South Eastern Wooded (mixed).

allocation was reduced to 30 each for both organic schemes (OELS and OHLS). This meant the sample was now not statistically robust enough to justify analysis of organic schemes for individual landscape types although comparisons at the national level were still possible. The main advantage was that the sample sizes for non-organic ELS and HLS agreements (by far the most numerous types) were made correspondingly larger. The resulting allocation is set out in Table 3.1.

Figure 3.1: Agricultural Landscape Types

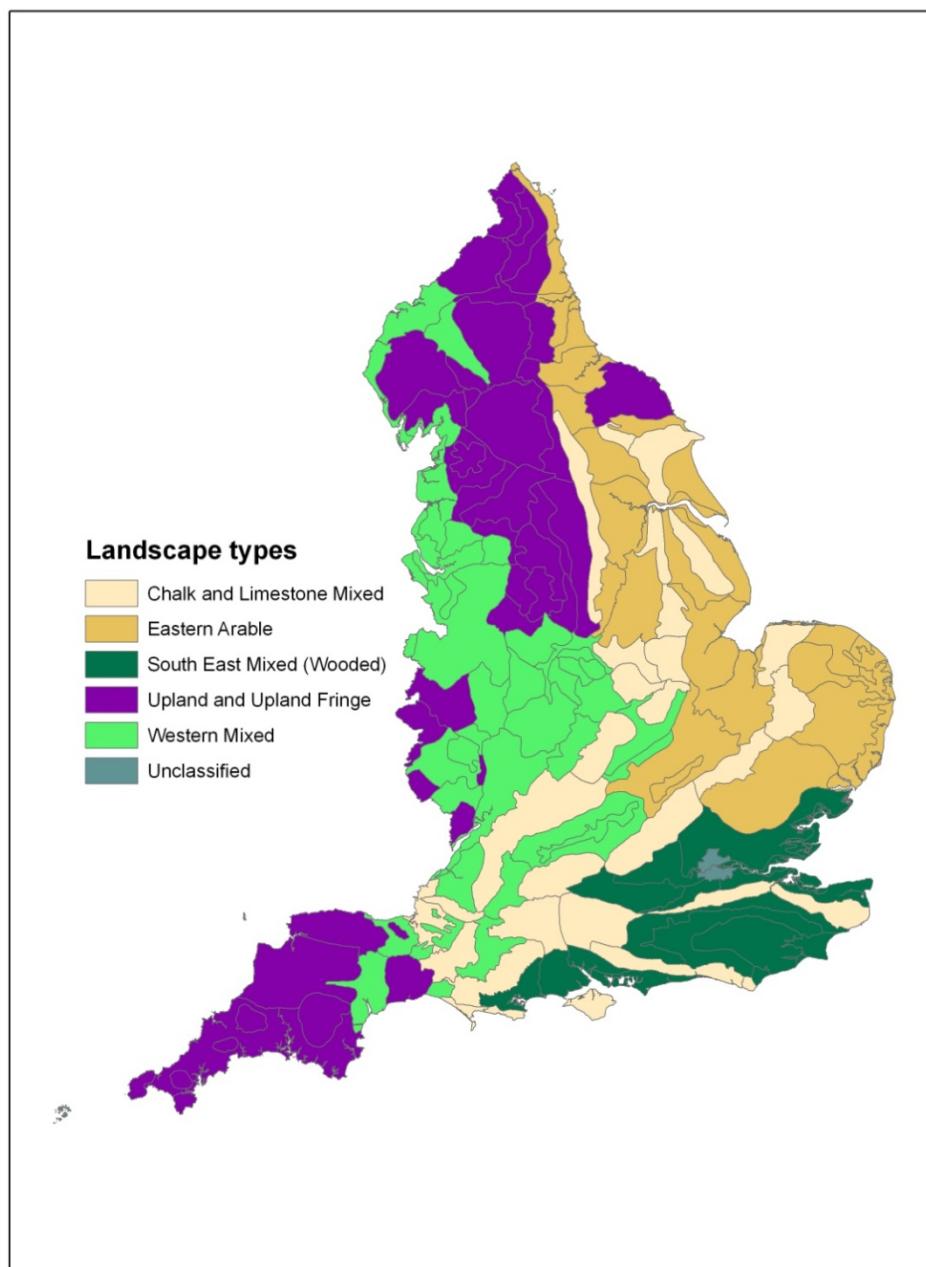


Table 3.1: Allocation of sample (No. of agreements)

Agricultural landscapes	Non-organic			Organic		
	ELS	HLS (dual scheme holders)	Total non-organic	OELS	OHLS	Total organic
Chalk and limestone mixed	30	20	50	Systematic sample by agreement value	Systematic sample by agreement value	
Eastern arable	30	20	50			
South eastern wooded mixed	30	20	50			
Upland fringe	30	20	50			
Upland	30	20	50			
Western dairying and mixed	30	20	50			
Total	180	120	300	30	30	60

Selection of the sample

Systematic sampling with a random start was employed for each of the landscape/ES combinations which produced twenty samples. Prior to sampling, the cell population was ordered according to agreement value. To cover anticipated non-responses, four further samples were selected from each combination comprising agreements immediately preceding and following each selected agreement. It was decided randomly which of the two alternate agreements were substituted in the event of a non-response. The split between telephone and face-to-face interviews is presented in Table 3.2. Due to the greater complexity of HLS (dual scheme holders) a greater proportion of these agreement holders were interviewed face-to-face.

Table 3.2: Telephone and face-to-face interview sample numbers

Scheme	Agreement holder interviews		
	Telephone interviews	Face-to-face interviews	Total
ELS	168	12	180
HLS (dual scheme holders)	66	54	120
OELS	27	3	30
OHLS	27	3	30
Total	288	72	360

To ensure the survey captured agreement holders which had commenced work on their agreements, only those agreements that had started before August 2008 were selected, i.e. a year before the survey data. The period of study ran from January 2005 to August 2009 (a maximum of 4.5 years) for ELS/OELS agreements and from January 2006 to August 2009 (a maximum of 3.5 years) for HLS/OHLS agreements.

3.3 Study of agreement holders

A combination of face-to-face and telephone interviews with agreement holders were used to collect the primary data to feed into the LM3 modelling framework and obtain data on the wider social benefits of the schemes.

The face-to-face interviews were targeted at the higher value agreements as these were likely to be more complex and benefit from the face-to-face approach. These solicited more detailed financial information than the telephone interviews, including contact details for any contractors, suppliers or advisors used for the schemes. The telephone questionnaire was a simplified version of the face-to-face questionnaire.

The questionnaires were split into separate sections, targeted at specific topic areas of the research. Thus, information was collected on:

- the farm business;
- impact of individual options on farm income and employment;
- impact of overall scheme on farm income and employment;
- impact of scheme on skills and training; and
- social impacts of scheme.

The questionnaire was designed to ensure that sufficient data was collected to address the socio-economic assessment, but also contained open questions to solicit qualitative responses that could provide an insight into certain aspects of the scheme. A copy of the face-to-face agreement holder questionnaire can be found at Appendix 2.

A pilot questionnaire survey was carried out with four agreement holders. This enabled identification of any possible misinterpretation of questions, enhanced the question sequence, length and clarity of instructions.

One objective of the research was to estimate the relative social and economic benefits of different ES options/groups of options. Due to the large number of options in the schemes (ELS - 46 options, HLS – 150 management options, 100 capital items), the management options and capital items were grouped into the categories presented in Table 3.3. These groupings included management and capital works options for related land management practices. To show how each option group was constructed a complete list of options under each group heading is provided in Appendix 4. Prior to each interview the interviewer was

provided with a print-out detailing the option groups for each agreement. An example of an agreement record is given in Appendix 3.

Table 3.3 Option Groups used in analysis

Code	Option Group
EB/OB/HB/OHB	Boundary features – hedges, stone wall, ditch
EC/OC/HC/OHC	Trees and woodland
ED/ODC/HD/OHD	Historic and landscape features
EE/OE/HE/OHE	Buffer strips and margins
EF/OF/HF/OHF	Options for arable
EJ/OJ/HJ/OHJ	Options to protect soil
EK/OK/HK/OHK	Options for grass outside SDAs
EL/OL HL/OHL	Options for SDAs
EM/OM/HM/OHM	Plans
HN/OHN	Access options
HO/OHO	Lowland heathland options
HP/OHP	Inter-tidal and coastal options
HQ/OHQ	Wetland options
HR/OHR	Additional supplements
HSB/OHSB	Bracken and scrub control
HOES/OHOES	Special projects
HLS/OHLS	Landscape capital items

Due to time constraints during the interviews, data on only a maximum of 6 option groups were collected for both ELS and HLS. For those few agreements where more than 6 groups existed (mainly HLS agreements) a decision was made by the project manager on groups to exclude from the interview based on those that contained fewer capital work items and therefore were considered to generate the least spending in the local economy. This may have added a small amount of bias to the analysis for the few HLS agreements affected. However, it was considered important to be able to follow the money in order to identify the links to local contractors, supplier and advisors for the local business survey. Although data was collected on nearly all the option groups presented in Table 3.3, in the final analysis, the limited number of records available for some option groups meant that only the 6 most frequently occurring ELS and HLS option groups (with more than 35 records) were analysed to ensure the results were statistically robust. Data for the remaining option groups were collated and analysed as an ‘other’ group. The low numbers in the sample for the organic schemes also meant that most organic options were combined resulting in 4 option groups being analysed for the organic options (see Table 3.5).

Some of the questions asked the respondent to identify geographic areas from which they purchased supplies and services, both for the operation of their farm, and for the scheme itself. This was required to help calculate indices of geographic dispersion for the suppliers. To assist with these questions an isochrone (line of equal time distance) map was produced for

each agreement holder showing 40 minute and 60 minute travel times from their own farm business (see also Courtney *et al.*, 2006; Lobley *et al.*, 2009). This was shown to the agreement holders during the face-to face interviews.

The literature identified the importance of accounting for additionality, displacement and substitution in the local economy when using the LM3 approach. Questions were asked which identified the proportion of scheme work that would have been carried out anyway had the scheme not been awarded. Also several questions captured any employment displacement, identifying whether additional staff employed specifically to undertake scheme work were previously employed in the local area in which case no new money had been brought into the local economy. Also the questions identified whether the new staff employed resided locally to assess if any new money was spent locally. The converse was calculated if employees were made redundant as a result of the scheme. Interviewers also probed to ensure that the supplies identified were truly additional and not simply substitutions, replacing other inputs, as was often the case with flower and wild bird seed expenditure which replaced previously purchased arable or grass seed.

3.4 Study of contractors suppliers and advisors

To provide data for the LM3 model both telephone and face-to-face interviews were conducted with a sample of local businesses, involving agricultural contractors, suppliers of agricultural goods and advisors. The agreement holders who were interviewed face-to-face provided the contact details of the local businesses (within 40 mins) that were used to implement their agreement. The target number of interviews was set at 90 businesses, with 15 in each agricultural landscape type to ensure adequate representation in each type.

The survey questionnaires were designed to obtain information on:

- General information about the business, including employment and turnover;
- Spatial distribution of supply and employment expenditure;
- Impacts of the schemes on the business, including additional employment; and
- Perceived impacts on the local economy.

The supplier's survey focused more on obtaining economic information crucial to the impact estimation (i.e., location of supply and employment expenditure) than the contractor and advisor surveys. Copies of the contractor, supplier and advisors interview questionnaires are attached at Appendix 5.

3.5 Local Economic Impact Analysis

The data gathered during the interviews were used as an input into the economic estimations of local economic impact. The methodology for deriving the estimations of local income and employment effects was based on the established LM3 approach (Sacks, 2002). The analytical methodology is detailed in Section 4, and is not repeated here. The more qualitative data were analysed to identify trends that would indicate the social impact of the schemes and other important issues.

The local economic impact of the ES schemes is calculated in terms of income and employment effects. A total of 48 LM3 income and employment models are presented in this report, the structure of which are detailed in Table 3.4, Table 3.5 and Table 3.6.

Table 3.4: Farm Level Models: England; by scheme

All schemes	
Agreement value (£s)	285 ¹⁵ – 15,964
	15,965 – 50,013
	50,014 – 148,524
	148,525 +
Farm type	Arable Dairy Livestock (lowland) Livestock (LFA) Mixed

(9 models)

Table 3.5: Option groups in option level analysis

	ELS option groups	HLS option groups	Organic option groups
Option level	EB EC EE EF EK EM Other ELS	HB HC HE HF HK HM Other HLS	OB + OHB OF + OHF OHK Other Organic

(18 models)

¹⁵ This minimum value is the smallest agreement value in the survey sample. In the total ES population the smallest agreement value is £34,

Table 3.6: Aggregate level: England; All farms; by scheme

Scheme type	ELS HLS OELS OHLS Non-Organic Organic All schemes
Landscape type	Chalk and Limestone Eastern Arable South East Mixed Upland Fringe Upland Western Mixed
Government Office Region	South West South East East of England East Midlands West Midlands North West Yorkshire & Humberside North East

(21 models)

4. Local Income and Employment Impacts

4.1 Response Rates

Agreement Holders

The target number of 360 interviews in Table 3.2 was met. As Table 4.1 shows in total 585 agreement holders were contacted, with a number of refusals (60), wrong or missing telephone numbers on file (67) or non-contactable despite evening and weekend calls (98). The success rate for interviews was 62%. Most agreement holders had a good recall of scheme financial expenditure. Only in a small minority of cases were agreement holders unable to provide all the required information, in which case they were then excluded from the analysis.

Table 4.1: Agreement holder survey sample

	ELS	OELS	HLS	OHLS	Total
No. contacted	300	52	186	47	585
refusal	33	8	12	7	60
wrong or no number	25	4	31	7	67
unable to contact	62	10	23	3	98
interviewed - telephone	168	27	66	27	288
interviewed - face to face	12	3	54	3	72
Total no. interviewed	180	30	120	30	360
response rate (%)	60	58	65	64	62

Local contractors, suppliers and advisors

In total 85 local business interviews were conducted, as detailed in Table 4.2. This did not quite meet the target of 90, in part because of the reliance on the agreement holders to provide contact details for local businesses. In total 104 businesses were contacted, with some refusals (12) or not contactable (7). This resulted in a credible response rate of 82%.

Table 4.2: Local business survey sample

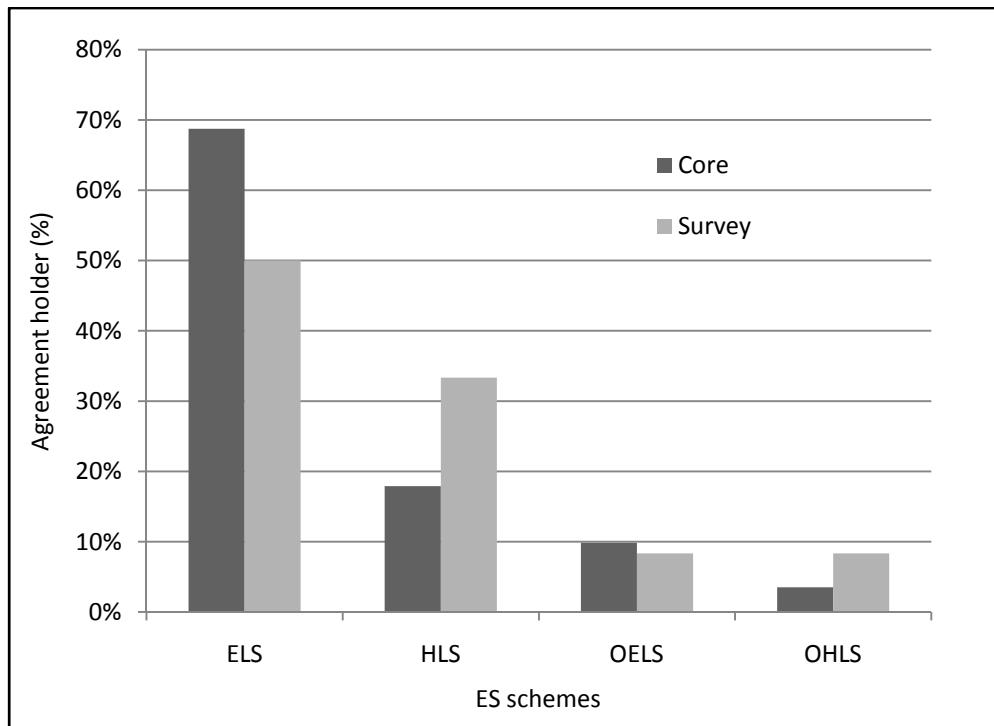
	Contractors	Suppliers	Advisors	Total
Total no. contacted	31	48	25	104
refusal	6	6	0	12
wrong or no number	0	0	0	0
unable to contact	3	2	2	7
interviewed - telephone	10	28	11	49
interviewed - face to face	12	12	12	36
Total no. interviewed	22	40	23	85
response rate	71	83	92	82

The agreement holders provided the interviewers with contact details for suppliers, contractors and advisors. The contractors interviewed face-to-face were also asked to provide names of suppliers. This is reflected in the local business survey numbers with a higher proportion of suppliers interviewed (47%) compared to contractors (26%) and advisors (27%). A number of agreement holders (8) used local farmer-contractors to undertake ES work, but were vague about the contact details suggesting that informal arrangements were in place that may also have been partly reciprocal.

4.2 Scheme coverage

The aim of the sample stratification was to ensure that the full range of schemes was represented in each landscape type. Figure 4.1 which compares the total ES population data (core) and the sampled survey data by scheme type, indicates that the survey broadly represents the total scheme population. ELS schemes were slightly underrepresented and HLS overrepresented in proportion to the core ES population. To account for these differences in the analysis at the aggregate level, a weighting factor was applied to the data to reflect the true distribution of HLS and ELS agreements in the total population.

Figure 4.1: Scheme use for core and survey data



The total scheme agreement values ranged enormously from £285 for a 5 year ELS scheme to £1,554,207 for a 10 year HLS scheme (see Table 4.3).

Table 4.3: Range of agreement values

Scheme value	ELS	HLS	OELS	OHLS
Minimum	285	2,867	3,530	29,955
Maximum	132,140	1,554,207	504,219	1,365,435
Mean	18,683	182,240	52,102	356,858
Median	11,658	117,756	29,595	277,400

4.3 Background information on respondents

Information about the agreement holders

The majority of agreement holders (57%) managed their land as traditional agricultural businesses¹⁶, with 190 businesses reliant on traditional agriculture for over 75 per cent of their income (Table 4.4). A large proportion of businesses (37%) derived income from alternative agricultural enterprises. This was mainly through livery stables, contracting and the provision of accommodation. Twenty-one agreement holders derived no agricultural income from their holdings.

Table 4.4: Sources of business income

Business income	Holdings (No.)	Holdings (%)
75% or more of income from traditional agriculture	190	57
Less than 75% of income from traditional agriculture	123	37
No agricultural income	21	6
Total	334	100

Just under half of the holdings in the survey were mainly or entirely owned by the occupier (47%) while one-fifth of the holdings (21%) were mainly or entirely rented. The remainder were of mixed tenure (Table 4.5). The OHLS schemes had a relatively smaller proportion of mainly or entirely owner occupied respondents compared to the other schemes.

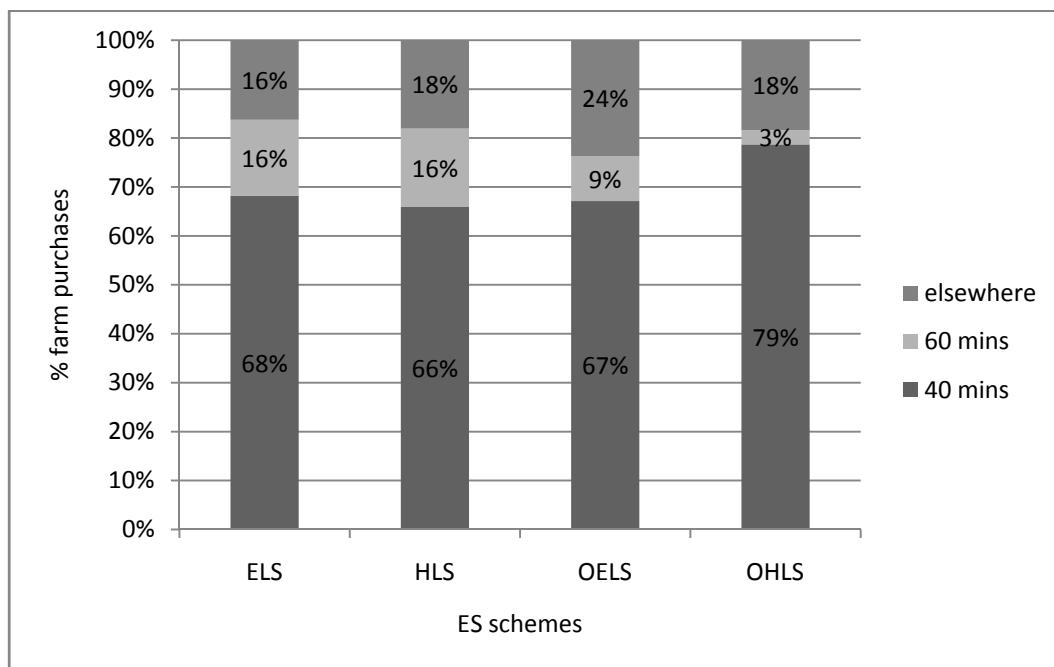
Table 4.5: Holding tenure

Tenure	Holdings (No.)	Holdings (%)
Mainly or entirely owner occupied	162	47
Mixed	112	32
Mainly or entirely rented	74	21
Total	348	100

¹⁶ Defined as sheep, beef, dairy, arable, horticulture, pigs and poultry enterprises.

The agreement holders were asked to allocate the proportion of all goods and services they purchased for the farm business into 40 minutes, 60 minute or elsewhere categories. Of those that responded (n=351), the majority of agreement holders purchased their goods and services within 40 minutes drive time of the agricultural holding (Figure 4.2). A slightly higher proportion of farm purchases were made locally within the Upland and Upland fringe compared to the other landscape types. This may in part reflect the remoteness and poorer transport links of these areas which restricts where goods can be purchased.

Figure 4.2: Proportion of farm purchases made locally (40 mins) by scheme



Information about local businesses

This section provides an overview of the local business survey sample. The distribution of respondents by landscape type is shown in Table 4.6:. Fewer contact details were provided for the South East Mixed landscape type compared to the other areas.

Table 4.6: Distribution of local businesses by landscape type

No. of businesses	Chalk and Limestone Mixed	Eastern arable	South East Mixed (Wooded)	Upland	Upland fringe	Western Mixed	Total
Contractors	2	3	3	5	5	4	22
Suppliers	6	12	2	5	4	11	40
Advisors	3	3	2	3	7	5	23
Total	11	18	7	13	16	20	85

The impact of ES on the contractors and advisors gross turnover is presented in Table 4.7:. Most of the contractors had experienced no change in turnover as a result of ES work, whilst the majority of advisors had reported an increase in turnover of between 1% – 10%. However, for nearly a quarter of the sample, ES work contributed to more than 50% of the business turnover. Two contractors had experienced a decline in turnover due to a reduced demand for their services with hedges in ES being cut every 2-3 years, rather than annually. One advisor whose clients were in CSS found that their services were no longer required when they moved into HLS or ELS.

Table 4.7: Impact of ES on local business turnover

No. of businesses	less than - 10%	-10 – 0%	0%	+1 - 10%	+10- 30%	+30- 50%	more than 50%	Total
Contractors	0	2	8	6	1	0	5	22
Advisors	0	1	2	10	2	1	5	21

Contractors

As Table 4.8 shows the main ES activities undertaken by the contractors interviewed were hedge cutting and fencing work.

Table 4.8: Contractors ES activities

Contractor activities	No. of contractors
Hedge cutting	7
Fencing	6
Hedge planting	4
Establishing wild bird cover plots	4
Drystone walling	3
Ditching/dyking	3
Hedge laying	1
Coppicing	1
Pond creation	1
Wetland creation	1
Scrape creation	1
Cutting/bailing grass	1
Topping margins	1
Moorland restoration	1
Grip blocking	1

On average, ES contracting activities contributed to 34% of the contracting businesses turnover and had a positive impact on turnover for 55% of the businesses. Four contractors (18%) felt that in absence of ES their work would cease, 3 of these were stone wallers and the other was a part-time hedge contractor. ES was particularly important to the dry stonewalling contractors who reported that without the scheme farmers would no longer

restore their stone walls. These stone wallers had trained specifically to meet the demands for ES stone walling work. There was a mixed response from the hedge cutting contractors. Some felt that ES had increased their workload as agreement holders were using more contractors to do hedge trimming under ES, rather than doing the work themselves. Also for a number of hedge contractors, ES had provided the guarantee of continuous work over the life-time of the scheme. Other hedge contractors had experienced a decline in their business as hedges were cut less often and the complexity of hedge cutting programmes required more unpaid consultation time with the client. Some of these contractors had invested in new hedge cutting machinery to deal with the thicker hedges.

Suppliers

The main suppliers to ES schemes were those supplying fencing materials, either directly from saw mills or from retail stores, and the seed suppliers (Table 4.9). Supplies were purchased either directly by the agreement holders or by contractors working for the agreement holders. As suppliers are more removed from ES activity than the other businesses surveyed they were less able to identify the goods that were purchased specifically for ES. Of those able to respond to this question (n=28), the reported impact on business turnover of ES was 17%. The suppliers tended to have a more diverse customer base than advisors and contractors, often supplying the domestic as well as the agricultural community, so the benefits of ES were more diluted. However, ES had led to a number of business start-ups, particularly for nurseries supplying hedging trees for ES schemes. The seed supplies were often a minor part of seeds companies business, although there were a few specialist seed companies. Although some of the larger seeds companies found the resource demands of specialist bespoke seed mixes uneconomical, they nevertheless persisted with the supplies for the additional custom it might generate.

Table 4.9: Main ES materials supplied

ES materials supplied	No. of suppliers
Fencing materials - timber, wire	14
Seeds - grass, wild bird, wild flowers	12
Hedge trees, guards, canes	7
Gates	5
Fruit trees	2
Hedge trimmers/toppers	2

Advisors

As shows the main activity undertaken by advisory organisations was assistance with scheme applications. This was the case for all 23 advisory organisations interviewed. These businesses included commercial advisory organisations set up specifically to offer environmental advice, agronomist and land agents who had diversified into environmental advice

and not-for-profit organisations whose goal was to promote environmentally-friendly farming practices.

Table 4.10: Main ES advisory activities

Advisory activities	No. of advisors
Scheme application	23
Hedgerow management/restoration	4
Grassland management	4
Woodland management	4
Headland strips/buffer zones/margins	3
Moorland Management/restoration	2
Wetland management	2
Pond management	2
Arable options	2
Buildings/archaeology	1
Scrub management	1

Of the three business types surveyed, the advisors derived the largest proportion of turnover from ES. On average ES contributed 44% to the turnover of these businesses and 86% reported ES having a positive impact on their businesses turnover. For some agronomists or farm management consultancies, ES accounted for a small proportion of their overall workload. For other organisations, notably the Farming and Wildlife Advisory Group (FWAG), ES contributed a substantial amount to the organisations' turnover. For some advisory organisations, ES represented not only an important source of income but also a way of gaining access to new farmers. The not-for-profit organisations, such as the Wildlife Trust and FWAG, valued ES as a way of enabling them to connect with and change the behaviour of farmers. The importance of ES to advisors is reflected by the fact that that 5 advisory organisations (22%) felt that they would most likely cease trading in the absence of ES schemes. Also a number of organisations, notably FWAG, have invested a large amount in training to deliver ES scheme advice. Seventy-eight per cent of advisors compared to 32% of contractors reported having undertaken training to assist in delivering business activities for ES.

It was suggested by the advisors that the payments for Farm Environment Plans (FEP)¹⁷ were too low which has created a particular economy of knowledge around the ES schemes. It has significantly advantaged some not-for-profit organisations who have access to external funding, such as the Wildlife Trusts. This is because they are able to provide advice independently of their actual costs and are therefore in effect subsidising farmers' entry into the scheme. Conversely, it has disadvantaged those smaller commercial advisory operations that are looking to compete. In some cases, the larger commercial advisory organisations are sub-

¹⁷ FEPs are a pre-requisite for HLS and must accompany HLS applications.

contracting the FEP element of the application to organisations such as FWAG.

4.4 Estimation of local income and employment effects

This section describes how local income and employment effects of ES were estimated using the LM3 approach. It begins by explaining the various components of the model and how the direct, indirect and induced effects which comprise it were derived. The ELS scheme aggregate model, one of 48 LM3 models that were constructed in the study, serves as a detailed example to illustrate this, and can be found in Appendix 6.

As explained in Sections 1 and 3, the LM3 model derives estimates of direct, indirect and induced effects in order to compute income and employment effects and their corresponding multipliers. Within this, the first three rounds of expenditure were captured, with fourth and subsequent rounds estimated on the basis of the third round data.

Estimation of Direct effects

The total scheme payment figure was calculated by dividing the total agreement value by the agreement length (5 years for ELS, 10 years for HLS) and multiplying this by the length of time the agreement holder had been in the scheme over the study period. This revealed that a total of £10.1m scheme monies have been paid to the 360 agreement holders in the period January 2005 – August 2009 inclusive. This equates to a mean holding payment over the study period of £10,785 for ELS schemes, £42,636 for HLS, £21,758 for OELS and £82,823 for OHLS. Details of all payment data, including the mean agreement holder payments for the four schemes, is given in Table 4.11.

Table 4.11: Payment data relating to ES schemes over study period

Scheme	Total Payment (£)	Mean Holding Payment (£)	% of scheme funds directly spent
ELS	1,865,853	10,785	12
HLS	5,073,654	42,636	61
OELS	630,987	21,758	24
OHLS	2,484,696	82,823	39
All schemes	10,055,190	28,647	18

Having calculated the total initial injection for each of the schemes, survey data was then used to estimate the proportion of scheme funds that were spent by agreement holders during the study period on works directly related to the scheme¹⁸. These figures are given in the right hand column of Table 4.11.

¹⁸ Although some would have counted towards income forgone, further impacts of the scheme not captured by the direct expenditure on scheme works encompassed in this study may also accrue to the local economy.

Additionality and displacement

An important component of the Direct effects estimation involved accounting for additionality and displacement. Essentially, variables were assembled from the agreement holder surveys to answer the following questions:

- What is the additional impact of the scheme on the local economy?
- To what extent is it simply displacing other activity in the area that would have had a comparable impact?

In the case of income effects, agreement holders were questioned about the proportion of ES work that would have been carried out in the absence of the scheme¹⁹, the results of which are summarised in Table 4.12.

Table 4.12: Proportion of work that would have been undertaken in the absence of the scheme

Scheme	Mean % of work undertaken in absence of the scheme
ELS	52
HLS	21
OELS	49
OHLS	36
All schemes	49

The agreement holder data suggest that some works would have been carried out even if the scheme monies had not been awarded, albeit to a possibly different standard of quality. (For example, using materials and techniques that were not traditional and/or sympathetic to the local area or undertaking tasks less frequently). This was factored into the direct injection.

In the case of employment effects, efforts were made to establish whether additional employees taken on as a direct result of the scheme were previously employed within the local economy. In some cases the agreement holder was aware of this and in other cases they were unsure. In computing the mean FTE staff employed as a result of each scheme, all FTEs were counted where the location of previous employment was known, and 50%²⁰ of FTEs where the previous job location was unknown. The results of this analysis are detailed in Table 4.13. The table shows that both HLS and OHLS schemes created more employment in the local economy, than the ELS and OELS schemes

¹⁹ Further displacement effects may have occurred through the fact that other farm supplies were no longer being purchased as a result of the scheme but there was insufficient scope in the surveys to collect this information. In addition, scheme works undertaken in the absence of the scheme would, to varying degrees, have offset the reduced expenditure on other supplies. Thus, although the surveys were designed to be as comprehensive as possible, they also sought to avoid double counting.

²⁰ Estimate based on similar previous surveys

Table 4.13: Mean FTEs employed as a direct result of the scheme

	A. Mean FTEs previously employed in the local economy	B. Mean FTEs not previously employed in the local economy	C. Mean FTEs where location of previous employment unknown	Mean FTEs counted as additional B+(C/2)
ELS	0.005	0.003	0.022	0.013
HLS	0.013	0.028	0.030	0.043
OELS	0.017	0.000	0.000	0.000
OHLS	0.000	0.010	0.150	0.085
All schemes	0.006	0.004	0.011	0.015

Estimation of Indirect effects

Data from the agreement holders survey were used to estimate the magnitude of direct effects of the scheme payment. As Table 4.14 shows, survey data revealed that, on aggregate, between 59% and 89% of all expenditure on ES-related works accrued to the local economy (40 minutes from agreement holding), with contractors, suppliers and advisors being the recipients of this expenditure.

Table 4.14: Proportion of ES-related works accruing to the local and wider local economy (%)²¹

	% within 40 mins of holding	% within 60 mins of holding
ELS	59	63
HLS	82	86
OELS	89	95
OHLS	74	77
All Schemes	72	77

The main objective of the survey of contractors, suppliers and advisors described in Section 3 was to derive data on the breakdown and spatial distribution of expenditure relating primarily to ES funded works. In both cases it was assumed that expenditure of income derived from ES-funded sources would mirror that of the business as a whole.

The spatial distribution of expenditure by contractors, suppliers and advisors, which feeds directly into the income and employment estimation models, is detailed in Table 4.15. This table indicates that a high percentage of expenditure by the local businesses on ES funded works went on staff wages and fuel, and a high proportion of this (around 80%) was spent in the local economy (40 mins).

²¹ The mean percentages take into consideration the relative values spent on each type of input. For example, in many cases staff wages, main supplies and contractors accounted for a higher proportion of overall spend by the agreement holder, the patterns of which inevitably influence the overall degree of integration into the local economy

Table 4.15: Breakdown and distribution of main expenditure by contractors, suppliers and advisors used to estimate indirect effects

Item	% of spend	% Local (40 mins)	% Wider Locality (60 mins)	% Elsewhere (beyond 60 mins)
Staff wages	51.4	81.3	3.1	15.6
National Insurance	2.7	0.0	0.0	100.0
Materials 1	8.1	34.4	9.9	55.7
Materials 2	4.3	15.8	19.2	65.0
Materials 3	1.4	26.6	9.5	63.9
Office supplies	3.1	47.0	0.9	52.1
Sub contractors	1.2	66.4	10.7	22.9
Fuel	18.3	86.8	3.4	9.8
Vehicles	7.8	71.5	1.5	27.0
Other	2.0	44.9	16.6	38.5
Aggregate Mean	100	43.7	8.0	48.3

Induced effects

Personal household expenditure data were collected from 25 respondents, both employers and employees, and included 6 contractors, 7 suppliers, 10 advisors and 2 agreement holders. Although a relatively small sample, it provided a cross section in terms of socio-economic group. The entire sample was used to compute induced effects for all models on the basis that a greater sample size, and cross section in terms of employee types, is likely to provide a more accurate picture of household consumption patterns.

A summary of the results is given in Table 4.16. On average 80% of household expenditure is retained within the local economy (40 mins).

Table 4.16 : Distribution of household expenditure used to estimate induced effects

	Within the 40 mins area (%)	Within the 60 mins area (%)	Elsewher e (%)	% of household spend*
Food	94	1	5	31.0
Clothing	70	9	21	14.0
Durables	78	10	12	17.0
Services/other	77	4	19	38.0
Mean	80	6	14	

*ONS, Family Spending 2002.

Employees were also requested to provide a breakdown of how all income is spent, in order to provide an estimate of how much earned income would directly leak out of the local economy through tax and savings etc. For the purposes of the economic analysis, only expenditure on food, clothing, durables and services were accounted for in calculating induced effects. This amounted to 36% of all wages and salaries²².

The income effect model

The following sections present the income and employment multipliers at farm, option and aggregate level. All multipliers are calculated by dividing the total income effect, that is the sum of the Direct, Indirect and Induced effects, by the Direct effect. Three types of income multiplier are presented in this report and are of differing magnitude because in each case whilst the direct injection used to calculate the multipliers differs, the absolute value of the total income effect is the same (56.5m). The section below and the flow diagrams in Figure 4.3 for ELS and Figure 4.4 for HLS explain how each multiplier was calculated.

Following through the flow diagram for ELS (Figure 4.3), the majority of the initial scheme payment (£1.00) compensates for income foregone and is therefore retained by the agreement holder (AH) and not translated into direct spend in the local economy (£0.88). The model also accounts for additionality by factoring out a proportion of expenditure by the agreement holder which cannot be regarded as additional income to the local economy beyond what would have occurred without the scheme (£0.06). As explained earlier, this information was obtained by asking agreement holders what proportion of all works would have occurred anyway, in the absence of the scheme. The income multipliers presented in the main text (A) relate to those that account for this additionality. Thus for multiplier A the direct injection used in the calculation is: [total scheme injection - proportion not spent by the agreement holder].

Because we are calculating a multiplier here, as opposed to seeking an income effect per £ injection, the calculation effectively excludes non-additional injection by including it within the direct injection used to calculate the multiplier. This results in cancelling out the effect of non-additional injection in the numerator (total income effect) as it is included in the denominator.

In the case of HLS schemes, the flow diagram (Figure 4.4) shows that an AH contribution is added for capital works. HLS does not cover the full cost of some capital items, but requires a contribution from the AH which can range from a 1%-50% contribution. This contribution is additional

²² All other expenditure of salaries was counted as leakage out of the area, even though in reality some income spent on rent and council tax may in fact be retained in the local economy.

money that would not have been spent by the AH that is going into the local economy and is therefore added to the scheme injection (£0.06).

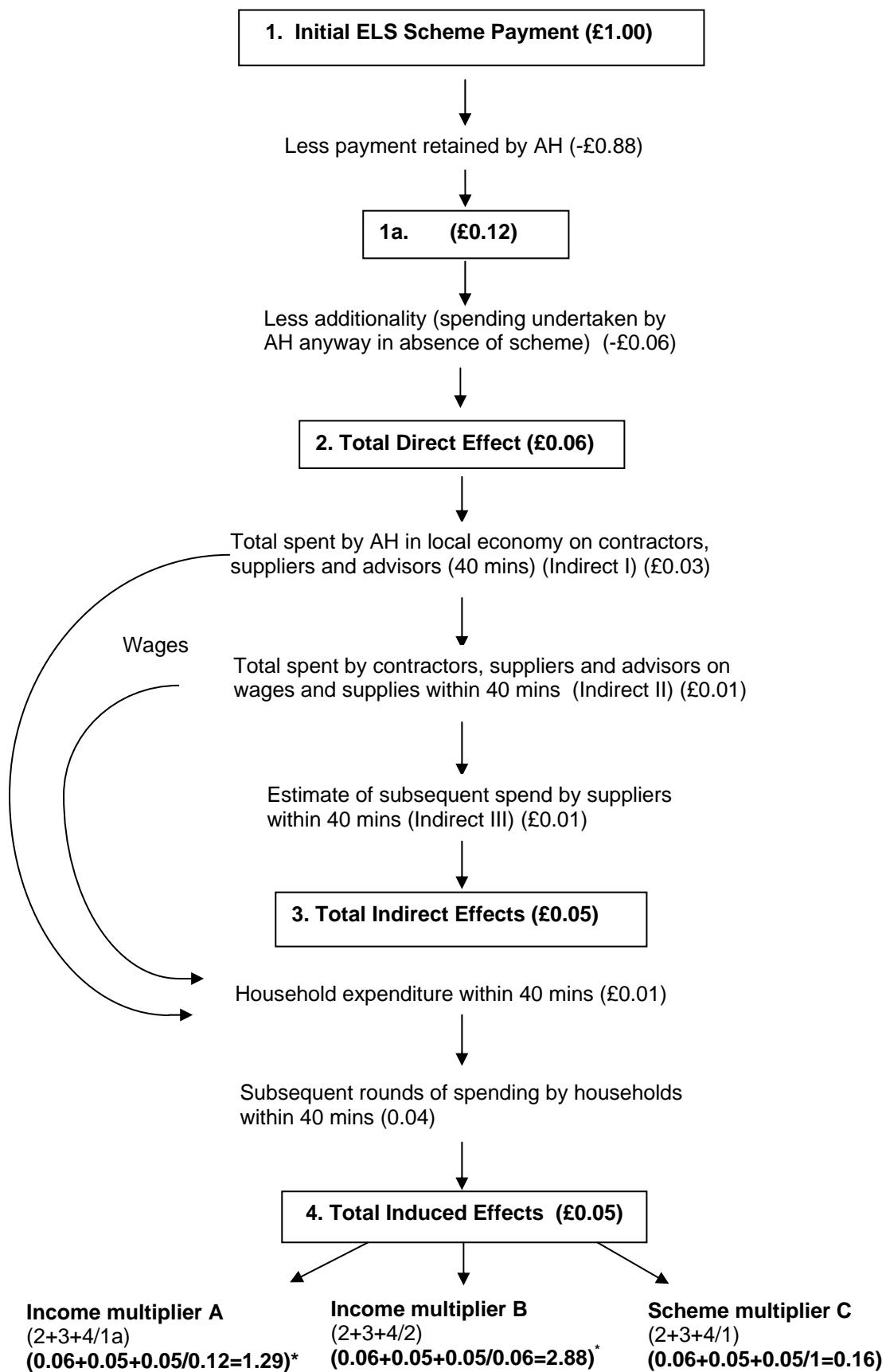
The Total Direct Effect (£0.06) is the direct injection into the economy. The first round indirect effect represents the total spent in the local economy by AH on contractors, suppliers and advisors as a result of the scheme (£0.03), the rest of the direct injection (£0.03) leaks out of the local economy. The second round represents spending by the contractors, suppliers and advisors on wages and supplies in the local economy as a result of the scheme (£0.01). The third round is an estimate of subsequent spending in the local economy by suppliers, reflecting those of the local businesses (£0.01).

The induced effect represents the impact on the local economy from increased household expenditure as a result of additional wages generated by the scheme (£0.01). An estimate of subsequent rounds of spending as a result of this increased household expenditure in the local economy is also calculated (£0.04).

For completeness, and to aid in the application of the multipliers to scheme payments beyond the study period considered in this report, two further sets of multipliers (B and C) are included in Appendix 7. Multiplier B does not take the additionality effect into account and is therefore larger than multiplier A. The direct injection is calculated thus: [total scheme injection - proportion not spent by the agreement holder – proportion deemed to be non-additional]. Multiplier B may be useful when comparing this study with other studies that have not accounted for the additionality effect. The reduction of the direct injection by the proportion deemed to be non-additional is done for the same reasoning as above. We are calculating a multiplier, as opposed to a per £ scheme injection.

Multiplier C is a pseudo ‘scheme multiplier’ whereby the total income effect is then divided by the total scheme injection to obtain a measure that could be applied to scheme injections beyond the study period captured here. In this case, the Direct effect is taken as being the total scheme injection. The majority of this scheme injection, particularly for ELS, is income foregone and therefore retained by the agreement holders. Consequently, Multiplier C is in many cases below 1, which means that a £1 injection of the scheme generates less than £1 for the local economy in real terms.

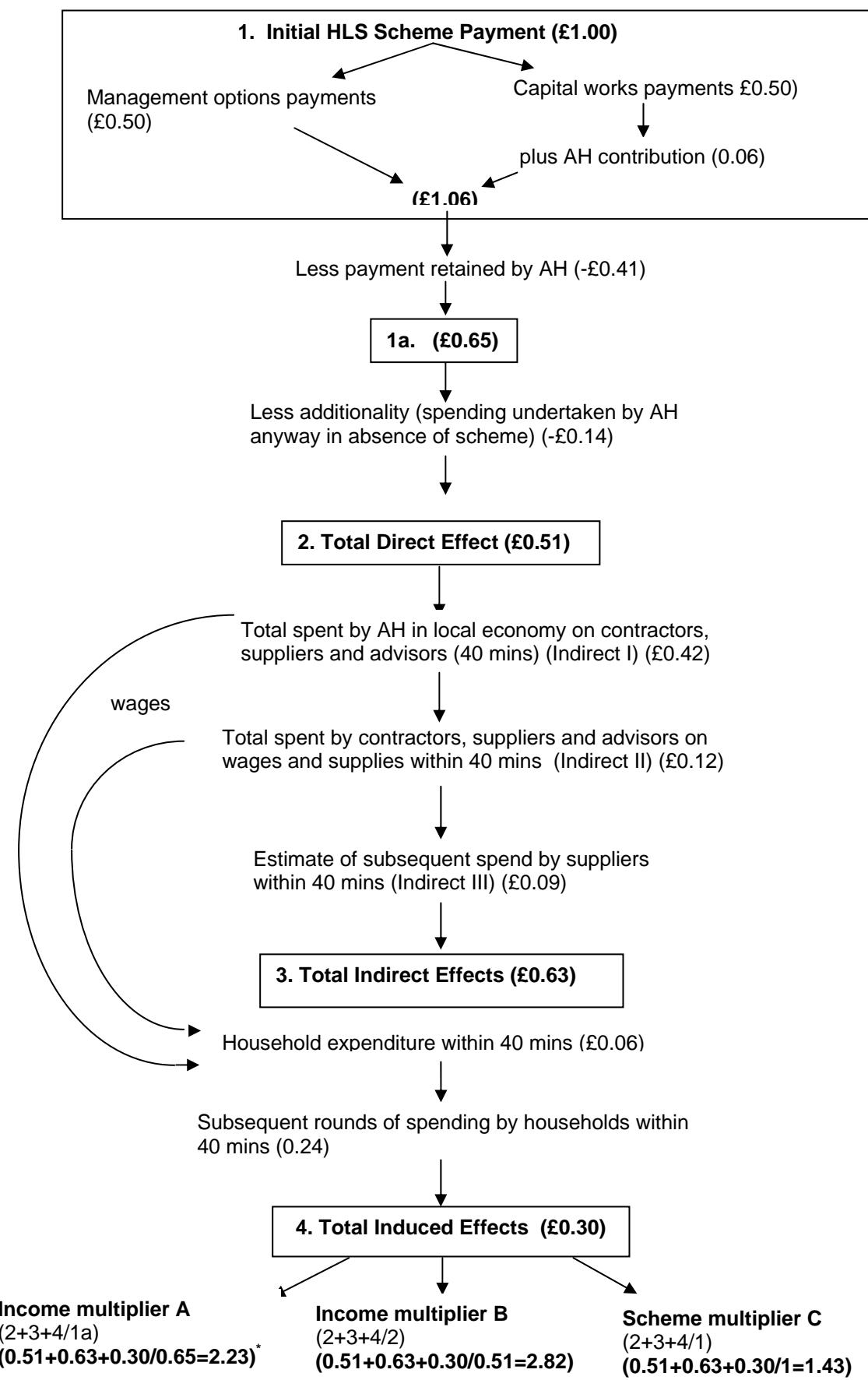
Figure 4.3: Calculation of ELS income multipliers (40 mins)



43

* Any slight variation due to rounding.

Figure 4.4: Calculation of HLS income multipliers (40 mins)



Income multiplier A
 $(2+3+4/1a)$
 $(0.51+0.63+0.30/0.65=2.23)^*$

Income multiplier B
 $(2+3+4/2)$
 $(0.51+0.63+0.30/0.51=2.82)$

Scheme multiplier C (2+3+4/1) (0.51+0.63+0.30/1-1.43)

A summary of the three multiplier calculations is given in Table 4.17, for the ELS model. All 3 multipliers are provided for the aggregate level models in Appendix 7 and also include multipliers beyond the 60 mins drive time (elsewhere).

Table 4.17: Summary of multiplier calculation for ELS model

		Multiplier A	Multiplier B	Multiplier C
Total Scheme injection (£)	347.1			
Scheme injection spent (£)	41.6			
Additional scheme injection (£)	20.0			
Non-additional scheme injection (£)	21.7			
Total income (Direct+Indirect+Induced) effects (£)	53.8			
Multiplier Calculation		53.8/41.7	53.8/20.0	53.8/347.1
Multiplier		1.29	2.69	0.16

The complete income estimation for the ELS aggregate model is presented in Appendix 6. The total scheme payments in the period 2005-2009 is £347.05m and given that 12% of all ELS payments is spent on goods and services in the local economy, this results in a total initial injection of £41.6m. After taking into account likely additionality and displacement effects, this results in a total direct injection of £20.0m into the local economy.

The indirect effects represent the second and third round industrial support for contractors, suppliers and advisors following an increase in income as a result of the schemes. It can be seen that these local businesses source the majority of their staff locally, with greater leakages of income resulting from purchases of supplies in the third round of expenditure.

Survey data reveals that the total local injection from expenditure by agreement holders (Indirect effects I) equates to £11.8m and subsequent expenditure by contractors, suppliers and advisors (indirect effects II) yields a local injection of £3.4m. However, to estimate total indirect effects it is necessary to compute a multiplier with which to estimate subsequent spending in the local economy. To do this we assume that further rounds of spending in the economy will reflect those of these local businesses (indirect III).

Taking into account the amount spent on each form of input and the proportion of each that remains local (See Table 4.15), a total of 44% of all expenditure by suppliers is retained in the local economy. From this a coefficient of 0.44 is used to derive a multiplier to estimate fourth and subsequent rounds of expenditure and in turn compute total indirect effects

resulting from the scheme. The proportion of 0.44 is applied to derive a multiplier of 0.79 using the following standard equation:

$$0.79 = 1 / (1-0.44) - 1$$

This multiplier of 0.79 is used to compute an estimate of subsequent spending in the local economy through indirect effects:

$$\begin{aligned} 0.79 * \text{£}3.4\text{m} &= \text{£}2.6 \\ \text{£}2.6 + \text{£}11.8\text{m} + \text{£}3.4\text{m} &= \text{£}17.8\text{m}^{23}. \end{aligned}$$

Total indirect effects arising from second, third and subsequent rounds of expenditure in the local economy therefore amount to £17.8m. Thus, a direct injection of £20.0m generates a further £17.8m through indirect effects.

The induced effect represents the impact on the local economy from increased household expenditure as a result of additional income generated by the scheme. This increase results from the fact that additional salaries are paid to households by agreement holders, contractors, suppliers and advisors, and that a high proportion (around 81%) of this is spent locally. On average, surveyed employees in turn spend 80% of their disposable income (see Table 4.16) (which in turn amounts to 36.0% of total income²⁴) in the local economy, yielding induced effects of £3.2m. Based on 80% of disposable income spent in the local economy, a coefficient of 4.0 is calculated to estimate subsequent induced effects in the local economy using the standard NEF calculation:

$$4.0 = 1 / (1-0.8) - 1$$

Total induced effects are calculated thus:

$$\begin{aligned} 4 * \text{£}3.2\text{m} &= \text{£}12.8 \\ \text{£}12.8 + \text{£}3.2\text{m} &= \text{£}16.0\text{m}. \end{aligned}$$

The multiplier, therefore, yields total induced effects of £16.0m.

The sum of direct, indirect and induced effects as computed by the model yields a total income effect of £56.5m (i.e., £20.0m + £17.8m + £16.0m) in the local economy as a result of intervention through the ELS scheme. Taking into account the additionality effects, an income multiplier of 1.29 is calculated from the ratio of total income effects to direct effects²⁵.

²³ Any slight variations are due to rounding to 2 significant figures.

²⁴ From ONS Family Spending 2002-03

²⁵ Not taking into account the additionality effect when computing the total income effect against the direct effect yields a multiplier of 2.81, although this does not represent such a realistic impact of the scheme on the local economy.

In summary, a £1 expenditure on an ELS scheme could be said to result in a total output in the local economy of £1.29.

The employment effect model

Employment impacts were estimated from survey information about additional employment resulting from the various schemes from the survey. Using survey data and data from the income effect model, direct, indirect and induced jobs were calculated, with the help of employment coefficients derived from previous economic impact studies. Based on the coefficients employed by the National Trust (1999) and Mills *et al.* (2001) the following assumptions were made:

- To calculate indirect Full Time Equivalent (FTE) jobs: 1 FTE job will be created for every £200,000 expenditure on second and third round supplies (throughout the duration of the schemes).
- To calculate induced jobs: An induced employment coefficient of 0.1 was assumed (i.e. an additional induced job will arise with every 10 jobs supported either directly or indirectly at the local level).

The employment model for ELS aggregate model is set out in Table 4.18 and is illustrated in Figure 4.4. For surveyed agreement holders a mean of 0.013 additional FTE jobs arose from the scheme per business, yielding a total of 413.9 direct FTE jobs for the local economy on the basis that 30,890 agreement holders in the total population have worked on ELS-funded schemes.

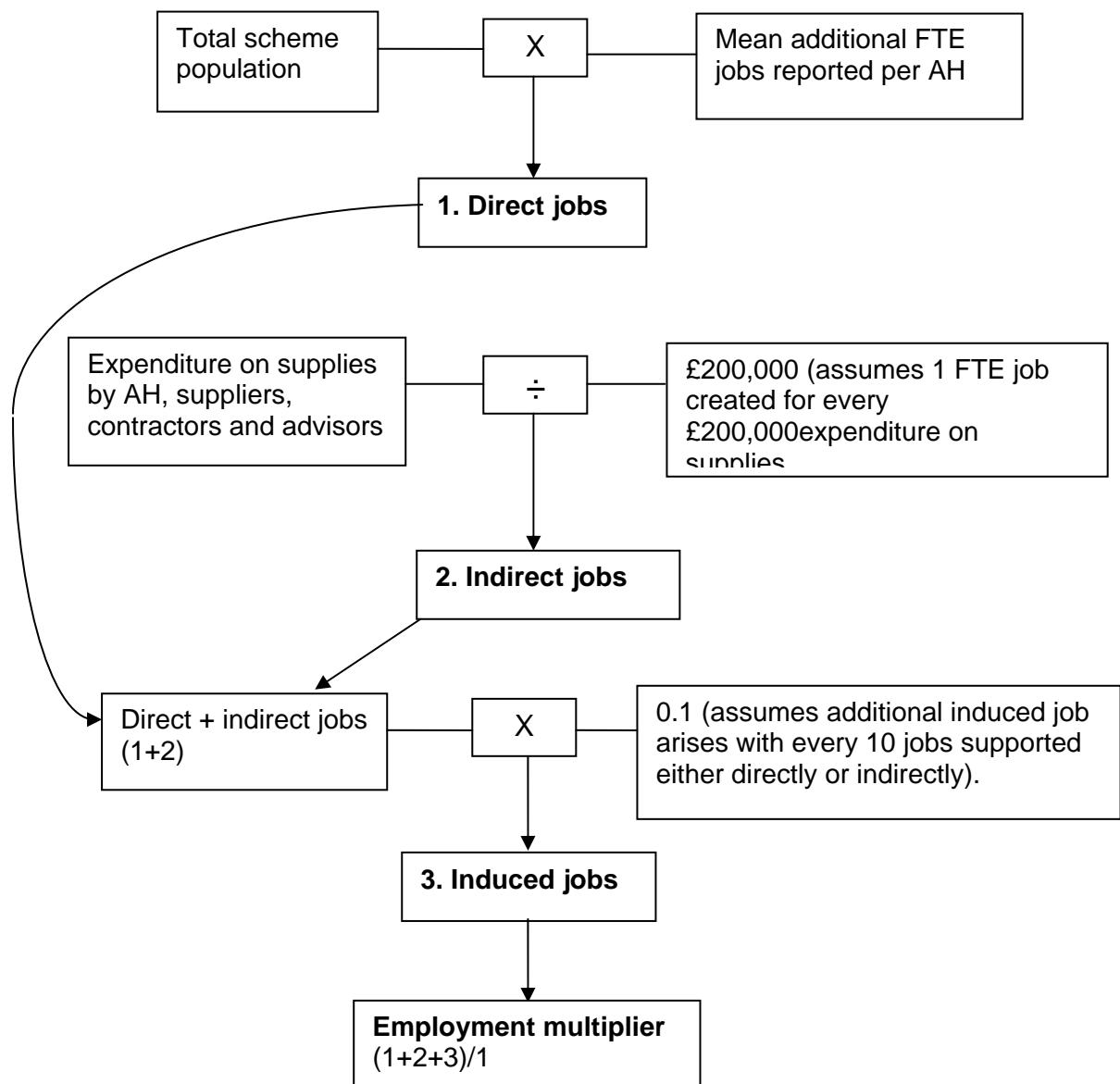
The indirect employment effect for local supplies is calculated using the indirect I and indirect II expenditure figures for supplies calculated in the income multiplier model (£4.29m) and assuming that 1 FTE job is created for every £200,000 expenditure on general and specialist supplies by agreement holders, contractors, suppliers and advisors on ELS-related works. This gives rise to a further 21.5 indirect FTE jobs in the local economy.

The spending of wages by employees whose jobs are supported by the ELS schemes will itself generate further employment in the local economy. Assuming an induced employment coefficient of 0.1 (i.e. an additional induced job will arise with every 10 jobs supported either directly or indirectly at the local level) a further 43.5 FTE jobs are generated in the local economy through induced effects.

The employment model presented in Table 4.18 indicates that for the total national population of ELS agreement holders, 413.9 direct FTE jobs have been created between 2005 and 2009 as a result of intervention through the ELS scheme. When the indirect and induced effects of this expenditure are taken into the account the figure rises to 478.9.7 FTE jobs, or 546

actual jobs²⁶. An employment multiplier of 1.16 is derived from the ratio of total FTE jobs to direct FTE jobs arising from the ELS scheme. Thus for every FTE direct job created a further 0.16 FTE jobs are created through indirect and induced effects in the local economy.

Figure: 4.5 Calculation of employment multiplier



²⁶ Actual jobs include part-time jobs and assumes the ratio of 1 FTE job per 1.14 actual job as used by other studies.

Table 4.18: Employment effect model for the ELS scheme

Direct FTE jobs	Total population	Mean additional reported FTE jobs (L)	Direct FTE jobs (40)	Direct FTE jobs (60)
	30,890	0.01*	413.9	413.9
Indirect FTE jobs			Indirect FTE jobs** (40)	Indirect FTE jobs* (60)
			21.5	24.7
Induced FTE jobs			Induced FTE jobs*** (40)	Induced FTE jobs*** (60)
			43.5	43.9
Total FTE jobs resulting from ELS scheme			478.9	482.5
Total jobs arising from ELS scheme			546	550
Employment multiplier			1.16	1.17

* Actual figure is 0.0134.

** Assumes 1 FTE job created for every £200,000 expenditure on supplies (excluding staff and sub-contractors) by farmers, contractors, suppliers and advisors

*** Assumes an induced employment coefficient of 0.1 (i.e. an additional induced job will arise with every 10 jobs supported either directly or indirectly at a local level).

4.5 Income effects at the farm level

A summary of income effects for all nine local economic models at the farm level is given in Table 4.19. This encompasses income multipliers by farm type and total agreement value.

Table 4.19: Income multiplier effects at by farm type and total agreement value

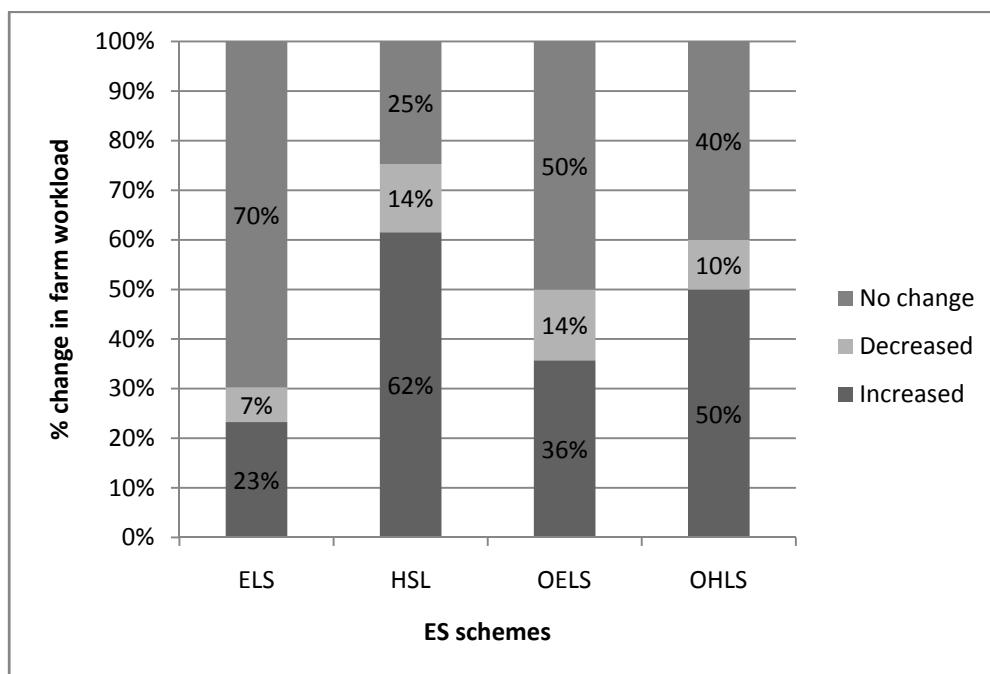
All Schemes: farm type	Income Multiplier (40)	'Scheme' Multiplier	All Schemes: Agreement value (£)	Income Multiplier (40)	'Scheme' Multiplier
Arable	1.36	0.25	285 – 15,964	1.39	0.25
Dairy	1.38	0.25	15,965 – 50,013	1.44	0.26
Livestock (lowland)	1.50	0.27	50,014 – 148,524	1.42	0.26
Livestock (LFA)	1.45	0.26	148,525 +	1.36	0.25
Mixed farms	1.42	0.26			

The income effects for all schemes by farm type range from 1.36 for arable farms to 1.50 for livestock (lowland) farms. Thus for every £1 expenditure on ES schemes by lowland livestock farms results in a total output within the local economy of £1.50. The estimations also show that the total income effects for all schemes by agreement value range from 1.36 for the highest value agreements (£148,525+) to 1.44 for the second lowest agreement values (£15,965 – 50,013).

4.6 Employment impacts at farm level

Around 40% of the agreement holders felt that over the study period their ES scheme had increased the overall workload on the farm, whilst 10% reported a decreased workload, with the remaining 50% experiencing no change in workload (see Figure 4.6).

Figure 4.6: Changes in farm workload due to ES schemes (%)



Not surprisingly, the Higher Level schemes, which are more demanding than the Entry Level schemes, experienced the highest increases in workload. Reasons stated for increased workload included, increases in boundary work, such as hedges and walling and scrub management. A number of respondents suggested that workloads were higher at the start of the scheme and then eased off as margins, hedgerows and fencing were established. Interestingly, some upland agreement holders saw the increase in workload as a positive impact in that it created work for underemployed farm workers and family members. Many of the activities associated with ES, particularly those relating to farm boundaries occur during the autumn and winter, traditionally a quieter period in the

agricultural calendar. The following quotes illustrate how ES has helped to maintain employment on the farm.

“We do all the hedging, stone walling and pond work ourselves. There really is only enough work for one and a half people on the farm, so we do all the ES work in our spare time, especially during the winter”.

“Large amount of boundary maintenance work in winter. Keeps a worker employed, would have considered making him part-time if not in the scheme”.

“Providing extra work for the family was the purpose of entering the scheme”.

“More people on the farm (visits); keeping us going for 4 months when would not be enough work for a second full time person”.

Reasons given for decreases in workload included less hedge cutting, reduced grassland inputs and reduced stock numbers.

As reported by the surveyed agreement holders, the proportion of ES related works carried out by contractors and the farm itself on schemes where workload had increased are indicated in Table 4.20. The survey data shows that a greater proportion of ES related work was carried out by the agreement holder than contractors.

Table 4.20: Proportion of ES-related activities carried out by the farm and contractors

	Farm (% by value)	Contractors (% by value)
ELS	82	19
HLS	71	29
OELS	86	14
OHLS	74	26
Total	74	24

Survey data revealed that direct employment effects of on-farm works were minimal, with seemingly most ES work carried out by existing farm labour. Only around 14% of agreement holders had employed additional workers or paid additional hours to existing employees to help specifically with ES work. In the case of the contractors and advisors, overall as a result of ES they had employed 2.2 FTE and 3.1 FTE workers, respectively, who had not previously been employed in the local area.

A summary of employment multiplier effects from all nine farm level models is given in Table 4.21. The models indicate that the employment multipliers for our sample by farm type range from 1.14 (dairy farms) to 1.45 (mixed farms). By agreement value the largest employment multipliers (2.63) are

attributed to the highest value agreements. These larger schemes are likely to have a significant amount of capital works and therefore require the use of contractors and farm help.

Table 4.21: Employment Multipliers: All schemes, by farm type and agreement value

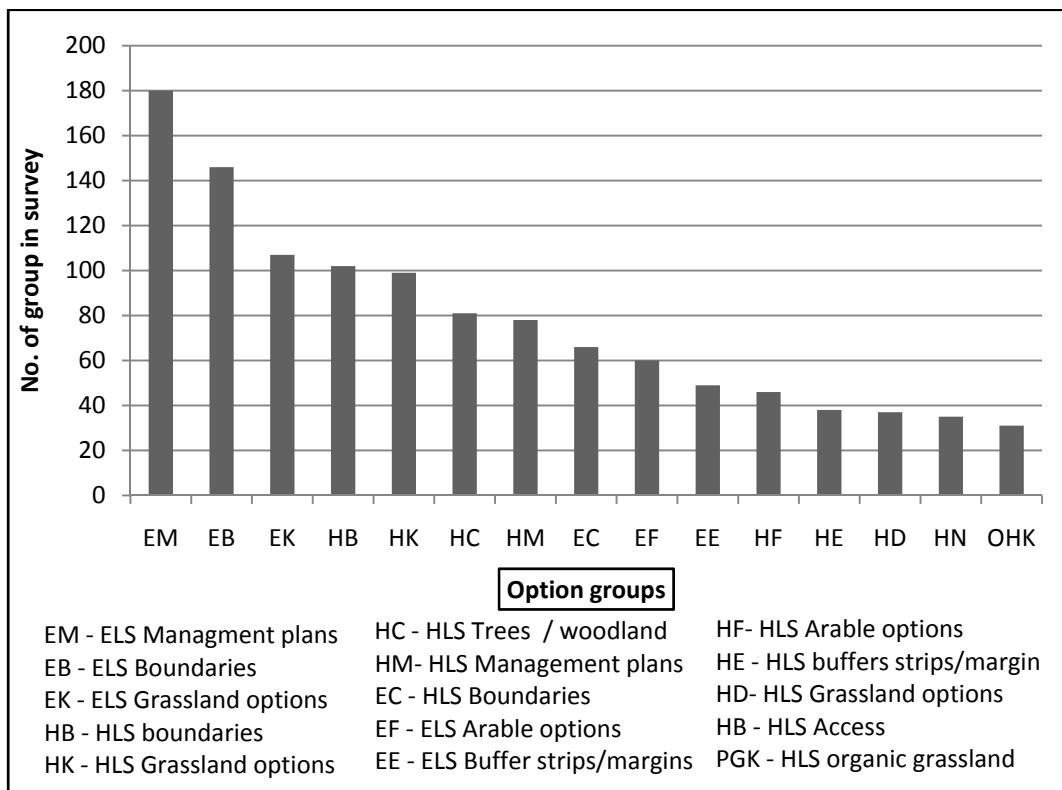
All Schemes: farm type	Employment Multiplier (40)	Employment Multiplier (60)	All Schemes: Agreement value (£)	Employment Multiplier (40)	Employment Multiplier (60)
Arable	1.26	1.23	285 – 15,964	1.18	1.19
Dairy	1.14	1.15	15,965 – 50,013	1.61	1.68
Livestock (lowland)	1.32	1.34	50,014 – 148,524	1.40	1.44
Livestock (LFA)	1.26	1.27	148,525+	2.63	2.82
Mixed farms	1.45	1.50			

4.7 Option Level Analysis

The agreement holders surveyed had a total of 4,872 individual options in their schemes, giving an average of 14 options per agreement. As discussed in Section 3 for ease of analysis each option was grouped into one of 52 option groups. In most instances, agreement holders were able to provide financial expenditure estimates by option group. In a few cases, for example with the fencing options, careful probing during the interviews was required to ensure farmers were accounting for fencing under the boundary option group, rather than other options groups, such as woodland and grassland management.

Figure 4.6 displays the top 75% of the most frequently occurring option groups in the survey. The most frequently occurring group was EM (entry level plans). This is not surprising as each scheme is required to produce a Farm Environment Record (FER) as part of the scheme application. Other frequently occurring option groups were those relating to boundaries (EB, HB), grassland options outside SDAs (EK, HK, OHK), trees and woodland (HC, EC), arable options (EF, HF), buffer strips and margins (EE, HE), historic and landscape features (HD), access (HN) and management plans (HM) which are no longer offered under HLS. The focus of the option level multiplier analysis was on those option groups for which we had most data, i.e. the highest frequency, and included boundaries, trees and woodland, grassland options, arable options, buffer strips and margins and management plans.

Figure 4.7: Number of option groups within 75% of the total number



Additionality

As Table 4.22 shows, the survey found that a large proportion of the agreement holders (51%) would have implemented some of the (EK) low input options because the farms were running low input systems anyway. Similarly, some of the boundary (EB) and woodland options (EC) were already undertaken on the farm. In arable areas, much less work would have been undertaken outside the schemes. As Table 4.23 indicates, anything that involved a reduction in productive land required an incentive payment (e.g. many of the options in HE and HF).

Table 4.22: Percentage of work potentially undertaken in absence of ELS

ELS	All (%)	Some (%)	None (%)
EB	54	28	14
EC	59	11	23
EE	12	31	53
EF	15	31	48
EK	51	13	28
EM	26	16	54
Other ELS	45	14	35
All ELS Options	40	19	36

Table 4.23: Percentage of work potentially undertaken in absence of HLS

HLS	All (%)	Some (%)	None (%)
HB	15	44	36
HC	8	24	60
HE	3	29	61
HF	4	20	70
HK	16	30	50
HM	20	15	63
Other HLS	17	18	60
All HLS Options	14	22	58

Overall the organic schemes showed a similar pattern to the non-organic schemes in the work that would have taken place in the absence of the schemes (see Table 4.24)

Table 4.24: Percentage of work potentially undertaken in absence of OELS and OHLS

Organic schemes	All (%)	Some (%)	None (%)
OB/OHB	33	42	23
OF/OHF	18	32	50
OHK	33	30	38
Other organic	27	18	53
All Organic Options	27	22	50

Local Income multiplier impacts at option level

The approach outlined above for calculating the local multiplier impacts at the farm level was used to calculate these impacts at the option level. A summary of income effects for all 21 local economic models at the option level is given in Table 4.25 to Table 4.27.

Table 4.25: Income Multipliers: ELS non-organic schemes, by Option group

ELS	Income Multiplier (40)	Income Multiplier (60)
EB	1.40	1.67
EC	1.34	1.70
EE	1.23	1.55
EF	1.23	1.61
EK	1.21	1.52
EM	1.22	1.55
Other ELS	1.38	1.66
All ELS Options	1.29	1.61

Table 4.26: Income Multipliers: HLS non-organic schemes, by Option group

HLS	Income Multiplier (40)	Income Multiplier (60)
HB	2.28	2.75
HC	2.22	2.58
HE	1.83	2.17
HF	2.00	2.41
HK	2.24	2.62
HM	2.26	2.70
Other HLS	2.23	2.74
All HLS Options	2.23	2.67

As would be expected, the HLS options generate a higher multiplier effect in the local economy as they incorporate capital items. For this same reason HB options, in particular produce a higher multiplier effect as they contain a large proportion of capital items associated with fencing, hedging and walling work. At a wider local level (60 mins) the management plans also produce a high multiplier effect as services of advisory professionals are required to help produce these plans.

Table 4.27: Income Multipliers: Organic schemes (OELS and OHLS), by option group

Organic schemes	Income Multiplier (40)	Income Multiplier (60)
OB/OHB	1.53	1.89
OF/OHF	1.59	1.89
OHK	1.29	1.73
Other organic	1.56	1.86
All Organic Options	1.49	1.94

Reflecting the pattern of the non-organic schemes, the organic boundary options produce the highest income multiplier effect in the local economy. Comparing the HLS organic grassland option group (OHK) with the income multiplier for the HLS non-organic grassland option group (HK), OHK has a lower income multiplier (1.29) compared to HK (2.24).

Impact on farm turnover by option group

The majority of respondents (73%) felt that the options had had no impact on the farm turnover. A small proportion (16%) reported a negative impact on turnover of some options. This particularly applied to the arable options, boundary options and grassland options outside Severely Disadvantaged Areas (SDAs). Reasons given for this negative impact included options that led to the removal of arable land for bird/flower seed mixes and bird plots and increased operation time due to inefficiencies from managing small arable areas and cutting thicker hedges and reduced stocking levels. Of those reporting a perceived positive impact on turnover

(11%), the majority related to the grassland and boundary options. On many of the upland farms visited the low input grassland options were not significantly altering the existing farm management practices which were already low input. Some agreement holders also felt they were financially benefitting from the hedges options as hedges were cut less often.

Employment impacts at option level

A summary of employment multiplier effects from all eighteen option level models is given in Table 4.28 to Table 4.30. The models indicate that the employment multiplier for our sample by option group ranged from 1.10 (EM) to 1.22 (EB/EC) in ELS schemes.

Table 4.28: Employment Multipliers: ELS non-organic schemes, by option group

ELS	Employment Multiplier (40)	Employment Multiplier (60)
EB	1.22	1.23
EC	1.22	1.25
EE	1.17	1.18
EF	1.14	1.14
EK	1.15	1.16
EM	1.10	1.10
Other ELS	1.23	1.25
All ELS Options	1.16	1.17

In the HLS schemes employment multipliers are higher due to considerably more FTE jobs being generated through indirect effects. In turn this relates to the fact that a higher proportion of HLS funds were spent by agreement holders in carrying out scheme works, and a significant amount of this income was accrued locally. The employment multipliers ranged from 1.44 (HE) to 2.36 (HM).

Table 4.29: Employment Multipliers: HLS non-organic schemes, by option group

HLS	Employment Multiplier (40)	Employment Multiplier (60)
HB	2.28	2.41
HC	1.66	1.68
HE	1.44	1.48
HF	2.08	2.52
HK	2.34	2.75
HM	2.36	2.83
Other HLS	2.92	3.05
All HLS Options	1.50	1.80

In the organic schemes, employment multipliers ranged from 1.37 (OB/HB) to 1.57 (OF/OHF). As with the income multipliers, the employment multiplier for the HLS organic grassland option group (OHK) is lower than the non-organic multiplier for the HLS non-organic grassland option group (HK)

Table 4.30: Employment Multipliers: Organic schemes (OELS and OHLS), by option group

Organic schemes	Employment Multiplier (40)	Employment Multiplier (60)
OB/OHB	1.37	1.51
OF/OHF	1.56	1.59
OHK	1.53	1.74
Other organic	1.23	1.23
All Organic Options	1.98	2.38

4.8 Aggregate Level Analysis

Given that scheme injections and total populations of agreement holders are available, the following analysis estimates the aggregate economic impact of ES at the national (England) and English Government Office Regions (GORs) levels; and by landscape typology.

As Table 4.31 shows, at the national level the derived income multiplier for all the ES schemes is 1.42. Thus, a £1 expenditure on ES activities could be said to result in a total output in the 40 minute local economy area of £1.42. Extending the local boundary to a 60 minute drive time zone from agreement holders, the income multiplier for all ES schemes is 1.73.

Table 4.31: Income Multipliers: National level, by Scheme

Scheme	40 Minute Drive time		60 Minute Drive time	
	Income Multiplier	'Scheme' multiplier	Income Multiplier	'Scheme' multiplier
ELS	1.29	0.16	1.61	0.19
HLS	2.23	1.43	2.67	1.72
OELS	1.47	0.35	1.78	0.43
OHLS	1.82	0.72	2.22	0.88
Non-Organic	1.41	0.24	1.73	0.30
Organic	1.49	0.39	1.94	0.51
All Schemes	1.42	0.26	1.73	0.32

The national level the 'scheme' multiplier for all ES schemes is 0.26. Thus, for every £1 of ES scheme payment that goes to the agreement holder, £0.26 is generated off-farm in the local economy through direct expenditure and indirect and induced effects. Applying this multiplier to the

annual value of all ES scheme payments in 2009 of £249.0m, reveals that £64.7m was generated in the local economy for this period as a result of ES activity.

Table 4.31 also shows that the HLS schemes generate the highest income multiplier in the local economy, 2.23 compared to 1.29 for ELS. These schemes are more demanding than ELS schemes and contain capital works, which require expenditure on materials and often the services of contractors, three quarters of which is retained locally. Thus, every pound spent on HLS related works results in a total output in the local economy of £2.23. The ‘scheme’ multiplier shows that for every £1 of HLS scheme payment that goes to the agreement holder, £1.43 is generated off-farm in the local economy through direct expenditure and indirect and induced effects. Thus over the study period, the HLS payments of £90.3m generates £129.1m in the local economy. Of the two organic schemes, it is the OHLS that generates the highest income multiplier of 1.82 compared with 1.47 for OELS. As with the HLS, OHLS agreement holders tend to spend a larger proportion of scheme funds, on a wider range of goods and services and source the majority of these inputs locally. Pound for pound, therefore, OHLS is more efficient at generating local economic benefits than is OELS. Comparing non-organic and organic schemes, the organic scheme produce both a higher income multiplier and ‘scheme’ multiplier indicating that overall they generate a greater expenditure in the local economy.

Table 4.32 shows that HLS schemes generate the highest employment multiplier, reflecting the more demanding nature of these schemes compared to ELS and the greater requirement for the use of contractors. The HLS and OHLS schemes also produce the highest number of FTE job per £m of scheme injection, 2.14 and 1.79, respectively. Comparing the organic with the non-organic schemes, it appears that the non-organic schemes produce a higher number of FTE jobs per £m of scheme injection, than organic schemes.

Table 4.32: Employment Multipliers: National level, by Scheme

Scheme	40 Minute Drive time		60 Minute Drive time	
	Employment Multiplier	FTE jobs/£m injection	Employment Multiplier	FTE jobs/£m injection
ELS	1.16	1.38	1.17	1.39
HLS	2.14	2.21	2.23	2.30
OELS	n.d.	n.d.	n.d.	n.d.
OHLS	1.58	1.77	1.63	1.83
Non-Organic	1.23	1.43	1.24	1.45
Organic	1.79	0.58	2.38	0.70
All Schemes	1.25	1.32	1.28	1.34

n.d. denotes no direct jobs reported in the survey .

The following four tables present an equivalent analysis of aggregate income and employment impacts at the regional (GOR) level and according to landscape type.

Table 4.33: Income Multipliers: All Schemes, by Region

All Schemes	40 Minute Drive time		60 Minute Drive time	
	Income Multiplier	'Scheme' multiplier	Income Multiplier	'Scheme' multiplier
East Midlands	1.37	0.05	1.68	0.07
East of England	1.33	0.25	1.71	0.33
North East	1.45	0.32	1.71	0.38
North West	1.48	0.71	1.78	0.86
South East	1.41	0.35	1.71	0.43
South West	1.42	0.25	1.76	0.30
West Midlands	1.48	0.24	1.78	0.29
Yorkshire and Humber	1.40	0.25	1.71	0.31

Table 4.33 shows some regional variations in the income multipliers generated by ES expenditure. The North West and West Midlands regions demonstrate the highest multiplier impact on the local economy, whilst the East of England is the lowest. This is likely to be a reflection of the higher income multipliers found for livestock in comparison to arable farms. Arable farms tend to source materials from greater distances. Livestock options also have a greater expenditure associated with them, particularly in relation to boundary activities.

Table 4.34: Employment Multipliers: All Schemes, by Region

All Schemes	40 Minute Drive time		60 Minute Drive time	
	Employment Multiplier		Employment Multiplier	FTE jobs/£m injection
East Midlands	1.11	2.42	1.12	2.42
East of England	1.35	0.73	1.41	0.76
North East	n.d.	n.d.	n.d.	n.d.
North West	1.55	2.00	1.61	2.08
South East	1.58	0.71	1.65	0.74
South West	1.17	2.16	1.19	2.19
West Midlands	1.22	2.18	1.23	2.20
Yorkshire and Humber	n.d.	n.d.	n.d.	n.d.

n.d. denotes no direct jobs reported in the survey.

Examining employment multipliers for the regions in Table 4.34 we can see that ES schemes are the most efficient at generating FTE jobs through direct, indirect and induced effects in the South East and North West. Multipliers of 1.58 and 1.55 compare to 1.11 and 1.17 in the East Midlands and South West, respectively. However, the highest number of jobs created per £m of scheme injection is in the East Midlands region (2.42).

Tables 4.35 and 4.36 contain an equivalent set of figures broken down by landscape type. The mainly livestock dominated landscape types show higher income multipliers compared to arable areas, 1.50 for Upland fringe areas, compared to 1.39 for Eastern arable areas, indicating a more efficient generation of economic benefits through indirect and induced effects. The Upland areas have the highest ‘scheme’ multiplier, reflecting greater direct expenditure in the local economy.

Table 4.35: Income Multipliers: All Schemes, by Landscape type

All Schemes	40 Minute Drive time		60 Minute Drive time	
	Income Multiplier	‘Scheme’ multiplier	Income Multiplier	‘Scheme’ multiplier
Chalk and Limestone	1.35	0.26	1.70	0.32
Eastern Arable	1.39	0.24	1.73	0.30
South East Mixed	1.37	0.29	1.68	0.35
Upland	1.41	0.48	1.71	0.59
Upland Fringe	1.50	0.23	1.76	0.27
Western Mixed	1.49	0.21	1.80	0.25

The Upland landscape type also appears to be most efficient at creating FTE jobs through direct, indirect and induced effects with an employment multiplier of 1.71. Despite a low employment multiplier, the highest number of FTE jobs created per £m of scheme injection is in the Western Mixed landscape type (2.73), where a particularly high number of direct FTE jobs have been created.

Table 4.36: Employment Multipliers: All Schemes, by Landscape type

All Schemes	40 Minute Drive time		60 Minute Drive time	
	Employment Multiplier	FTE jobs/£m injection	Employment Multiplier	FTE jobs/£m injection
Chalk and Limestone	1.26	1.30	1.29	1.33
Eastern Arable	1.31	0.82	1.34	0.84
South East Mixed	1.30	1.03	1.33	1.05
Upland	1.71	0.79	1.74	0.80
Upland Fringe	1.31	0.78	1.33	0.79
Western Mixed	1.18	2.73	1.19	2.75

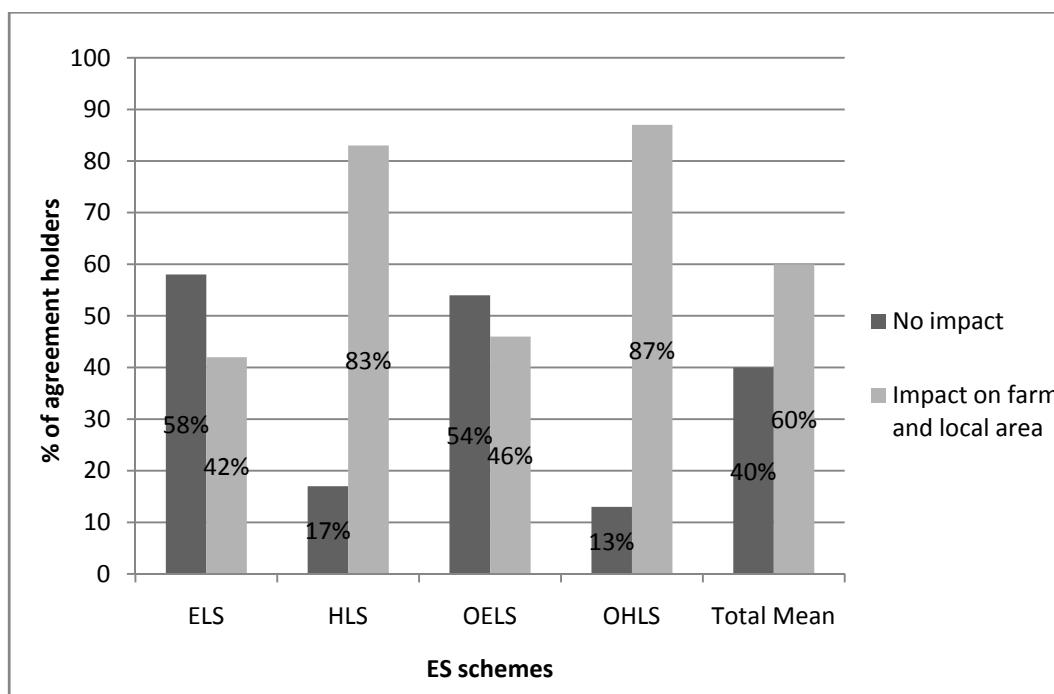
5. Social Impacts

This section of the report considers the social impacts of ES that go beyond the economic impacts identified in the previous section. The social impacts of ES can be understood through two lenses; what the landowner learns about conservation, the impacts of working with an official agency or how ES leads to contact with new networks of people. One relates to training and skills and knowledge development, the ‘know how’ or ‘know why’, the other is in the realm of ‘know who’, the forging of extra social contacts and new associations.

5.1 Skills and knowledge development

The literature review suggested that AES have contributed positively to the management skills base of farmers and increased their environmental knowledge, skills, and awareness. This view appears to be supported by the survey, particularly with respect to the higher level agreements.

Figure 5.1: Impact of ES on skills and knowledge development by scheme (%)



Interviewees were asked to identify the extent to which the scheme has impacted on their or their employee’s farms skills and knowledge base and also that of the local area. As Figure 5.1 shows a high percentage of HLS (83%) and OHLS (87%) agreement holders appeared to have gained skills and knowledge from joining the scheme. These respondents felt ES had been effective in increasing their general awareness and appreciation of

the environment, making them more conscious of the environmental impact of their management actions as the following quotes illustrate.

“I’m a better farmer for taking part in the scheme, it has forced me to think about the environment, particularly the soil”. (OELS agreement holder).

“It has increased my awareness of the farmed environment. The FEP survey found evidence of otters that no one was aware of”. (HLS agreement holder)

“The staff are a lot more aware of environmental issues now - they can see they have to do things in a certain way”. (ELS agreement holder)

The management plans had been particularly helpful for some in raising their awareness levels as the following quote demonstrates.

“Yes, the main impact has been with the manure, nutrient and soil management plans. I’ve learnt much using these plans and they’ve made me think more about what I’m doing” (HLS agreement holder)

Others also reported learning new management skills in terms of managing wetlands, woodlands, grassland and hedges, with some having to re-learn these skills as a result of arable conversions.

“I know a lot more about wetland and river management as a result of the scheme”. (HLS agreement holder)

“I know a lot more about managing farm land for birds. The different types of management required on different habitats at different times of the year”. (HLS agreement holder).

“The farm business had lost a lot of practical management skills during this generation. We can plough and reap cereals but not much else. Farm staff are having to re-learn a lot of practical skills such as hedge management and grassland management”. (HLS agreement holder)

Some had also increased their practical skills in, for example, fencing, pond clearing, and new stocking handling skills.

“We have had to learn new stock handling skills, managing the highland cattle is far less hands on than working with the sheep but requires a different set of skills. These skills have been passed on to me by my Father”. (HLS agreement holder)

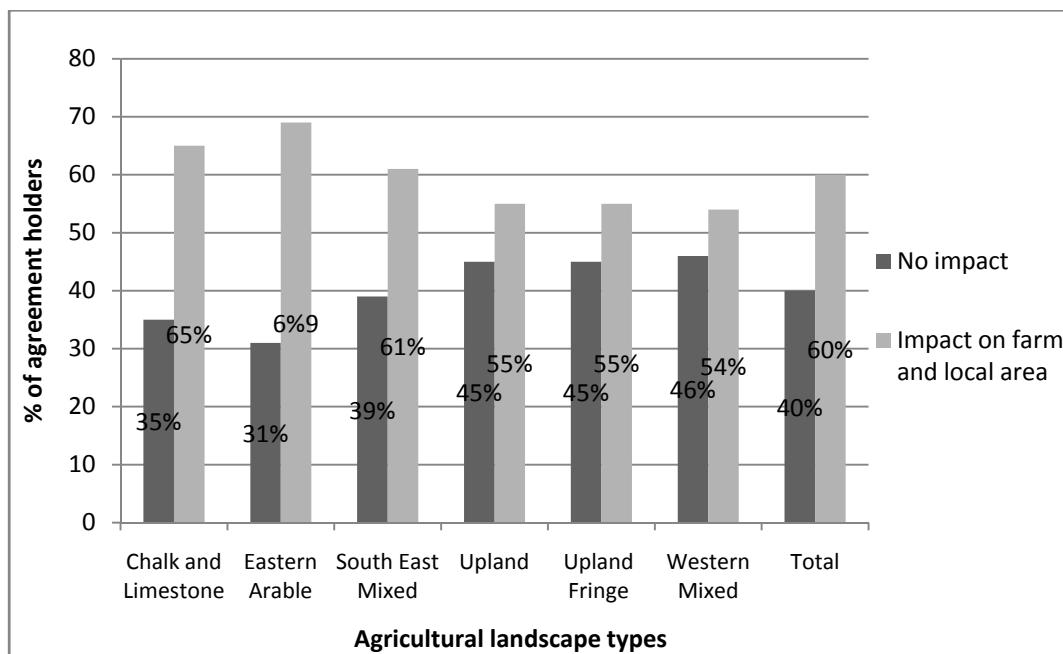
Those respondents who had undertaken educational access had learnt new skills in dealing with people, which were seen as rewarding and transferable.

"It's had a major impact on me. Made me much more aware of the need to protect wildlife and to engage with and educate public". (HLS agreement holder)

"I know a lot more about the wildlife and landscape features on the farm. Being part of the access option I have learnt more about children's education". (HLS agreement holder)

For those who reported no or little impact on skills and knowledge (40%), mainly ELS agreement holders, most felt they already had the skills required to implement their schemes. This suggests that the extent to which they had to change their established farming practices was small and therefore there was minimal opportunity for gains in knowledge or skills. As Figure 5.2 indicates this was particularly the case for livestock farming areas, where agreement holders already had the boundary, grassland and stock management skills required to implement their schemes.

Figure 5.2: Impact of ES on skills and knowledge development by landscape type (%)



Looking more specifically at the skills and knowledge impact on the local area, the majority felt there had been little or no impact on the local area and that many farmers were still sceptical about the schemes. For those who responded positively, some had hosted farm visits which were considered effective in raising local awareness. Some reported retention

of general boundary, woodland and stocking management skills in the local area as a result of ES and suggested that contractors were more aware of the scheme requirements.

“Our contractors (hedge cutters) realise there is a different way of doing things. People on walks are now aware in a small way”. (HLS agreement holder)

During the face-to-face interviews agreement holders were asked to what extent there is transferability of skills from schemes to other projects/areas of farm work. Of those that responded, most of whom were HLS agreement holders, 44% felt that there was transferability of skills. They tended to apply the scheme management principles when carrying out other tasks around the farm, this applied particularly to field operations, such as cultivation of field edges, spraying and chemical usage, drilling and the timing of field operations as the following quotes illustrate.

“Yes, have been able to take the lessons across the whole farm, I hate to say it but the whole farm is much more sustainable than it was before. We are using 20% less fertiliser across the farm as a whole”. (HLS agreement holder)

“Yes, there is overlap. I think about biological pest control now, I’m very conscious of buffer strips and pest control”. (ELS agreement holder)

“We are a lot more careful about what sprays and chemicals we use. Much more aware of the wildlife. If we come across an animal or bird nest we can go and put it somewhere. We put baskets over eggs when spraying (lapwing)”. (HLS agreement holder)

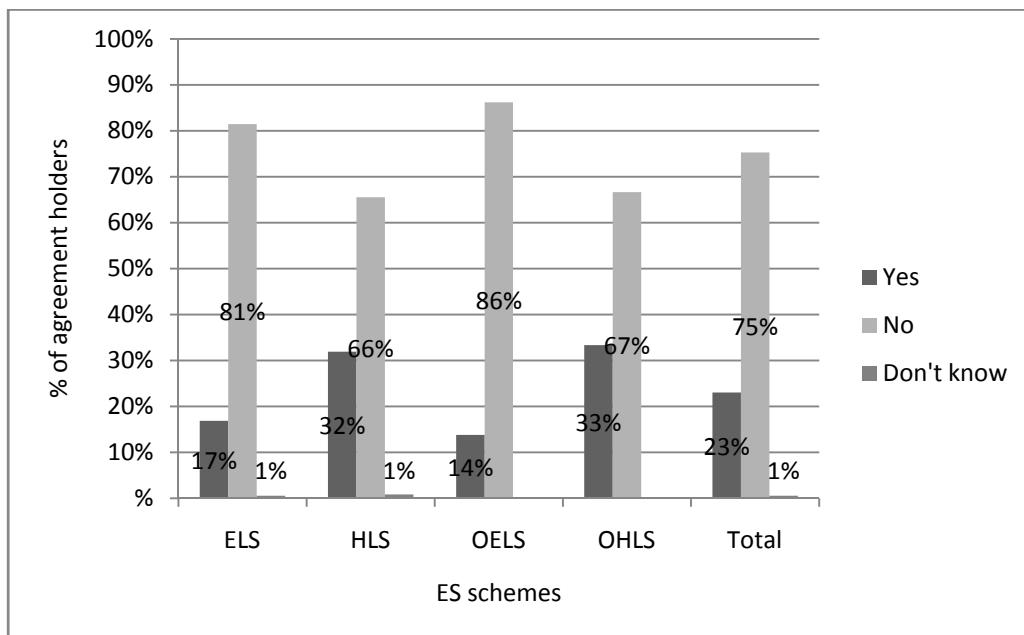
Some also commented on the social skills developed through the access options which are considered transferable to other areas of work.

5.2 Training

As Figure 5.3 shows around a quarter of respondents or their employees had received some training or attended open days as a result of signing up to the scheme. This was particularly the case for those in HLS schemes with around a third having received training. A large number of these had attended open days, such as those run by Natural England or FWAG or attended more specialist meetings, such as Catchment Sensitive Area or grey partridge meetings. Others had undertaken training courses to develop specific skills, such as hedge laying, stone walling and or attended management courses for soil, orchards, buffer strips, wetlands, grassland weed control. The educational access options had prompted some farmers to attend courses specifically designed for dealing with the public with training under the Countryside Educational Visits Accreditation Schemes (CEVAS). Some agreement holders who had taken up bird options

(upland and lowland) had joined bird groups (BTO, RSPB) to learn more about the species they were creating habitats for. Some already had a passive interest and joining ES had prompted them to be more active, this involved attending courses to learn more about species and taking part in bird recording programmes.

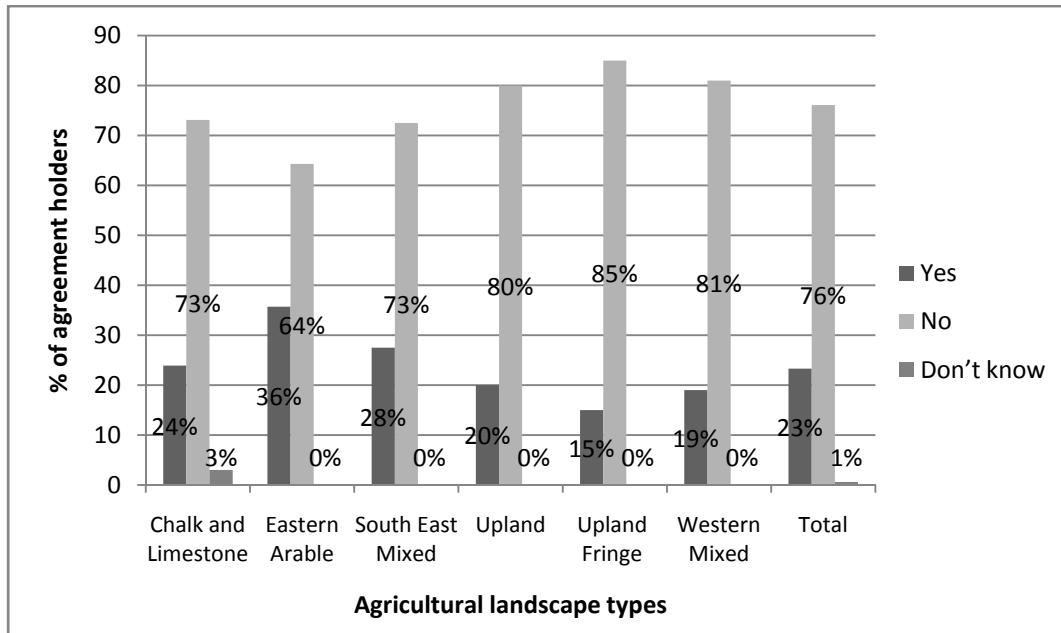
Figure 5.3: Attended training course or open day as a result of ES by scheme



As Figure 5.4 shows the agreement holders in the arable landscape areas were more likely to attend a training course or open day than those in livestock areas. This pattern correlates with those that thought the schemes had had a positive impact on skills and knowledge (Figure 5.2). This possibly reflects the more demanding nature of the arable options where agreement holders are required to do more than their usual farming practices.

Training was also undertaken by the local businesses surveyed. A number of organisations, notably FWAG, have invested a large amount in training to deliver ES scheme advice. Seventy-eight per cent of advisors compared to 32% of contractors reported having undertaken training to assist in delivering business activities for ES. A number of stone wallers in upland areas had undertaken training programmes specifically to meet the demand of ES.

Figure 5.4: Attended training course or open day as a result of ES by landscape type



5.3 Social interaction

The survey suggests that ES can play an important part in developing new social contacts and networks. There is considerable and sustained evidence to demonstrate benefits from contact with different groups or networks of people. Whereas familiar networks can provide reassurance and affirmation, new people bring with them novel flows of information and perspectives. For farming families their networks tend to be characterised by a small, stable group of people with whom they have frequent contact. This group can provide the stability to sustain the farm business, but it can also have profound social consequences in terms of well-being and the operation of a land based business. Narrow or small social networks can leave families isolated, particularly if a key person is absent or normal communication is disrupted. It also means that business decisions are made in the context of a limited range of information. Involvement in a scheme can lead to novel contacts being made, and with them a broadening of the social networks of the business and the family.

The importance of these new contacts is apparent in the question about the recruitment of contractors and advisors to work on the scheme. As Table 5.1 shows most (78%) of the contractors engaged to carry out work on the scheme were known to the agreement holder before their entry into the programme. This suggests that they turned to those people whom they knew could conduct the work, and that most of these tasks do not demand specialist skills or knowledge. In sharp contrast, 40% of the advisors used by the agreement holders were not known to them previously, this

indicates that the agreement holders had to reach out beyond the established social networks around their farm or business for this expertise.

Table 5.1: Contractors and advisors known to agreement holders before ES by scheme

	ELS (%)	HLS (%)	OELS (%)	OHLS (%)	Total mean (%)
Contractors					
Yes	77	80	78	77	78
No	14	20	0	23	15
Don't Know	9	0	22	0	7
Advisors					
Yes	55	28	6	11	60
No	23	62	7	10	40
Don't Know	0	0	0	4	0

The group that had to push most beyond their normal networks were those in the HLS scheme, 62% of those people who did not know their advisor beforehand were taking part in the HLS. The next largest group were those taking part in ELS, comprising 22% of those who did not know their advisor. If we consider this by farm type in Table 5.2 then those farmers who are mainly dairy or lowland livestock were those who most frequently had to find an advisor from outside of their established networks. In contrast those who searched outside of their networks least were the organic farmers. This suggests that for many entering the HLS scheme, and to a lesser degree the ELS, their established support networks could not encompass the demands for environmental information required by the scheme. Entering the scheme brought a new range of actors into the circle of advice and influence over the management of the land.

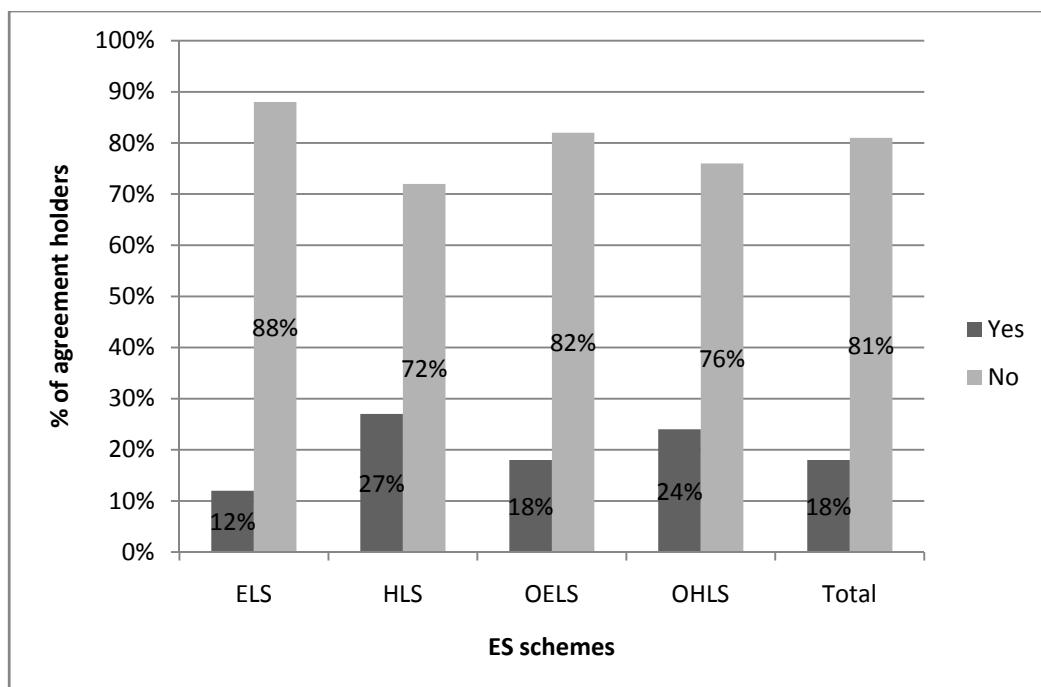
Table 5.2: Advisors known to agreement holders before ES by farm type

		Mainly arable	Mainly dairy	Grazing livestock (lowland)	Grazing livestock (LFA)	Mixed	Horticulture Pigs/poultry	Total
Yes	Nos. (%)	38	6	30	24	37	4	139
		69	40	46	69	64	100	60
No	Nos. (%)	17	9	35	11	20	0	92
		31	60	54	31	35	0	40
Don't know	Nos. (%)	0	0	0	0	1	0	1
		0	0	0	0	2	0	0
Total		Nos. (%)	55	15	65	35	58	232
			100	100	100	100	100	100

Note: some of the farm types have small numbers so figures should be treated cautiously.

The qualitative information alongside these responses suggests that for many agreement holders they turned to those they already knew and trusted –[we] ‘just knew of them’ or ‘Agent, known to family and locally based’ – were typical of these responses. Other responses reveal how the search was conducted, and how the circuits of recommendation operated. The first port of call was to ask a known associate for a contact, ‘Word of mouth, a local’, neighbours and friends were used to find an advisor. Next were those who already provided some advice, and might have access to a contact ‘from XXXXX. This is our land agent and the valuer suggested a colleague’ and ‘Agromonist known previously - received informal advice over cup of coffee’. The diversity of these more formal contacts is striking ranging from auctioneers, input suppliers, output purchasers, conservation bodies and statutory agencies. As is the use of those who have expert knowledge and would provide it for free; relatives working in conservation, or neighbours who had filled in their own forms were mobilised. It is evident though that even though landowners may have used their ingenuity and opportunities to find advisors many of them had to turn to new people.

Figure 5.5: Joined discussion group as result of ES, by scheme

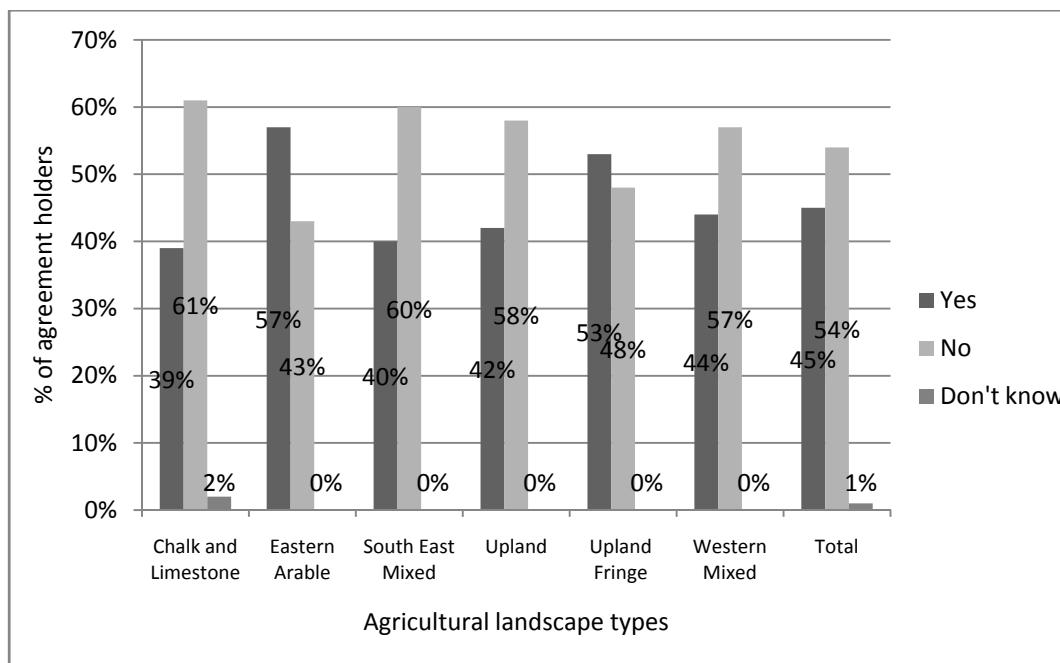


Discussion groups have long been a mainstay of transferring knowledge to, and between, farmers and landowners, with the exception of those renting land, as well as a way of navigating the management of innovative practices. As Figure 5.5 shows the majority of participants had not joined a group because of the scheme, 88% in the case of the ELS, which may be the lack of a group to join or the feeling that it was un-necessary in order to fulfil the criteria. Those taking part in the OELS and the OHLS schemes had joined groups because of it, 18% and 24%, respectively. Those in the

HLS had been moved to joined groups more than any other category (27%). Research has shown that organic farmers are more likely to join groups and also be more adept at gathering information, but the finding for the HLS is striking. This suggests that the demands of the scheme are leading to those farmers finding a common cause and sharing their experiences. It may also reflect the targeted nature of HLS which has meant that local groups and forums have been established in order to encourage farmers' entry into the scheme.

It is interesting to note in Figure 5.6 that the agreement holders in the Eastern Arable area of the country were more inclined to engage with discussion groups than other areas. It seems that the arable and mixed farms in these areas were more interested in learning about the environment, required more support as the options were more outside their usual farm management practices, or perhaps had more time available to attend such groups.

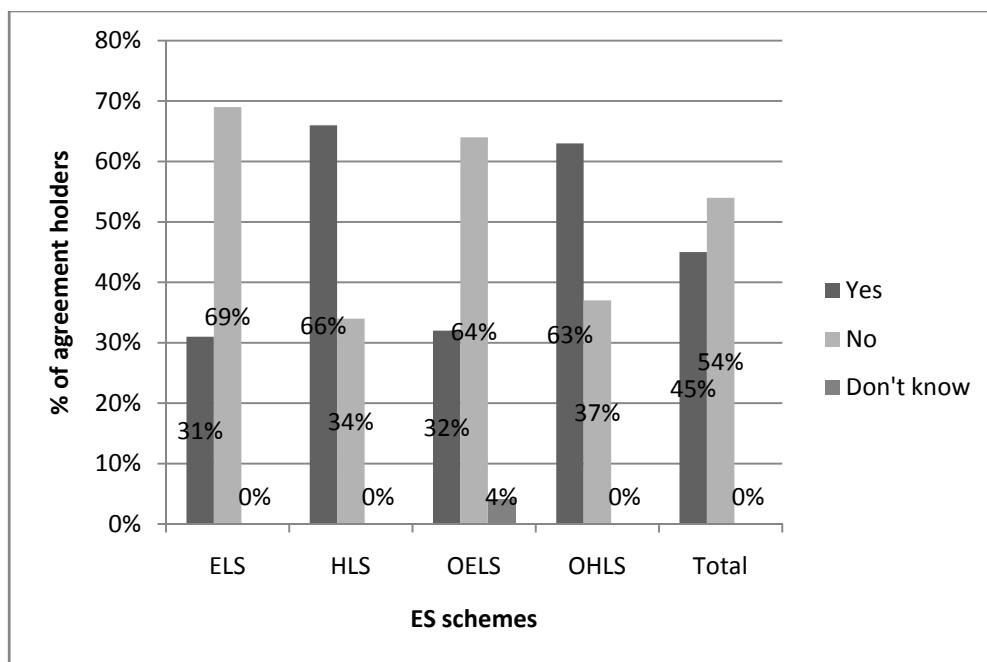
Figure 5.6: Joined discussion group as result of ES, by landscape type



When asked as to whether they were in contact with more people through the scheme, outside of the formality and regularity of a group, the widening of the contacts was more pronounced. As shown in Figure 5.7 of those participating in the ELS 31% reported more contact with other farmers and/or members of the public, this doubled with those in the HLS at 66%. The organic schemes demonstrated a similar pattern with 33% in the OELS reporting increased contact and 63% in the OHLS. This is particularly striking as many of those in the higher schemes had already participated in CSS and other agri-environmental schemes. This difference between ELS and HLS schemes may be due to the targeted

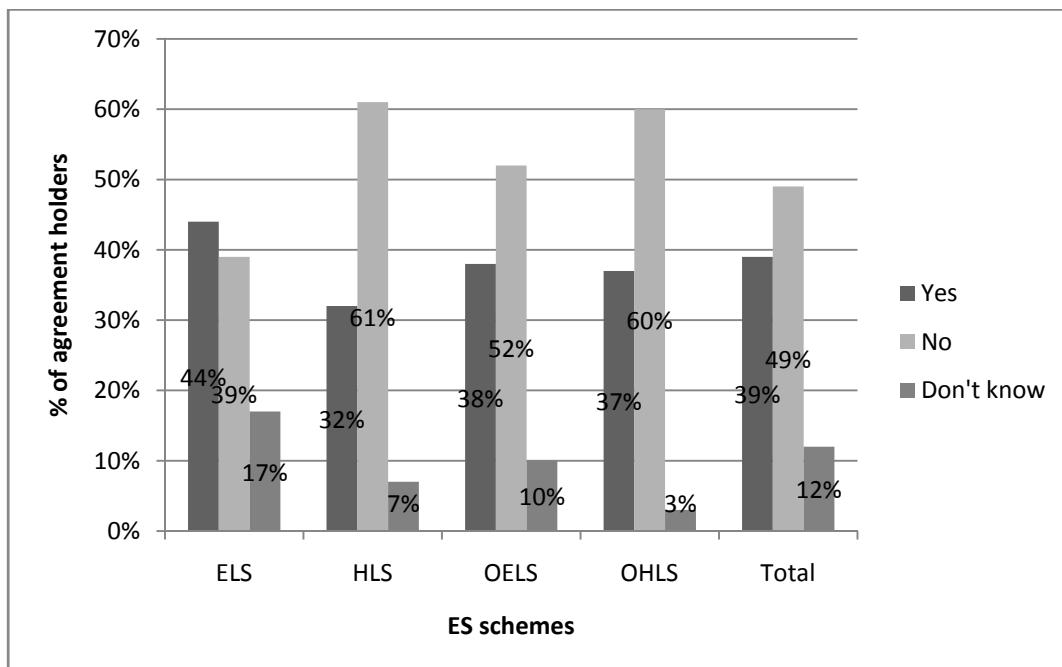
nature of HLS schemes which meant that more local groups or forum have been established to get farmers on board. Increasingly it appears that in a period where long established farms are disappearing and farmers are becoming more isolated (loneliness was mentioned by some as an issue) the social contact prompted by scheme membership (hosting or going on farm walk, meetings to discuss options) was valued. In the upland areas in particular, farmers often talked about the scheme officers as friends as well as professional colleagues. Frequent comments were made about how they wanted to see more of their project officers, which seemed to include more than just for project advice. Perhaps in a time when farmer social contacts were declining, contact with project officers is becoming more important.

Figure 5.7: Increased contact with other farmers or general public due to ES



The mechanism for contact with the public would appear to be educational links either through visits to schools or parties coming to the farm. The qualitative responses alongside these answers suggest that members of the public with an interest in conservation, particularly ornithologists, play an important role in these contacts. Walkers are an important category of contacts, but also the only ones who attract criticism, as they walk over some of the new conservation areas. A number of farmers who had chosen access/education options mentioned that they enjoyed meeting the public and school children. This seemed to come as a surprise to some who had not expected to get that much personal reward out of the options. One farmer talked about how he had grown in confidence as a result of having to talk to the public - "I have the confidence now to deal with different types of people" (HLS agreement holder).

Figure 5.8: General publics' increased awareness of farmer's role in ES



This contact with the public may inform the next question as to whether 'the general public is aware of the role that farmers have in preserving wildlife and the countryside through agri-environmental schemes'. The results suggest a divergence from the earlier answers, as those in the HLS believe that their peers have the least understanding of the role of farmers (32%) (see Figure 5.8). Those in the ELS have the most confidence in the general public understanding their role (44%), but have had least extra contract with people because of the scheme. It may be the form of that contact that is influencing this figure, as the organic schemes (OELS 38%, OHLS 37%) mark the midway. The HLS participants have educational agreements, and explaining to educational parties may influence how much the participant's feel others know. The question produced a wide range of responses. There were those who said that farmers were a misunderstood and maligned group and that the public was largely clueless about what went on in the countryside. While others thought that certain sections of the public, those who knew about or visited the countryside, were well aware of the role of farmers in managing the countryside

These changes to those people that are within the knowledge networks of the landowners suggest divergent routes through the scheme and so a differentiated social impact of these initiatives. For some participants, a majority in some schemes, they do not have to reach beyond their established network of advice, either formal or informal. Therefore the flows of information into their business and lives remains unchanged, some whilst there may be changes to their 'know how' and 'know what' but their

'know who' remains static. A minority have to reach beyond the boundaries of their 'know who' and these people are particularly in the HLS scheme, and those in dairy or lowland farming who enter a variant of the scheme. From other studies we know that these new linkages and flows of information can lead to profound changes in social and business activity. The schemes can therefore either re-enforce the existing networks of farmers or open the opportunity for change.

The influence on organic farmers points to the pattern being about more than pro-environmental dispositions, as organic farmers have already signed up for a series of environmental restrictions. Yet, they show a differentiated social impact with regard to the scheme, with those in the higher-level schemes demonstrating a similar increase in group membership and contact with the public/other farmers as those in the HLS scheme. Given that we can assume that organic farmers tend to be younger and more highly formally educated, we can postulate that it is mechanisms with the scheme and adoption of the scheme itself, particularly the higher levels, that is leading to the widening of these networks and increased social footprint of the farm. Counter-posed to this is that for a numerical majority in the ELS scheme, the social impact of scheme participation is minimal.

5.4 Other benefits of ES

The interviews also explored further benefits of the scheme to the farm or to the future of the farm business

A number of agreement holders felt that ES had complemented and in some cases enhanced their on-farm diversification activities. Several examples were given of the use of the wild bird cover options to improve the commercial game shoot experience on the farm. Others had used ES to help market their products. One respondent who sells meat at the farm gate mentioned advertising his scheme on their marketing board as it "sounds good" to the general public and perhaps helps sales. Another, who supplied directly to a supermarket, had entered ELS because it was one of the supplier criteria used by the supermarket.

Some respondents, particularly hill farmers and those in remote areas of the South West, valued ES for the regular income²⁷ it provided. The payments helped to stabilise income and offered the security of a regular income twice a year. The payments also made it easier to budget for lean months and the 10 year time horizon helped with financial planning. Although not designed to fulfil this role, the scheme seemed to be supporting vulnerable family farming businesses in areas that are heavily dependent on agriculture. The incomes of these farms were obviously low

²⁷ ES payments are based on income forgone. They replace lost income and are not additional income. A farmer however may describe it as "income".

with the money from the scheme becoming part of the pot of money that keeps the farm going and they tended to talk of the payments as contributing to a fraction of a person's wage. Their commitment to the farmed environment was wrapped up in the importance of the schemes funding to their income, and certainly without the payments they would be farming differently.

Some saw ES as improving the capital value of the farm through improvements to boundaries and woodland and one tenant farmer felt that ES had helped to secure his tenancy as the landlord valued the scheme.

A number of respondents mentioned how well the scheme fitted in with the farm business or the direction in which they were planning to take farm business. The scheme was seen in some instances to help the running of business by simplifying farm management, improving functionality and helping to comply with the cross compliance requirements.

Several HLS respondents also expressed personal satisfaction and a sense of enjoyment from ES participation. It had given them a "sense of pride" in their work, had provided a "feel good factor" and had given them a "platform to preach from" As one agreement holder put it:

"We have more pride in what the farm looks like- we are no longer just an arable farm growing crops - we can take the public around and show them things like wildlife".

Finally, it was suggested that ES was crucial to keeping the presence of livestock in some areas, particularly in the upland and lowland marsh areas. Without the schemes, some of the lowland marsh areas would have been converted to arable. This would have led to a loss of livestock and consequently a loss of the ancillary livestock industries in the area, such as the livestock markets, abattoirs and stores.

To further illustrate the benefits of ES scheme four scheme case studies are presented in Appendix 8. These case studies reflect the range and scale of incidental/socio-economic benefits as a result of ES schemes.

6. Conclusion and implications for policy change

This section presents conclusions based on the data collected and analysed during the study and identifies some implications for policy.

6.1 Local Income effects of ES

National level analysis:

At the national level the derived income multiplier for all the Environmental Stewardship schemes is 1.42. Thus, a £1 expenditure on ES activities could be said to result in a total output in the 40 minute local economy area of £1.42. Extending the local boundary to a 60 minute drive time zone from agreement holders, the income multiplier for all ES schemes is 1.73.

At the national level the ‘scheme’ multiplier for all Environmental Stewardship schemes is 0.26. Thus, for every £1 of ES scheme payment that goes to the agreement holder, £0.26 is generated off-farm in the local economy through direct expenditure and indirect and induced effects. Applying this multiplier to the annual value of ES scheme payments in 2009 of £249.0m, reveals that £64.7m was generated in the local economy for this period as a result of ES activities.

80% of ES expenditure by agreement holders is spent locally (within 40 minutes). Also 45% of the purchases made by contractors, suppliers and advisors is sourced locally. Thus much of the employment and income generated by ES is retained locally with only a relatively small leakage of ES expenditure out of the local economy. Some of this expenditure is on supplies outside the country and ways to encourage the use of local provenance materials, such as timber, seeds and tree root stocks, through ES schemes should be considered to reduce leakage from the national economy.

The research results confirm for the first time at a national scale that the incidental benefits of ES have a significant impact on the local economy. Due to the nature of ES requirements, much of the income and employment benefits are retained locally. This appears to be a particular characteristic of agri-environmental activities undertaken by the agricultural community.

The research also found that in the absence of ES scheme payments a large proportion of the scheme work would not have been undertaken, particularly for HLS schemes where 79% of ES activities would not have taken place in the absence of the scheme. The contribution of ES scheme funding is, therefore, vital to ensuring that wildlife, landscape and historical features are created, restored and maintained and continues to benefit the social and economic landscape of the English countryside.

Scheme level analysis:

The income multiplier for HLS agreements is 2.23 and is higher than the income multiplier for ELS agreements of 1.29. This is largely because HLS agreements contain capital item options which require greater expenditure in the local economy. To produce the wider socio-economic value to the local economy, ways to encourage the uptake of capital items should be considered.

Comparison of organic and non-organic schemes reveals a higher income multiplier for organic of 1.49 compared to 1.41 for non-organic schemes. Scheme expenditure on goods and services for organic schemes is sourced more locally than non-organic schemes.

Analysis by farm type:

Lowland livestock farms generate the highest income multiplier of 1.50. The livestock schemes contain a high proportion of boundary options which produce a high income multiplier. Also more income has been retained in the local economy for these farms through sourcing a greater proportion of supplies and contractors locally.

Agricultural Landscape level analysis:

The Upland Fringe and Western Mixed landscape types generate the highest multipliers of 1.50 and 1.49, respectively. This largely reflects the predominance of livestock options in these areas which produce higher income multiplier effects.

Regional level analysis:

The highest multiplier impacts on the local economy were for the mainly livestock dominated North West and West Midlands regions, with income multipliers of 1.48, whilst the arable dominated East of England produced the lowest income multiplier of 1.33.

Analysis by agreement value:

Those agreements with a value of between £50,014 – £148,524 produced the highest multiplier of 1.44. The higher value agreements will have both more complex options and a greater number of options, thus requiring more help in implementing their agreement and greater expenditure on materials.

Option group level analysis:

The option group generating the highest income multiplier was the HLS boundary group (HB). This reflects the high proportion of capital items in this option group, such as those associated with fencing and hedgerows which are popular options and require the use of contractors and the purchase of materials.

Income effect on local businesses:

Seventy per cent of the surveyed businesses reported some increase in turnover as a result of the schemes. For about a quarter of these

businesses, mainly stone wall contractors, tree nurseries and advisors, the impact on turnover was high (more than 50%). This suggests that some suppliers, contractors and advisors are far more engaged with supplying ES goods and services and are more dependent on the continuation of ES to remain viable. The demise of such schemes may mean that such businesses cease trading and traditional rural skills are lost.

6.2 Local Employment effects of ES

National level analysis:

At the national level the local employment multiplier derived for all schemes is 1.25. This suggests that ES schemes are fairly efficient at generating positive local employment impacts through subsequent rounds of industrial support. Also 1.32 FTE jobs were created for every £m of initial scheme injection.

Accounting for direct, indirect and induced effects, ES schemes have created around 665 new full-time equivalent (FTE) jobs in the local economy over the study period (2005-2009). Of these, 530 FTE jobs have been generated through direct effects, i.e. direct employment of farm workers, contractors or advisors as a result of the increased workload generated by the ES schemes.

On average over the sample only 0.015 additional FTE jobs were created in the local economy per agreement holder, which suggests farms were able to absorb much of the additional workload generated by the scheme without recruiting additional staff. This implies that farm staff on these agreement holding were largely underemployed. Thus it appears that ES is more important on the agreement holdings for job *retention* rather than job *creation*. In some areas where farm underemployment is widespread, ES appears to have been important in retaining family members and farm employees on the farm. This has important policy implications at a time when farm employment is contracting

Scheme level analysis:

HLS schemes generated the highest employment multiplier of 2.48, and the highest FTE jobs created/£m scheme injection of 2.21, reflecting the more demanding nature of these schemes and the greater requirement for the use of contractors and supplies compared to ELS. However, ELS has the largest aggregate employment impact nationally, generating 478.9 FTE jobs at the local level through direct, indirect and induced effects over the study period of which 413.9 FTE jobs are generated directly. Thus, although ELS has a low multiplier and is less efficient at generating jobs through the second and subsequent rounds of industrial support, due to its prolific take up it has generated a significant number of jobs through direct employment on the farm.

Landscape level analysis:

The Upland landscape type also appears to be most efficient at creating FTE jobs through direct, indirect and induced effects, compared to 1.18 for Western mixed landscape type. Despite the low employment multiplier the Western mixed area generated the highest number of FTE jobs created per £m of scheme injection (2.73, due to the creation of a particularly high number of direct FTE jobs.

Regional level analysis:

ES schemes are the most efficient at generating FTE jobs through direct, indirect and induced effects in the South East and North West. Multipliers of 1.58 and 1.55 compare to 1.11 and 1.17 in East Midlands and South West, respectively. However, the highest number of jobs created per £m of scheme injection is in the East Midlands region (2.42).

Analysis by farm type and agreement value:

Examining differences in employment multipliers between farm type and agreement value reveals that schemes on mixed farms are most efficient at generating indirect employment (1.45) and those where the agreement value is highest (2.63). These larger schemes are likely to have a significant amount of capital works and therefore require greater use of contractors and farm help.

Employment effect on local businesses:

The advisors created an average of 0.13 new FTE jobs per business in the local economy to meet the demands of the ES schemes and an average of 0.1 FTE jobs per contractor business was created. These existing businesses were able to absorb much of the additional demand for their services without recruiting additional staff. This suggests that these businesses were underemployed and/or a relatively large number of them existed in the study area to absorb the new business.

In addition to the tangible financial benefits of the schemes, agreement holders and contractors cited the extra security and stability that the schemes provided to the business. This in turn has improved the security of employees' jobs. Conversely, some advisors felt less secure about the future, recognising the potentially short-term nature of ES funding.

6.3 Comparison of ES multipliers with other studies

Due to the different methods used in calculating the multipliers, it is inappropriate to compare the ES multipliers identified by this study with the earlier studies identified in Tables 2.2 and 2.3. For example most of these earlier studies only calculated Type 1 multipliers (Direct+indirect/Direct). Also the sizes of the areas defined as the 'local economy' are different which can affect the magnitude of the multiplier figure. The most comparable studies are those produced by Edwards *et al.* (2005) and Courtney *et al.* (2007) which looked at the local economic multiplier effects of grants for the restoration of historic farm buildings and restoration of

stone walls in the Lake District National Park and the Yorkshire Dales National Park. These studies identified the direct, indirect and induced effects on the local economy and also accounted for additionality. The multipliers were calculated in the same way as Multiplier B and the ‘Scheme’ multiplier in this study. Thus pound for pound it is possible to compare these multipliers, although the boundary demarcation for the local economy was the National Park boundaries, rather than a 40/60 drive time boundary. Table 6.1 shows that the Scheme multiplier for HLS is comparable to the Edwards and Courtney studies which looked at the impact of grants for capital items. The ELS scheme multiplier is substantially lower, reflecting the absence of capital grants in this scheme.

Table 6.1: Comparison of ES income multipliers with other studies

Source	Initial injection (£m)	Area	Income effects (£m)				Multiplier B	Scheme multiplier
			Direct	Indirect	Induced	Total		
ES all schemes (40 mins)	504.8	England	46.8	51.0	32.2	130.0	2.78	0.26
HLS (40 mins)	90.3	England	45.9	56.6	27.0	129.5	2.82	1.43
ELS (40 mins)	347.0	England	20.0	17.8	16.0	53.8	2.69	0.16
Edwards, R. et al. (2005) ESA Traditional Farm Building repair agreements	6.46	Lake District	3.41	3.64	1.45	8.5	2.49	1.32
Courtney, P. et al. (2007) Grant-funded farm building restoration	2.81	Yorkshire Dales	2.18	1.3	0.11	3.58	1.65	1.28
Courtney, P. et al. (2007) Grant-funded traditional drystone wall restoration	1.9	Yorkshire Dales	1.89	1.6	0.15	3.63	1.92	1.91

Similarly, when looking at the employment effects only Edwards *et al.* (2005) and Courtney *et al.* (2007) considered the induced effects as well as the direct and indirect employment effects.

Table 6.2 provides a comparison of these studies with ES employment multipliers and shows that the FTE jobs supported per £m of initial injection is lower for the ES schemes compared to the grants specifically for traditional farm building repairs and drystone wall restoration. This is because these two activities are extremely labour intensive and require specialist schemes and only form a small part of the overall HLS scheme.

Table 6.2: Comparison of ES employment multipliers with other studies

Source	Initial injection (£m)	Area	Employment effects (FTEs)				Multiplier	FTE jobs supported/ £m initial injection
			Direct	Indirect	Induced	Total		
ES all schemes (40 mins)	504.8	England	530.2	74.6	60.5	665.3	1.25	1.32
HLS (40 mins)	90.3	England	93.3	88.4	18.2	199.9	2.14	2.21
ELS (40 mins)	347.0	England	413.9	21.5	43.5	478.9	1.16	1.38
Edwards, R. et al. (2005) ESA Traditional Farm Building repair agreements	6.46	Lake District	15.0	8.4	2.3	25.7	1.71	3.98
Courtney, P. et al. (2007) Grant-funded farm building restoration	2.81	Yorkshire Dales	7.0	2.9	1	11.0	1.56	3.48
Courtney, P. et al. (2007) Grant-funded traditional drystone wall restoration	1.9	Yorkshire Dales	13.1	1.2	1.4	15.7	1.2	5.73

6.4 Social benefits of ES

Human capital - skills and knowledge development:

Participation in ES schemes has contributed positively to the management skills base of farmers and increased their environmental knowledge, skills, and general awareness of the environment when managing the farm. In particular, HLS agreement holders who have had to make changes to their established management practices have benefitted in this way.

ES has had a greater positive impact in terms of skills and knowledge development on arable agreement holders than other farm types, and these agreement holders were also more likely to have attended a training course. This may reflect the more demanding nature of the arable options where agreement holders are required to do more than their usual farming practices.

Forty-four per cent of mainly HLS agreement holders felt that there was transferability of skills from ES schemes to other projects/areas of farm work. They tended to apply the scheme management principles when carrying out other tasks around the farm, this applied particularly to field operations, such as cultivation of field edges, spraying and chemical usage, drilling and the timing of field operations.

Around a third of the sampled HLS agreement holders had attended training courses or open days as a result of ES scheme membership. They attended courses to learn practical skills, such as hedge laying, drystone walling and management skills for specific habitats. In addition, a number of contractors and advisors also sought new knowledge and skills through training courses.

The educational access options in particular have prompted some farmers to attend courses specifically designed for dealing with the public. They gained valuable and transferable skills in communicating with the general public and with children.

Social capital - social interaction benefits:

ES can play an important part in developing new social contacts and networks. Of the advisors used by agreement holders, 40% were not known to them previously, which indicates that these agreement holders had to reach out beyond the established social networks around their farm or business for this expertise. This was particularly the case for HLS agreement holders and for the lowland dairy and livestock farms. Entering the scheme brought a new range of actors into the circle of advice and influence over the management of the land. These new linkages and flows of information can potentially lead to profound changes in social and business activity. The advisory not-for-profit organisations also saw the schemes as a useful mechanism for reaching new farmers with whom they had previously had no contact.

ES schemes have brought agreement holders in contact with more farmers and the general public. It appears that in a period of increased isolation the social contact prompted by scheme membership (hosting or attending farm walks, meetings to discuss options, advisor visits) is greatly valued. Natural England and other organisations should continue to promote such events as open days and farm walks to fill a social vacuum in the agricultural community.

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Appendix 1: Literature Review

The aim of the literature review is to critically examine relevant work relating to the socio-economic benefits of agri-environment schemes in terms of approach, methods and findings.

The literature search encompassed two main types of publication: journal articles and specialist research. Within these the review aimed to draw out the main methods and findings.

The review is divided into two sections. The first focuses on studies which have explored the economic impacts of agri-environment schemes and in particular the use of the New Economic Foundation's Local Multiplier 3 (LM3) model. The second section examines the evidence for the social and human capital benefits of agri-environment schemes.

Throughout the review the aim was to consider the socio-economic benefits of agri-environment schemes empirically and methodologically; the ultimate aim being to inform the current research project which is estimating the incidental socio-economic benefits of Environmental Stewardship Schemes.

Economic Impact Studies of Agri-Environment Activities

Whole schemes

ADAS (1997) Evaluation of the Hedgerow Renovation Scheme in Wales

The focus of this study was to assess scheme compliance together with an assessment of the effects of the scheme on wildlife, landscape and historic features. The study also provided a general non-quantitative assessment of the socio-economic effects of the scheme. A random sample of 100 agreement hedges was chosen and then face-to-face interviews were carried out with agreement holders.

The survey of agreement holders found that there had been a 232% increase in the number of days spent on hedging operations using farm labour. The study found that the scheme had created additional employment on 12 holdings, but it was not possible to quantify the number of actual jobs created. The study also looked at the effect of the scheme on the local economy in terms of the use of contractors and suppliers. In total, the 100 agreement holders had purchased services and supplies from 50 businesses. Of these, almost all were classed as 'small, local businesses'. It was not possible to quantify the benefits to local businesses, but the study concluded that 'a very large proportion of the £1.27m payment to date of the scheme must find its way into the local economy, either directly to local businesses, or more diffusely through wages and labour changes' (ADAS, 1997).

Harrison-Mayfield et al. (1998) The socio-economic effects of the Countryside Stewardship scheme

Harrison-Mayfield et al.'s study considered the socio-economic effects of the Countryside Stewardship (CS) scheme. The main objective of the study was to estimate the effects of the scheme upon income and labour use on-farm and upon local incomes, jobs and local communities. The study used national and regional input-output models to estimate the national and regional employment impact of CS, and also adopted a 'spatial tracking' technique²⁸ (see Harrison 1993 for details) to identify the location of any employment impact. A 46% response rate was achieved from the postal questionnaire sent to 1,000 CS agreement holders stratified by geographic area, scheme value and scheme type. More detailed information on the location of agreement holder purchases and sales was gathered through 12 face-to-face interviews in three case study areas. In addition, 30 interviews with local businesses were undertaken (10 in each case study area) to provide further information on the local impacts of the scheme.

The net impact of the scheme on labour employed directly on the farm was small. However, joining CS resulted in a marked increase in the use of contractors and advisors. The study found that a significant part of increased employment created by CS was related to capital works while the negative effects generally related to extensification of management. It was estimated that in 1994 around 220 Full-Time Equivalent (FTE) jobs had been created by CS work. The study found that in terms of inputs and outputs, changes on farms were influenced to a greater extent by management changes than by capital spending. Just over a quarter (27%) of agreement holders reported a change in household income with 60% of these indicating a positive change. The results of the input-output modelling of indirect effects showed a small net positive employment impact with a net increase of 31 FTE farm-related jobs. It was estimated that £5.7m had been spent on contractors, of which the direct and indirect impact created 391 FTEs and this increased to 448 FTEs once the induced effects were taken into consideration. The total input effect was, therefore, 479 FTEs. The 'spatial tracking' exercise conducted on the case study farms showed little change in the patterns of input purchasing and output sales before and after joining CS.

Crabtree et al. (2000) Socio-economic and agricultural impacts of the Environmentally Sensitive Areas Scheme in Scotland

As part of a broader study on the socio-economic and agricultural impacts of the ESA scheme in Scotland, Crabtree et al. (2000) also investigated the local income and employment effects. Keynesian multiplier analysis and spatial tracking techniques were used to estimate the local income and employment effects of each of the 10 ESAs in Scotland over a one-year period. Face-to-face interviews were conducted with 505 farmers stratified

²⁸ Spatial tracking involved the measuring the size and spatial distribution of first round transactions (sales, purchases and employment) by farmers in the local, regional and national economy.

by ESA and whether or not the farmer had joined the scheme. This was followed by telephone interviews with 58 contractors and firms, identified from the farm survey, to provide additional information for the spatial tracking and multiplier analysis.

The study found that over a period of a one year ESA scheme household incomes increased by an average of £3,359 and this had implications for off-farm expenditure. The conservation-related investment produced a demand for upstream inputs and services, such as fence posts, grass seed, accountants or vets. The local income multipliers were similar for all the ESAs ranging from 1.37 to 1.54. There was a greater degree of variation among the 10 ESAs in the creation of off-farm employment ranging from 19 to 110 FTEs. The study concluded that the scheme was quite effective in supporting income and employment in the ESA localities, but noted that much depended on the assumptions made by the economic models. It was estimated that in 1997 the £4.97m in scheme payments generated in the region of 500 FTE jobs. Two-thirds of this employment was a result of the impact on farm incomes and one-third was derived from conservation activities.

ADAS (2004) Socio-Economic Assessment Of CCW's SSSI Management Agreements

The purpose of this ADAS study was to assess the impact of SSSI management agreements at a farm level and within the context of the broader rural economy. In total 57 agreement holders took part in the survey. The information was collected using an interviewer-administered questionnaire.

The study found that SSSI management agreement payments contributed £1.8m to the Welsh economy in 2002/3. A third of respondents felt the impact of their management agreements on the local economy was positive, two thirds felt it was neutral and less than 10% felt there was a negative impact on the local economy. It was estimated that across Wales an additional 390 days of on-farm employment was generated by SSSI management agreements. In addition, SSSI management agreements generated 55 FTE contracting jobs of which 50 FTEs were estimated to have been created locally. The study also found that significant capital expenditure on such items as farm machinery, fencing materials and stock handling facilities had taken place as a direct result of the management agreements. Agreement holders tended to use more local suppliers for capital expenditure, animal feed and other inputs as a consequence of management changes associated with their agreements. When livestock practices had changed as a result of SSSI management agreements, 65% of farmers said they used more local suppliers compared with 30% who used fewer local suppliers. The study concluded that local expenditures such as these are important to the rural economy of Wales and help maintain the external agricultural economy.

Agra CEAS Consulting (2005) Socio-Economic Evaluation of Tir Gofal

The impact of Tir Gofal agreement holders on the wider Welsh economy was assessed using face-to-face interviews with 251 Tir Gofal participants (around 20% of all agreement holders). The survey sought information on farm business revenue and expenditure. These were used with an Input-Output model of the Welsh economy to derive the impact.

The Input-Output model showed that the £4.2m additional expenditure resulting from Tir Gofal in 2003 resulted in an estimated spend of £6.3m and the creation of 112 FTE jobs after consideration of indirect effects. Of this spend, 73% went to Welsh industries (half of this impact was concentrated in the agricultural, forestry and fishing and construction sectors), 23% to Welsh households and the remaining 4% to taxes and imports. Taking just capital payments over the period 2000 to 2003, Tir Gofal resulted in increased expenditure in the wider Welsh economy of £21m and the creation of 385 FTE jobs. The study concluded that whilst these figures were fairly small in the context of the Welsh economy as a whole, the impact on isolated rural communities was likely to be disproportionate and the creation of 385 FTEs jobs was likely to be significant.

Individual components

Hewitt and Robins (2001) Cirl Buntings and Countryside Stewardship Farmers

The CS Cirl Bunting special project offered, in addition to the standard low-intensity grazed grassland prescription, a weedy spring-sown barley stubbles option aimed specifically at Cirl buntings and restricted to target areas mainly in south and east Devon. The aim of this study was to investigate the motivations behind farmers' decisions to participate in the CS scheme and explore the scheme's social and economic effects. All CS agreement holders (63) in south Devon were contacted and asked to take part in the study. Face-to-face interviews were undertaken with 53 agreement holders using a questionnaire. The agreement holders were questioned about the effects of both annual and capital payments.

The study found that nine out of ten agreement holders (89%) reported a positive effect on profitability, although compliance with scheme prescriptions had resulted in a loss of crop value and IACS payments and a small increase in labour costs. The average value of capital payments was £1,500 and it was estimated that 3 on-farm FTE jobs had been created. A positive effect on the use of contractors was also reported but not quantified.

Edwards et al. (2005) A Study of the Social and Economic Impacts and Benefits of Traditional Farm Building Repair and Re-Use in the Lake District ESA

Edwards *et al.* investigated the social and economic impacts of ESA capital grants for the restoration of traditional farm buildings in the Lake District ESA. Local economic impacts were estimated in terms of direct, indirect and induced effects using an adapted LM3 model. The study involved a desk study of all farm building renovation projects undertaken between 1998 and 2004. This was followed up by an interviewer-administered questionnaire of a stratified sample of 42 agreement holders. The study also undertook an interviewer-administered questionnaire of 12 building contractors and local suppliers to provide further information for the LM3 analysis.

Significant local economic benefits for the building industry and wider local economy were identified by the study. Accounting for additionality and displacement, the scheme had resulted in a minimum direct injection of £3.41m to the local economy between 1998-2004. In the interest of avoiding any potential double counting between selected measures, the analyses employed three scenarios, which used varying degrees of rigour to account for additionality and displacement. Depending on the scenario adopted, the study showed that the ESA farm building renovation scheme had generated between £8.5m and £13.1m for the local economy of the Lake District ESA area. This is a minimum multiplier of 2.49 and demonstrated that local inter-industry linkages in the study area were strong.

The study found that around 30 contractors had worked on grant-funded building restoration projects. These businesses tended to be small, locally based and often family run. They also tended to predominantly employ local people, and support traditional local skills. It is likely, therefore, that a large share of any indirect and induced expenditure would remain in the local economy. The grant scheme was found to be of significant value to such businesses and the mean number of contracts per business was 3.2 per year. Consequently, the scheme has had a significant benefit on the viability of such businesses, with eight out of the nine contractors surveyed citing an increase in turnover of at least 16%. Depending on the additionality scenario adopted, and accounting for direct, indirect and induced effects, the study found that the scheme had created between 25 and 30 FTE jobs in the local economy. Of these, at least half were generated through direct effects (directly generated by the grant scheme).

Courtney *et al.* (2007) A socio-economic study of grant-funded traditional drystone wall and farm building restoration in the Yorkshire Dales National Park

Building on the research into the socio-economic impacts of the renovation of traditional farm buildings in the Lake District (see Edwards *et al.*, 2005) Courtney *et al.* undertook a study to investigate the combined socio-economic impacts of six different grant schemes involving the renovation of traditional farm buildings and drystone walls within the Yorkshire Dales National Park. The schemes considered in the study were Defra's Pennine Dales Environmentally Sensitive Areas Scheme, the Countryside

Stewardship Scheme and the Rural Enterprise Scheme, as well as the National Park Authority's Barns and Walls Conservation and Farm Conservation Schemes, and the Yorkshire Dales Millennium Trust Scheme. The study involved a desk study of all farm building and wall renovation projects undertaken between 1998 and 2004. This was followed up by an interviewer-administered questionnaire of a broadly representative sample of 52 agreement holders. Interviews were also carried out with 10 building contractors and 6 walling contractors along with 6 of their suppliers. Data collection focused primarily on obtaining sufficient information to carry out a local economic impact analysis using an adapted LM3 model to estimate the income and employment effects of the grants.

Allowing for direct, indirect and induced effects, the study showed that building schemes have generated between £4.27m and £4.74m for the local economy of the national park area. In the same way, the walling schemes had generated between £2.81m and £4.38m for the local economy between 1998 and 2004. The income multiplier for building schemes in the national park was calculated to be 1.65. The equivalent multiplier for the walling schemes was calculated to be 1.92. Thus, pound for pound, walling repairs were found to be more beneficial to the local economy through income effects²⁹. This was largely due to the fact that more income has been retained through sourcing a greater proportion of contractors locally.

Estimating the magnitude of income effects to the wider local economy (which includes the market towns serving the National Park) showed the economic benefits of the schemes were likely to have been substantial. Income effects accrued to the wider area for all building schemes were estimated to be between £6.42m - £7.10m for the period 1998 - 2004. Similarly, estimates suggest that walling schemes were likely to have generated between £3.46m - £5.41m within the wider local economy through direct, indirect and induced effects. Building and walling work was carried out by local firms and is estimated to have created 74 FTE jobs in the National Park and its wider local area. Of these, 41 FTE jobs were created by building schemes and up to 33 FTE jobs created through walling schemes, with around 23 of these generated as a result of direct employment on walling projects.

Other studies

Mills et al. (2000) The Socio-Economic Impact of Implementing the UK Biodiversity Action Plan for Species Rich Hedges in Devon

²⁹ It is important, however, not to take multipliers at face value. First, it should not be suggested that all future investment should be directed at wall repairs at the cost of other schemes. Second, a high multiplier can be generated not by having a high numerator but rather a low denominator. In other words, it is not generating huge amounts of income or employment but rather it is very efficient at generating some income and employment from a very small base. Finally, multipliers tend to be average figures. Any future investment is at the margin which could have a different multiplier effect.

The socio-economic impacts on the Devon economy of reaching the UK Biodiversity Action Plan's targets for species-rich hedges was estimated, assuming an expenditure of £1m per year over a five-year period. The methodology applied to the research included telephone interviews with hedge contractors using a structured questionnaire and key informant interviews to obtain information on funding, training and agricultural supplies. This information was fed into a spreadsheet and multipliers were applied to obtain the total socio-economic impacts of implementing the hedge restoration and management work. This information was then analysed to provide an estimate of the additional income and employment impacts to the local economy arising from an injection of £1m per year for 5 years. This analysis included an assessment of the multiplier effects to the Devon economy.

The multiplier analysis identified expenditure on hedge restoration work in Devon contributes both directly and indirectly to income generation within the local economy, producing an output of £2.17m. The employment impact on the Devon economy of £1m expenditure on hedge restoration work amounts to 27 FTE jobs or 32 FTE jobs once indirect and induced impacts were taken into account. From these figures it was possible to identify the employment multiplier for hedge restoration work in Devon as 1.2. The analysis found that the direct links between hedge restoration work and employment for hedge contractors was strong, as most of the jobs will go to local contractors, who work within a small radius. The indirect links were weaker as, unlike forestry and agriculture, which support significant timber and food processing industries, there was minimal processing of hedge by-products.

Lobley et al. (2005) The Impact of Organic Farming on the Rural Economy in England

The Lobley *et al.* study examined differences in the socio-economic footprint between organic and non-organic farming in three study areas in England. In order to explore the socio-economic impacts of organic and non-organic farms a self-administered postal questionnaire was sent to a sample of organic and non-organic farmers stratified by geographic area and farm enterprise type. The questionnaire collected information about farm business characteristics and the patterns of sales and purchases including the value and location of transactions. In total, the sample contained 1,684 agricultural holdings of which 684 were registered organic holdings. The survey achieved a response rate of 35% and 44% for the non-organic and organic holdings, respectively.

The study measured the extent to which organic and non-organic farm businesses were connected to local economies by collecting data on the proportion and value of sales and purchases made by a business locally, regionally, nationally, and internationally. The study found that in terms of the sales and purchases of the two groups of farms, the organic farms generated a higher sales value when expressed on per hectare basis, but

in terms of economic connectivity with the local area there was little difference between organic and non-organic farm businesses.

Courtney et al. (2006) The role of natural heritage in rural development

This study examined the nature and strength of local economic linkages associated with natural heritage within four case study areas in Scotland. The research distinguished between three types of natural heritage activities, ‘core’ activities, such as environmental management; ‘primary production and extraction’ activities; and ‘reliant’ activities where the natural heritage is highly important to a business’s commercial viability.

The study area boundaries were designed to ensure a population of around 500 individual business organisations. This boundary defined the immediate ‘local economy’ of each study area. To allow comparable boundaries for analysis of local economic linkages, a second boundary of the ‘local economy’ was defined in terms of a one-hour drive time from a key focal point. This temporal boundary (called an isochrone, see Cullinane and Stokes 1998) provided a standardised boundary within which to directly compare the strength of economic linkages across contrasting areas. Information was collected using a postal questionnaire for a census of businesses in each study area. In total, 2,454 businesses were contacted which resulted in a response rate of 20%. The study used a multiplier model to estimate income and employment effects in each case study area. Analysis of first-round economic linkages and multiplier effects of local economic activity indicated that natural heritage ‘reliant’ activities had the greatest potential for generating local economic benefits through their propensity to source locally. They were also found to contribute more significantly to the economic base of the study areas through sales of goods and services to visitors.

Informing the methodological approach to the current study

As a result of the review of methodological approaches used by previous economic impact studies of agri-environmental activities a number of key issues have been identified and used to inform the methodological approach to the current study.

Measuring income and employment impacts

The studies outlined in Table 1 clearly identified positive income and employment impacts accruing to the local economy from funding agri-environmental activities. A number of different approaches to measuring the socio-economic impact were employed, such as input-output tables and spatial tracking. For the purposes of the current study the multiplier method will be adopted, using an adapted LM3 model. This method was successfully utilised by Edwards *et al.* (2005) and Courtney *et al.* (2007) and is particularly suitable for estimating impacts at the sub-regional and local level. It is also less reliant on the need for complex secondary data, than input-output methods which can prove un-reliable or problematic

when disaggregated to the required spatial level and is less resource-intensive than other methods.

Inconsistency between studies

Courtney *et al.* (2008) note that the methodologies used by economic impact studies have been subject to a considerable degree of variation. This in turn makes it difficult to compare results and to make informed judgements about the effects of investment and spending in different areas of the economy between studies. There are also difficulties in generating consistent data and in avoiding the ‘double counting’ of statistics. It is, therefore, important to provide a detailed explanation of methods used and the nature of any underlying assumptions during all stages of the multiplier calculations.

Measuring additionality

One of the difficulties with economic impact studies is to ensure that the impact measured is genuinely additional (Courtney *et al.*, 2008). English Partnerships has produced a guide to assist with assessing the additional impact of projects (English Partnerships, 2004). As well as considering the economic multiplier effects they suggest that the assessment should also consider:

- Leakage effect: Number or proportion of outputs which benefit people or businesses outside the study area and are therefore deducted from gross local direct benefits;
- Displacement: Number or proportion of outputs accounted for by reduced outputs elsewhere, for example attracting jobs which would have been located inside or outside the study area; and
- Substitution effects: the effect where one activity is substituted for another.

In line with previous studies by Edwards *et al.* (2005) and Courtney *et al.* (2007) the current study will take account of leakage, displacement and substitution effects. All interviews will include tailored questions to examine the additionality of the grants to the business, and potential displacement effects of the grants on the local economy, in terms of both income and employment. Further information about how this will be achieved is contained in Section X.

Tracing the investment and spending

A major challenge for all economic impact studies is to gain an accurate picture of the value and pattern of investments and spending. For agri-environment schemes, such as Environmental Stewardship this can become complicated, as there are payments for capital items as well as scheme payments. To ensure accuracy, the current study will collect data at the individual farm level with a follow-up survey of local businesses used by agreement holders in order to track the value and pattern of expenditure on the schemes.

Scheme payments

A key issue in gathering data on the effects of scheme options is to be able to group the options in such a way that the agreement holders can easily relate the groups to their land management practices. The ES options for this study will be grouped in a suitable way with guidance from the project Steering Group.

Capital grants

Edwards *et al.* (2005) and Courtney *et al.* (2007) confined their studies of capital grants to completed conservation plans where all monies had been claimed and all works completed. They reasoned that live conservation plans were likely to have some works and some payments outstanding and that it would be very difficult to identify exactly how much money had been received and expended. This in turn would introduce uncertainties into the economic evaluation. The findings of these studies indicate that it is important when collecting data on the higher level schemes (HLS and OHLS) to identify which capital works have been completed and the money claimed.

Defining boundaries

A major methodological consideration for all LM3 models is how to define the boundaries of the ‘local economy’ because the LM3 model demands a clear demarcation of what is within the economy of interest and what is not (Sellick and Sumberg 2008). This is an important consideration because where the boundary of the ‘local economy’ is drawn can affect the size of the LM3 figure. If the boundary is tightly drawn the LM3 figure may be small as most of the economic activity may take place outside the boundary. Conversely, if the boundary encapsulates a large economic space the LM3 figure may be large and indicate that most of the economic activity takes place within the boundary. Crabtree *et al.* (2000), Lobley *et al.* (2005), Courtney *et al.* (2006) and Sellick and Sumberg (2008) all note that there are difficulties in placing boundaries on local economies, as there is no widely accepted definition of what constitutes a local economy, and that very much depends on the purpose of the study.

In an attempt to move away from arbitrary boundaries, such as distance in miles or political areas, Courtney *et al.* (2006) used isochrones to provide a standardised boundary within which to compare the strength of economic linkages across contrasting areas. It was argued that using travel (drive) time to demarcate the boundary would to a large degree take into account the relative differences between the study areas in terms of their accessibility to urban areas, travel times and topography. The advantage of using this boundary definition is that it can be calculated for each of the agreement holder holdings for the current study. The problem remains, however, as to how long agreement holders have to drive before leaving their ‘local economy’. Other studies have used administrative or designation boundaries to define the local boundary, such as county (Mills *et al.*, 2000) or ESA or National Park boundaries (Edwards *et al.*, 2005; Crabtree *et al.*, 1999; Courtney *et al.*, 2007), whilst others have used set

distances, for example Harrison-Mayfield (1998) determined the local effects of CSS within 15 km of 6 case study farms and Lobley & Reed (2005) used a 10 mile boundary from organic farms.

Gathering information

Economic impact studies rely on three main methods of primary data capture: face-to-face interviews, telephone interviews and postal questionnaires. Face-to-face and telephone interviews are the most popular methods of gathering details of financial transactions and employment histories required for the multiplier modelling procedure. Postal questionnaires have proved successful in gathering general information about income and employment effects. However, there is limited scope for detailed questioning and postal surveys generally achieve low response rates, see Courtney *et al.* (2006), compared to other methods.

Generally, telephone interviews and postal questionnaires methods are combined with face-to-face interviews in economic impact studies. Mixing methods allows for more detailed information to be obtained and verification of survey findings. Case studies are commonly used to illustrate survey findings by highlighting the main patterns and processes.

Social and human capital benefits of agri-environment scheme participation

The section aims to examine the literature on the social and human capital benefits, including the social interaction and knowledge and skills benefits of those participating in agri-environment schemes.

Impacts on rural development

Commentators have argued that conservation schemes can have broader rural development impacts and even become a vital ingredient in the pursuit of sustainable rural development. Banks and Marsden (2000) have suggested that agri-environment schemes (AES) can play a key role within the Rural Development Programme, which aims to foster and support viable rural economies, especially as they have the capacity to involve a large number of businesses. Banks and Marsden (2000) using the case of Tir Cymen³⁰ in Wales looked at the extent to which policies designed primarily to support habitat, landscape, biodiversity and conservation are commensurate with goals to maintain viable rural communities, including viable agricultures. They concluded that conservation policies can, if appropriately designed and regionally embedded, positively contribute towards rural development.

³⁰ Tir Cymen was pilot whole farm scheme initiated in 1992 in three regions in Wales in which three types of payment were made.

There is also evidence that Tir Gofal in Wales has delivered wider socio-economic and cultural benefits. The Agra CEAS Consulting (2005) evaluation of the socio-economic impact of Tir Gofal found that the scheme created employment opportunities and concluded that the additional jobs created would be of particular benefit in small rural communities, where other employment opportunities are limited. Focus group discussions supported this view (Welsh Audit Office, 2007). Several participants emphasised the importance of Tir Gofal in sustaining and increasing demand for traditional rural businesses, such as walling and hedging. The financial benefits also helped to sustain family farming by encouraging children to take on their parents' farms. This wider impact was also noted by farmers in discussions concerning Tir Gofal and the Organic Farming Scheme; they reported that local employment opportunities are enhanced by both schemes (Frost, 2004).

It has been considered that where AES are able to support agriculture they can contribute to and help sustain the positive social externalities of agriculture which include provision of jobs, contributions to the local economy and opportunities for businesses, and as such contribute to the social fabric of rural communities (Dobbs and Pretty, 2001). This is particularly the case in regions where many farm businesses are likely to be already highly dependent upon subsidy support. However, it can also be argued that in some circumstances AES can hold back improvements in competitiveness and wider economic restructuring by allowing otherwise unviable farms to continue.

Whilst in the UK these benefits are seen as incidental, in other countries there has been more interaction of stewardship and social support scheme aims. Dobbs and Pretty (2001) note that some schemes providing stewardship support have social or production elements. They give an example of Australia's National Landcare Programme, which is aimed primarily at society's stewardship concerns, but it also has strong social support elements. The 4,500 farmer groups formed in the past decade, comprising one-third of all Australian farmers, have effected environmental transformations as well as social ones. In the USA, as interest in sustainable agriculture has increased, stewardship and social concerns have been more closely intertwined than in the UK. Most US sustainable agriculture 'advocates' see stewardship and family farm-based social policies to be mutually reinforcing. They believe that moderate-sized, owner-operated family farms are the kind most compatible with ecologically-based farming systems. The importance of sustaining family based production, which is seen as integral to rural society and landscapes, has also been recognised in the UK context by commentators like Banks and Marsden (2000) who believe that AES, because they can impact a large number of family farms, can act as a catalyst to rural development.

Human capital benefits of AES participation

Human capital is defined by the OECD (1998, p9) as “the knowledge, skills and competences and other attributes embodied in individuals that are relevant to economic activity.” It encompasses both social as well as technical skills.

Knowledge and skills

A number of commentators have concluded that AES have contributed positively to the management skills base of farmers and increased environmental knowledge, skills, and awareness (Dwyer, 2001; Hodge and Reader, 2007). This is thought to have led more generally to an increase in quality of life (Dwyer, 2001). Indeed it is recognised that farmers who have been in schemes sometimes for 10 years or more represent a valuable reservoir of knowledge and experience (Dwyer, 2001).

Participation in AES has been found to increase the interest in conservation of some participants (Crabtree *et al.*, 1999; Whitby, 2000). Fish *et al.*³¹ (2003) in their study of CSS and ESA found that those land managers who expressed views associated with the Enthusiastic style of participation (34 out of 100 surveyed) appreciated the fact that they had gained knowledge about the nature and management of their landscapes through the scheme; others thought that the scheme instigated good discipline in the maintenance and enhancement of landscape features. Many of these land managers admitted that such an approach would have been unlikely to occur otherwise. These respondents had all been held up as examples of ‘good practice’ at events demonstrating the potential of the scheme to other farmers. They mentioned the sense of pride they felt in this and in implementing agreements that had been well received by both Defra and the wider farming community. This provides an example of how schemes can promote a better understanding between farmers and other groups which generates positive perceptions of farming (Dwyer, 2001).

Evidence of any positive impact of training and farm days run by AES programmes is limited. In their review of the schemes offered by South Pembrokeshire Whole Farm Review and Development Scheme, Short and Powell (2003) found that the benefits of the training and other events were seen as important, as was the business and environmental advice given through the scheme as it was this that provided a new direction for the farm business as a whole. Research³² looking at whether training can play a role in improving both farmer knowledge about, and attitude towards, wildlife-friendly farming is currently underway as part of the Rural Economy and Land Use (RELU) programme, but as yet no results are available.

³¹ Fish et al. (2003) through analysis of the qualitative interviews of 100 land managers, identified four styles of participation in the ESA and CSS schemes and four styles of non-participation. Respondents were drawn from five broad study areas: the Breckland, the Peak District, the Shropshire Hills, the South Downs, and the Trent and Belvoir Vales.

³² <http://www.relu.ac.uk/research/projects/SecondCall/Bullock.htm>

Farmers' experiences with agri-environment schemes have been described as an important learning tool. In their comparative study of farmers in Finland and Estonia, Herzon and Mikk (2007) found that farmers with agri-environment contracts targeted specifically at biodiversity enhancement were more knowledgeable about practical on-farm activities favouring wildlife, and were more willing to employ them than other farmers. The farmers could name some biodiversity-benign practices and quoted almost exclusively management options supported under the respective agri-environment programmes as the way to enhance biodiversity.

Farming in an environmentally sensitive way or sustainable way is considered to require a broader knowledge base than conventional farming; the practices are thought to be complex, locally specific and information intensive with more emphasis on observation, monitoring and judgment (Park *et al.*, 1997; Morris and Winter, 1999). As such it could be argued that participants in AES acquire new knowledge and skills, in particular their local knowledge is harnessed and improved. Organic farming is thought to be a special case amongst AES as it requires specialist farming skills and knowledge (Padel, 2001). There is some evidence from a study of Tir Cymen that technical efficiency of production rose as farmers had to reduce stocking rates and adapt to farming systems that emphasised quality rather than quantity (Banks and Marsden, 2000).

However, the extent of learning and increased awareness depends on the extent to which the farming system has changed under AES participation and the extent to which the farmer is committed towards the aims of the scheme. In situations where scheme participation merely facilitates a continuation of already established farming practices, which has been the case for some ESAs (Skerratt, 1994; Wilson, 1997; Agra CEAS Consulting, 2003), it is anticipated that there will be minimal opportunity for gains in knowledge or skills. The extent of learning can also be linked to the nature of the scheme. In the Finnish agri-environment programme, for example, farmers' understanding of farmland biodiversity or practical measures to enhance biodiversity was found to be limited; this was attributed to poor incorporation of conservation-oriented options into the basic level schemes (Herzon and Mikk, 2007).

Increased awareness and appreciation and change in attitude

There is evidence that farmers in agri-environment schemes acquire an appreciation of the environment. Participating farmers tend to appreciate environmental improvements that the schemes bring and show an awareness of the environment that may not have been there previously. A review of Tir Gofal found that there was a strong consensus amongst agreement holders attending focus groups that the scheme had a positive impact overall on the environment. Participants had noticed how bird and wildflower populations had increased on their farms, and that on the whole

farms in the scheme were ‘tidier’ and better kept than those outside (Welsh Audit Office, 2007).

In a survey of AES participants in Scotland (Manley and Smith, 2007)³³, Rural Stewardship Scheme (RSS) and Countryside Premium Scheme (CPS) participants showed a general and strong consistency of agreement that there had been an increase in biodiversity, that the appearance of the landscape had been positively improved and that the schemes had increased their environmental knowledge. Organic Aid Scheme (OAS) participants also remarked on increased biodiversity and that participation had increased their environmental knowledge. Similarly in a study in Ireland³⁴ (Van Rensburg *et al.*, 2009), Rural Environment Protection Schemes (REPS) farmers exhibited a higher degree of awareness of the degraded state of commonage land than did their non-REPS peers, although the percentage willing to admit the severity of the environmental damage was still low.

Smithers and Furman (2003) carried out a survey of 123 Environmental Farm Plan (EFP) participants in Ontario and found that in the majority of cases, participation in the EFPs resulted in a significant outcome³⁵. Over 90% of respondents indicated that participation in the programme had increased their awareness of potential environmental issues relating to farming. In addition, many others actually went on to prepare an environmental farm plan of some kind. In the same way it is recognised that schemes like ELS in England have a beneficial effect, in terms of increasing awareness, by introducing farmers to the possibility of engaging for the first time in the agri-environment programme and signing whole farms up to a basic level of environmental management (Hodge and Reader, 2007).

An appreciation of the environmental benefits that AES bring can in some cases encourage a positive attitudinal shift. A number of studies have looked at the relationships between attitude towards conservation, motivation and scheme participation and considered farmers’ commitment towards long term behavioural change. Many have questioned the effectiveness of schemes in bringing about enduring changes in attitudes and knowledge about countryside management which outlasts the schemes themselves (Morris and Potter, 1995). A number of

³³ A postal survey of participants (486) and non-participants (353) in Scottish AES (RSS, CPS and OAS) was undertaken in Spring 2004 carried out by the Royal Agricultural College for the Scottish Government.

³⁴ A study of 282 farms (mostly marginal extensive farms) in the west of The Republic of Ireland, all of which are in commonage and 193 of which are in REPS. Commonage is land held in common ownership on which two or more farmers have grazing rights.

Farmers in commonage who join REPS get higher payments than those not in designated areas, in recognition of the higher environmental standards to which they must conform.

³⁵ In this programme, the focus is not on the promotion and adoption of any particular farming innovation, but rather on the completion of a farm-level environmental appraisal and the development of a farm-specific environmental action plan.

commentators have suggested that there has been little positive attitudinal change accompanying AES enrolment especially when farmers joined for financial or opportunistic reasons (Skerratt, 1994; Lobley and Potter, 1998; Wilson and Hart, 2000, 2001; Fish *et al.*, 2003; Tranter, 2007).

However, other research has suggested that long term attitudinal change can be achieved. Fish *et al.* (2003) in their study of CSS and ESA explored the attitudes and practices of 100 land managers towards features of landscape and historic interest using semi-structured interviews. When asked whether they were sympathetic to the conservation goals of the schemes, over 90% of all the land managers surveyed responded positively. In their typology they noted those expressing enthusiastic participation styles had changed their attitude to farming towards conservation-oriented beliefs. These farmers stated that, in the event of an agreement ending, a similar timetable of work would be continued. The goals of these schemes were overwhelmingly thought to be beneficial by the farmers. The authors point out that this finding represents a departure from the insights of earlier UK-based research, such as that by Morris and Potter (1995) which suggested little attitudinal shift.

Similarly, in a survey in Scotland of ESA agreement holders, around 57% of agreement holders thought they would continue to farm in the same way even if ESA payments were to stop, with only 25% of agreement holders indicating that there would likely to be some decrease in the level of their environmental management (Crabtree *et al.*, 2000). REPS farmers in Ireland showed a greater willingness to break with past practices than non-REPS farmers as evidenced by their attitudes towards the future management of commonage (Van Rensburg *et al.*, 2009).

Davies and Hodge (2006), in their study of farmers' attitudes towards cross compliance, suggest that a change in attitude can follow a change in behaviour, even when the behaviour is imposed. This was the case with the Birds Eye pea farmers in the CCRI study who were pushed into joining ELS to secure their contracts. It was noted that once they were in the scheme, they appreciated the benefits and particularly the knowledge the scheme provided and they became more positive about it (Dwyer *et al.*, 2007). The nature of the motivation of the farmers are important, for example, in a recent study of dairy farmers in Northern Friesian Woodlands, the Netherlands, it was found that organic farmers, who are internally motivated for nature conservation and had strong institutional links, were more likely to internalize the goals of environmental policy schemes than conventional farmers who focused predominantly on financial rewards (Stobbelaa *et al.*, 2009).

Although not in itself a measure of human capital, this suggested change in attitude and intentions with respect to future practice accompanies an increase in knowledge about the management options within a scheme. This suggests AES participants are increasingly acknowledging the environmental benefits and knowledge that scheme participation may

produce. There is a suggestion also that whole farm schemes like Tir Cymen can help farmers appreciate the value of environmental services and goods and capitalise on these, as such these schemes can help farmers find a ‘new income generation principle’ (Banks and Marsden, 2000:13).

One question is whether practices adopted on the land under agreement would be transferred to other parts of the farm (for partial farm schemes). The CCRU/ADAS evaluation of the CSS scheme in England highlighted the impact of the new environmental practices gained through CSS beyond the land under agreement but on the same holding (CCRU, 2000). However, it was uncertain at that time whether this would be sustained when the agreement ended.

Research has suggested that farmers under organic farming schemes have not only increased their knowledge and skills about organic farming, but also increased their capacity for gaining knowledge (see below). It is argued that organic farming can foster innovation and in some cases social skills such as entrepreneurship, since organic farmers need such skills to compete in the more specialist organic food-chain (Lobley *et al.*, 2008). Thus, the farmers gain both entrepreneurial skills and crop/product specific management skills and knowledge.

Individuals also appear to develop human capital through activities fostered by schemes, such as sharing knowledge and involvement in group activities. In a study carried out in Wales for the Welsh Assembly Government looking at opportunities for co-operative agri-environment schemes, there was evidence of human capital development within collective initiatives. For example, in the Ireland Moor ESA commons agreement the central committee have developed increasing competence and skills and this brought confidence in speaking with government representatives. The farmers had also developed an appreciation of the scheme’s aims, many spoke of seeing the moor differently now when they walked to collect their sheep. There was a sense of a wider purpose in acting collectively to enhance the moor, that the Commons ESA was something bigger than just farming (Mills *et al.*, 2008).

These benefits are well known for group based initiatives. A further example in Wales is the Pontbren group³⁶ whose farmer members have broadened their knowledge through group activities and attendance on training courses and developed good social networking skills through the hosting of numerous farm walks and farm visits. Indeed Dobbs and Pretty (2001) suggest that AES should be supported by learning and through farmers study groups and advice to maximise the benefits of farmer adoption, since they argue some farmers still join just grudgingly and do

³⁶ The Pontbren Group is comprised of 10 hill farmers located near Welshpool, Powys. They undertake sustainable farming practices on a contiguous block of around 1,000 hectares of land along the Nant Pontbren, a tributary of the Severn.

not invest in learning. They make a clear link between learning and commitment.

AES also provide a forum or common interest for farmers to interact, this is in most cases informal, although has been formalised for some schemes. The Tir Gofal farmers association³⁷, for example, was set up by scheme participants with the intention of exchanging knowledge, networking and offering mutual support.

Social capital benefits of AES participation

The strengthening of local ties is seen as being a prerequisite for the formation of a stronger rural economy with the benefits of local enterprise cascading into the rest of the rural economy (Winter and Rushbrook, 2003). These local ties, connectivity or social ‘glue’, are described as social capital. Social capital refers to the networks that people within a social group can draw on, and the value of connectedness and trust between people. Some authors have conceived social capital as a public good which the members of a group can enjoy (e.g. Putnam, 1993), where social capital is defined as consisting of shared norms and values of trust, reciprocity and solidarity. Others place more emphasis on individual social networks and interactions and individual access to resources (Coleman, 1990). In the context of sustainable land management, social capital refers to the links between: farmers and farmers (bonding social capital); farmers and society, particularly the local community (bridging social capital) and; farmers and institutions (linking social capital) (Putnam 1993).

The assumption is that rural business networks are tightly knit but it has been demonstrated that they are in fact highly variable (Butler *et al.*, 2006). For example, a study carried out by CCRI found that farmer social networks (bonding) are increasingly fragmented due to time demands on the farm, a consequence of economic pressures, and a smaller and more scattered farming population (Dwyer *et al.*, 2007). A number of studies have also demonstrated deeply internalised hostility to governments and therefore low (linking) social capital between farmers and government (Hall and Pretty, 2009, Dwyer *et al.*, 2007).

Because the benefits of social capital are generally identified with its role in facilitating change by reducing transaction costs among actors and in helping to overcome collective action problems, studies in relation to AES have tended to examine how social capital can enhance rural development or lead to AES uptake, rather than looking at social capital as an outcome (e.g. Magnani and Struffi, 2009). For example, enhanced social capital has lead to higher enrolment (Barrerairo *et al.*, 2008) and has a positive and significant effect on the willingness to adopt AES (Mathijs, 2002). Also a key conclusion of the Norfolk Arable Land Management Initiative NALMI

³⁷ <http://www.spanglefish.com/TGFA/>

project³⁸ was that social capital appears to assist the transition to more sustainable land management and a lack of social capital appears to impede the transition (Appleby *et al.*, 2004). However, arguably enhanced social capital can also be an outcome of participation in AES, although there is less evidence for this. Hodge and Reader (2007) mention the social capital (in the form of the knowledge, skills and institutions) that has been built up through the implementation of existing AES. There is most evidence from studies of co-operative AES. By linking people to achieve common objectives, and networking, agri-environmental cooperatives are thought to contribute to social cohesion, and thus build social capital. There are a number of examples where environmental co-operatives have achieved this (Franks and Gloin, 2007). One is the Hedgerow Planting Scheme in Denmark which is based on a ‘bottom-up’ approach³⁹ to developing applications and strong collaborative elements (Hodge and Reader, 2007).

In the UK, where there are contiguous land managers in schemes, for example, in ESAs or in particular environments, such as commons or wetlands, it is possible that participants have a sense of collective purpose and that this can lead to enhanced social capital. In an evaluation of key factors that lead to successful agri-environmental co-operative schemes in Wales (Mills *et al.*, 2008), the key to successful co-operative working was found to be the development of social capital within the groups, resulting in increased social interaction and the “feeling of belonging”. As social capital was built within the group, members were more willing to provide advice and mutual support to each other. Group membership then opened up new opportunities that would have been impossible to access by the farmers individually. Furthermore, through involvement in group activities individuals developed both social and technical skills. Following the success of collective activities and the development of human capital, members’ business confidence increased. They were then more willing to try new ideas and to take on new projects and social capital was further strengthened. In one of the case studies, Ireland Moor ESA in Wales, for example, nearly all of the members felt that the social benefits of the group had increased significantly since the signing of the ESA agreement (Mills *et al.*, 2008)

The interaction between social capital and government support and funding has also been identified as an important precursor to participation

³⁸ NALMI, launched in June 1999, explored a wide range of issues affecting the sustainability of land management in an arable area.

³⁹ Bottom up approaches start at the very local level, with local communities demanding a say in the definition of priorities and the delivery of services. In contrast top-down approaches usually involves local authorities and other agencies seeking to co-ordinate their actions at a strategic level.

in schemes. For example in the Australian Landcare networks⁴⁰ the top-down government stimulus was a catalyst for bottom-up community development (Sobels *et al.*, 2001). Successful Landcare networks received support and funding from government in their formative years and continue to attract considerably more funds than is the average for less successful Landcare groups. Sobels *et al.* (2001) conclude that without this ‘financial capital’, the ‘social capital’ of the networks is unlikely to have been expressed in positive outcomes, suggesting that a trigger in the form of funding and support can lead to positive social capital outcomes. Building social capital has been shown to be important in other studies as well, for example in NALMI, which promoted an integrated whole farm approach, social capital was an important outcome (Appleby *et al.*, 2004).

However, most AES participants join as individuals; attributing any social capital benefits to the individual as a result of participation is therefore difficult. One measure of social capital is whether joining has enabled greater access to other resources and arguably, by linking farmers to Project Officers, newsletters, training and farm visits through AES, participants do have greater access to resources than non participants. Although in some cases providing such resources to an individual can lead to more competition and not to a greater good, as Butler *et al.* (2007) found in their evaluation of the Vocational Training Scheme (VTS) funding in Cornwall which aimed to promote a more vibrant farming community, but in the event promoted individual competition.

Some farmers demonstrate the ability to engage with actors in agencies and government leading to good linking social capital; this was the case between some farmers and CSS and ESA staff (who were respected and trusted) observed in the NALMI project. Thus those farmers (e.g. those in schemes), who had contacts with government agencies had higher linking social capital and this was contrasted with a ‘self-excluded’ under-class (Hall and Pretty, 2009). This raises concerns about the social exclusion of those who have not joined schemes⁴¹ (see below).

In the case of organic farming, a number of researchers have pointed to the propensity of organic farmers to cluster together and to the role of wider social networks (e.g. Padel and Lampkin, 1994). The practical, marketing, social and knowledge sharing benefits of organic farm clusters are well recognised (Rigby *et al.*, 2001). Organic farmers collaborate both for practical reasons and for solving problems on the farm since meeting organic standards can require the support of other organic farmers. Sharing of knowledge and experience and support in a small emerging community have been shown to be important to success (Padel, 2001).

⁴⁰ The National Landcare Programme in Australia started in the late 1980s and has been encouraging groups of farmers to work together with government and rural communities to solve a range of environmental problems.

⁴¹ Shucksmith (2000) points out that social capital can only be built over long time periods; this is especially the case of individuals with least capacity to act.

Also entrepreneurial skill (organic) is not seen as just being held by an isolated individual, but is located in a cluster of other people with whom business operators can collaborate, share knowledge and trust (Butler *et al.*, 2006).

Negative social impacts

Some negative impacts might accrue for the community when individual farmers join AES, although these are rarely reported. Skerratt (1994) suggests that selective targeting in the Cambrian Mountains (CM) ESA, for example, created a rift in the farming community, with those outside the scheme envying those who have made substantial profits from the ESA. In this ESA, specific habitats such as semi-natural rough grazing of woods were targeted and it was noted that this approach favoured larger farmers, who consequently benefited from more income. According to Wilson (1997) this brought division in the close knit community. This effect was also noted in the workshops reported in Dwyer (2001), where it was argued that schemes can create inequalities by using geographical boundaries which cut through communities, and by targeting certain farmers as used with CSS. For CSS, participation was higher amongst larger farms, although there is no evidence of any associated social division (Crabb *et al.*, 2000). The workshops also identified a form of social exclusion, occurring where those poor, smaller farmers, who are unable to understand or have insufficient time to deal with complexities and costs of AES applications, are excluded from their benefits.

With respect to human capital, there has also been the suggestion that farmers do not benefit from new skills or knowledge where AES management prescriptions have been imposed and conflict with the farmers' own traditional local knowledge (Riley, 2006, 2008; Burgess *et al.*, 2000). Indeed it could be argued that such imposed management can lead to the erosion of traditional knowledge.

Informing the methodological approach to the current study

The review of the literature on the potential social impact of agri-environment schemes has identified a number of key issues which has been used to inform the methodological approach to the current study.

Potential benefits to rural development

The literature has shown that agri-environment activities have the potential to produce rural development benefits that go beyond the primary aims of the scheme by creating employment opportunities and helping to sustain family farms. This can be particularly beneficial in rural areas where employment opportunities are limited. The research will aim to identify the impact of ES on rural development through face-to-face and telephone interviews. The research will identify the extent to which the schemes have created new jobs, both on-farm and more widely in the local rural economy for contracting, advisory and supply business. Also open-ended questions will also be used to ascertain the extent to which schemes have

helped maintain existing jobs and businesses. The interviews will also identify any new business ventures indirectly related to ES schemes, such as development of product brands based on their environmental credential, or educational ventures.

Impact on human capital development

The literature suggests that agri-environment schemes can make a positive contribution to the skills base of farmers and increase their environmental knowledge. This research will aim to identify the extent to which this applies to Environmental Stewardship schemes. The face-to-face and telephone interviews will specifically ask agreement holders to identify any training received as a result of signing up to Environmental Stewardship schemes. The interviews will also identify any impacts of the schemes on the agreement holders' skills and knowledge base which in part will depend on the extent to which the farming system has changed under ES. Human capital development benefits may extend beyond the farm and also have a positive impact on local businesses. The contractor and advisor surveys will also identify the extent to which these businesses have undertaken training to assist in providing for Environmental Stewardship schemes. The interviews will also ascertain the extent to which the agreement holders' awareness of environment has changed since joining the scheme, including their awareness of any environmental benefits. It will not be possible to identify any longer-term attitudinal shifts towards environmentally-friendly farming practices as this would require a more detailed behavioural study which is beyond the remit of this research.

Social capital benefits

The literature review highlighted the importance of social capital in binding rural communities and increasing farmer networks making them more adaptive to change. It identified a number of studies which showed that social capital was an important outcome of various schemes. The research will assess the extent to which improved social capital is a positive outcome of the Environmental Stewardship schemes. The research will identify through interviews the extent to which ES has developed bonding capital through increased interaction with other farmers and strengthening farmer networks.

Several studies have suggested that agri-environment schemes may also be important in developing bridging and linking social capital with organisations outside the farming community. To examine this impact the research will look to identify whether ES has increased civic participation, particularly if agreement holders join non-farming environmental groups. Also it will identify the extent to which as a result of the scheme networks have broadened beyond the local farming community with agreement holders employing contractors and advisors who are new to them. This can be an important in giving farmers access to new information and is often instrumental in causing change.

Conclusions

The preceding review of literature have summarised the state of literature as regards to estimating the socio-economic benefits of agri-environment activities. The review has identified a number of issues that will help to inform both the direction and detail of the current research project. Specifically, the review has identified the following points:

- The need to ensure that the methodology and assumptions used within the current research project are clearly explained to enable comparison with other multiplier studies.
- The necessity of considering leakage, displacement and substitution effects to ensure that the impact measured is genuinely additional.
- The requirement that the monies claimed for capital works are identified to ensure the analysis only accounts for work completed thereby reducing inaccuracies in the economic evaluation.
- The difficulties in assigning an appropriate ‘local economy’ boundary and the advantages of using isochrones to define these boundaries, enabling a standardised boundary for each agreement holder holding.
- The benefits of using mixed data collection methods, allowing for more detailed information and verification of findings.
- The need to recognise that agri-environmental activities can improve social interaction and strengthen local ties, whilst being mindful that some agri-environmental schemes have created negative social impacts.
- The need to give consideration to the potentially positive contribution of agri-environment activities to rural development
- The evidence that agri-environmental activities can increase awareness of the environment and offer opportunities for learning and skills development.

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Appendix 2: Agreement holder questionnaire

Estimating the Incidental Benefits of Environmental Stewardship Countryside and Community Research Institute Agreement Holder Face-to-Face interview

Complete prior to the interview

Questionnaire No: (ID no. from spreadsheet)	
Name of Agreement Holder:	
Address of Agreement Holder:	
CPH No:	
Telephone No:	
Date and time of interview:	
Name of interviewer:	
Landscape Type area:	

Introduction

I'm calling from CCRI on behalf of Natural England and Defra. You will have recently received a letter which explains that Natural England and Defra have asked us to carry out a project to examine the incidental benefits of the Environmental Stewardship schemes. They are interested in finding out the income and employment impacts of the schemes on the local economy. The results of the survey will enable these agencies to identify the additional benefits of the schemes that go beyond the primary environmental and landscape objectives.

Everything you tell me will be treated confidentially and the results of the survey will be aggregated and conclusions reported as part of the study. We would under no circumstances release any individual information about your farm or your business to anyone else. We stress this because some of the questions cover financial aspects to do with the running of your farm. However it is intended that particularly good examples of schemes will be highlighted in the report. We would of course seek your permission beforehand.

Before we start, please can I just check with you that you are in the following Stewardship scheme (see front sheet)

Please can I just confirm that these are the options in your scheme.

Please can I check whether the holding is run as a farm business, or not.

1. General Information about the farm business

[Interviewer] Please could you give me some general information about this business.

- May I first just check on your own status - are you the principal farmer/grower, partner, or a farm manager and is your job full-time? (tick one box only)

	Full-time	Part-time
Principal farmer/grower		
Partner		
Farm Manager		
Other (specify)		

- Including yourself, how many people are employed on this farm? (Including working proprietors)

Employee Type	Persons
Regular Full-time (30hrs+/week)	
Regular Part-time (-30 hrs/week)	
Seasonal/Casual	

- What is the total area of land you farm as a single business?

Hectares

- How much of the holding is owner-occupied and how much rented?

Tenure	Hectares
Owner-occupied	
Rented	
7.1 Total	

- Which best describes your farm? (Tick one)

Mainly arable		Grazing livestock (LFA)	
Mainly dairy		Pigs and Poultry	
Horticulture		Other livestock	
Grazing livestock (lowland)		Mixed	
Other			

6. Turning to the main activities of your business, if I read out a list, could you please indicate the approximate proportions of your total household revenue for each activity? (**enter percentages**)

Activity	% of Sales revenue	Pleas e specify:
Traditional agricultural*		
Other agricultural		
Non agricultural		
Off-farm employment		
7.2 Total	100	

*Sheep, beef, dairy, arable, horticulture, pigs and poultry

7. What proportion of all the goods and services (i.e. supplies)you purchase for the farm business are from the following areas? (**Show map 1**)

	40 mins	60 mins	ELSEWHERE	TOTAL
All purchases (By value)				100%

(E.g. seeds, fertilisers, sprays, feed, livestock, professional services (vets/advisors), machinery, fuel)

2. Impact of individual options on farm income and employment

I would now like to run through each of your scheme options as we have grouped them and ask you to briefly describe the work that you have undertaken, since joining the scheme and to identify any expenditure on the option and impact on employment.

[Interviewer: Complete Section 2 for each option group presented on front sheet]

Option Code:

[Enter relevant option code from front sheet]

8. Please can you provide a description of the work undertaken for this option group.

9. What effect has this option group had on the overall turnover (i.e. sales) of the farm business up until now?

less than -10%	<input type="checkbox"/>	-10 to 0%	<input type="checkbox"/>
0 %	<input type="checkbox"/>	+1 to +10%	<input type="checkbox"/>
more than +10%	<input type="checkbox"/>		

9a. If positive or negative, why has this occurred?

10. If the farm hadn't obtained the funding for this option, would any management changes/additional management/maintenance/enhancement/capital works have taken place at all? *[Interviewer – select appropriate descriptor]*

Yes
No if no, go to Q11

If yes:

10a. Please indicate the proportion of all scheme related works for this option group that would have taken place up until now.

.....%
.....%

10b. How would the work carried out have differed from that if it had been undertaken without funding from the scheme (e.g. different quantity or quality)?

11. Roughly how much have you spent on each option group since the start of the scheme, and what secondary inputs there were, such as advice and contracting and where the inputs came from.

(Use separate recording sheet for each option group for Q11 - Show a copy of the recording sheet to the Agreement Holder as a prompt and provide assistance to complete as accurately as possible)

3. Overall scheme impact

12. What effect has the overall scheme had on the overall turnover (i.e. sales) of the farm business up until now?

- | | | | |
|----------------|--------------------------|------------|--------------------------|
| less than -10% | <input type="checkbox"/> | -10 to 0% | <input type="checkbox"/> |
| 0 % | <input type="checkbox"/> | +1 to +10% | <input type="checkbox"/> |
| more than +10% | <input type="checkbox"/> | | |

12a. If positive or negative, why has this occurred?

13. For the overall scheme, roughly how much have you spent on the following since the start of the agreement?

	Total amount spent £
Contractors	
Main Supplies	
Other Expenditure	
Staff wages	
Training	
Advisory services	
Professional services	
Plant, machinery, repairs	
Fuel and utilities	
Insurance	
Additional taxes	

14. What effect has the scheme had on the overall workload of the farm business up until now?

- | | | | |
|----------------|--------------------------|------------------|--------------------------|
| less than -10% | <input type="checkbox"/> | -10 to 0% | <input type="checkbox"/> |
| 0 % | <input type="checkbox"/> | Go to Q19 | <input type="checkbox"/> |
| more than +10% | <input type="checkbox"/> | +1 to +10% | <input type="checkbox"/> |

14a. If positive or negative, why has this occurred?

15. What proportion of this **increased/decreased** (*interviewer – select appropriate term based on response above*) workload was carried out by
a) the farm and b) contractors?

	a) FARM	b) CONTRACTORS	TOTAL
All grant works			100%

If 100% was carried out by contractors, go to Q20

If workload increased:

16. If some or all the increased workload as a result of this scheme was carried out by the farm, were any additional people employed or additional paid hours worked by existing employees to help specifically with this work?

Yes **if yes go to Q18**
No **if no go to Q19**

If workload decreased:

17. If some or all the decreased workload as a result of this option was previously carried out by the farm, are these people still working on the farm?

Yes **if yes go to Q18**
No **if no go to Q19**

If yes:

18. *[If increased workload]* Could I ask you a bit more about these employees? I just need to know what their occupation is, roughly how many hours they work a year on this scheme related work and where they live. Do you also know whether any of these employees left an existing job in the local area to come and work for you? (**Show prompt card**) (**Also ask an employee questions in Employee Expenditure form**)

[If decreased workload] Could I ask you a bit more about these past employees? I just need to know what their occupation was, roughly how many hours they worked a year and where they lived. Do you also know whether any of these employees have a new job in the local area?

<i>Occupation</i>	<i>Employ ment fraction (i.e. 0.2, 0.5, 1 etc)</i>	<i>Left previous job in 40/60 minute drive time <u>or</u> has new job in 40/60 mins?</i>	<i>Place of residence 40 min, 60 min or elsewhere</i>
		Yes/No Don't know	

19. Have you used contractors to undertake any of your scheme work?

See Q15

Yes

No **go to Q21**

If yes,

20 How did you recruit the contractors used on the scheme? Were they known to you beforehand?

21 Did you use an advisor to help with the scheme application?

Yes

No **go to Q24**

If yes,

22 Can you recall how much was spent on this scheme application advice?

-----?

23 How did you recruit the advisor used on the scheme? Were they known to you beforehand?

24. When you receive your Environmental Stewardship payment does it go towards general farm/household costs or do you use it to pay for specific farm costs. If so, which specific farm costs does it pay for?
(Prompt for: mortgage, machinery investment, infrastructure investment)

4. Impacts of the scheme on skills and training

25. Have you or any of your employees received training as a result of you signing up to the scheme, including attendance at open days?

Yes

No **if no, go to Q27**

If yes,

26. Could you elaborate on the nature of training received and the qualification obtained?

27. In your view, or to the best of your knowledge, has the scheme had an impact on the skills and knowledge base of a) the farm and b) the local area?

[Probe for positive or negative impacts, apprenticeships, availability of training, skill deficits (and areas where they occur)]

a) Skills and knowledge base of the farm

b) Skills and knowledge base of the local area

28. To what extent is there transferability of skills from schemes to other projects/area of farm work (i.e. do skills development within the scheme programme benefit work outside it?)

5. Social impacts of the scheme

29 As a result of joining the scheme have you joined a discussion group or an environmental group? (names of organisations, also if they play a role in that group)

30 Has joining the scheme increased your contact with other farmers or the general public, and if so, how did this come about?

31 How aware do you think that the general public is of the role that farmers have in preserving wildlife and the countryside through agri-environment schemes?

32. Does the scheme reflect your priorities for what should be preserved and enhanced on your farm? If not, why not?

6. Other benefits of the scheme

33. What have been the benefits of the scheme to yourself or the farm?

(Probe for increased income, heritage and conservation, efficiency, capital values, landscape stewardship, reduced labour input, improvements in stock quality)

34. Are there any further impacts of the scheme that might impact on the future of the farm business that haven't yet been mentioned?

(Probe for stability, future development, diversification, likelihood of remaining a family business etc)

35. Are there any further comments or observations you would like to make about the impact of the Environmental Stewardship schemes on the local economy of the area?

(Probe for ease of obtaining supplies, employment, sub-contracting etc)

Thank you for your time

Employee personal household expenditure

(Interviewee – only use this section if an employee has been taken on specifically to help with scheme work)

Location:

Are you:

- Full time
 Part time
 Seasonal/casual

What is your job title? _____

Where do you live? (Show map 1)

- Within a 40 minute travel time
 Within a 1 hour travel time
 Elsewhere
 Post Code _____

Please estimate your personal household expenditure, according to where it takes place.

	Within a 40 minute travel time*	Within a 1 hour travel time*	Elsewhere	Mail order/internet/other	Total
Example	25%	70%	5%	0%	100%
Food					100%
Clothing					100%
Durables					100%
Services/other					100%

*Show map

How is your income spent?

Monthly/annual expenditure	%
Food, clothing, durables and services (i.e. all of the above)	
Income tax and NI	
Rent/mortgage	
Household utility bills and council tax	
Loan repayments	
Savings	
Total income	100%

Q11 How and where were scheme funds spent?

Central to this interview is the need to find out the impact of the scheme on the local economy, and for that we need to establish how the scheme money was spent, and where it went in the local area.

Before we do that, can we just run through what the main expenditure items were for this option group (i.e. grass seed, trees etc)

Interviewer: Establish what the main items were for the option group insert them into the table under a)-e) before going through the figures in any detail.

Obtain the figures in two stages, following a), then b).

- a) Please provide the approximate amount spent on each item (i.e. 'staff costs', 'professional services'), Sub-total's a) – d) should add-up to the total grant received plus any contribution made by the farm.

NB If contractors carried out all of the work, only section c) needs to be completed. Please obtain contact details for contractors and main input suppliers and advisors located in the 40 and 60 minute zones if at all possible. This is important as this is our only source of information for the suppliers, contractors and advisor interviews.

If the farmer is unable to provide specific figures, ask them to think about the total grant received and the percentage breakdown across the various expenditure items in column 3. Insert these percentages into column 3 for all expenditure items before going on to stage b).

- b) For each item of expenditure, please tell us where the money was spent. If items were delivered, we need to know the location of the supplier/distributors/manufacturer/service provider, according to the three boundaries. Please use the map as a guide.

Q11. How and where were option funds spent?

Option Group Code.....

Examples	Total amount spent on option £	% of total option expenditure	% 40 Min drive time	% 1 hour drive time	% Elsewhere	Please name the main local business/es you use for each category.
Steelwork	£575.00		10%	30%	60%	<i>John's Ironmongers, London Road, Bristol BS5 2RH</i>
Grass seed		35%	20%	40%	40%	<i>Smiths seed supplies, Johnson Lane, Ipswich IS4 6DX</i>
a) Main Supplies relating to option	Total amount spent on option £	% of total option expenditure	% 40 Min drive time	% 1 hour drive time	% Elsewhere	Please name the main local business/es you use for each category.
a)						
b)						
c)						
d)						
e)						
Other expenditure						
Sub-total a)	£	%				

b) Staff	Total amount spent £	% of total expenditure	% 40 Min drive time	% 1 hour drive time	% Elsewhere	
Staff wages (excl. NI and pension)						
Training						
Sub-total b)	£	%				
c) Contractors	Total amount spent £	% of total option expenditure	% 40 Min drive time	% 1 hour drive time	% Elsewhere	Please name the main local business/es you use for each category.
1)						
2)						
Sub-total c)	£					
d) Other scheme expenditure	Total amount spent £	% of total expenditure	% 40 Min drive time	% 1 hour drive time	% Elsewhere	Please name the main local business/es you use for each category.
Scheme advisory services						
Professional service (i.e. vets, solicitors, accountants)						
Plant, machinery, repairs						
Fuel and utilities						

New Investment						
Insurance						
Other expenditure						
Sub-total d)						
Total a)-d)		100%				

Appendix 3 Example of Agreement Holder Record Sheet

Agreement Holder Code:	AG0000XXXX																																																									
Customer Name	XXXXXXX																																																									
Address Line	XXXXXX																																																									
Address Line	XXXX																																																									
Address Line	XXXX																																																									
Town	XXXXXX																																																									
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Postcod	XXXXXX																																																									
Tel	XXXXXXXXXXXX																																																									
ALT_ID	5																																																									
Start Date:	01/08/2005																																																									
<table border="1"> <thead> <tr> <th>Option Group Code</th> <th>ELS_MasterSample_Option</th> <th>Option Area (Option Area (r</th> </tr> </thead> <tbody> <tr><td>EB</td><td>EB1 - Hedgerow management (on both sides of hedge)</td><td>0</td></tr> <tr><td>EB</td><td>EB11 - Stone wall protection and maintenance</td><td>0</td></tr> <tr><td>EB</td><td>EB2 - Hedgerow management (on one side of hedge)</td><td>0</td></tr> <tr><td>EB</td><td>EB5 - Stone faced hedge bank management on one side</td><td>0</td></tr> <tr><td>EG</td><td>EG2NR - Wild bird seed mixture in grassland areas</td><td>0.5</td></tr> <tr><td>EJ</td><td>EJ1 - Management of high erosion risk cultivated land</td><td>6.89</td></tr> <tr><td>EJ</td><td>EJ2 - Management of maize crops to reduce soil erosion</td><td>23.64</td></tr> <tr><td>EK</td><td>EK2 - Permanent grassland with low inputs: outside SDA & ML</td><td>4.33</td></tr> <tr><td>EK</td><td>EK4 - Manage rush pastures: outside SDA & ML</td><td>5.38</td></tr> <tr><td>EL</td><td>EL1 - Field corner management: SDA land</td><td>5.87</td></tr> <tr><td>EL</td><td>EL2 - Permanent in-bye grassland with low inputs: SDA land</td><td>3.52</td></tr> <tr><td>EL</td><td>EL4 - Manage rush pastures: SDA land & ML parcels under 15ha</td><td>2.35</td></tr> <tr><td>EM</td><td>EA1 - Farm Environment Record (FER)</td><td>359.03</td></tr> <tr><td>EM</td><td>EM1 - Soil management plan (pre-RDPE)</td><td>359.03</td></tr> <tr><td>EM</td><td>EM2 - Nutrient management plan (pre-RDPE)</td><td>359.03</td></tr> <tr><td>EM</td><td>EM3 - Manure management plan (pre-RDPE)</td><td>359.03</td></tr> <tr><td>EM</td><td>EM4 - Crop protection management plan (pre-RDPE)</td><td>27</td></tr> <tr><td>NA</td><td>OPTELSTHR - Non-Organic threshold payment option</td><td>0</td></tr> </tbody> </table>		Option Group Code	ELS_MasterSample_Option	Option Area (Option Area (r	EB	EB1 - Hedgerow management (on both sides of hedge)	0	EB	EB11 - Stone wall protection and maintenance	0	EB	EB2 - Hedgerow management (on one side of hedge)	0	EB	EB5 - Stone faced hedge bank management on one side	0	EG	EG2NR - Wild bird seed mixture in grassland areas	0.5	EJ	EJ1 - Management of high erosion risk cultivated land	6.89	EJ	EJ2 - Management of maize crops to reduce soil erosion	23.64	EK	EK2 - Permanent grassland with low inputs: outside SDA & ML	4.33	EK	EK4 - Manage rush pastures: outside SDA & ML	5.38	EL	EL1 - Field corner management: SDA land	5.87	EL	EL2 - Permanent in-bye grassland with low inputs: SDA land	3.52	EL	EL4 - Manage rush pastures: SDA land & ML parcels under 15ha	2.35	EM	EA1 - Farm Environment Record (FER)	359.03	EM	EM1 - Soil management plan (pre-RDPE)	359.03	EM	EM2 - Nutrient management plan (pre-RDPE)	359.03	EM	EM3 - Manure management plan (pre-RDPE)	359.03	EM	EM4 - Crop protection management plan (pre-RDPE)	27	NA	OPTELSTHR - Non-Organic threshold payment option	0
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Appendix 4 Option Groupings

ELS Option Groupings

code	Options	Potential extra costs
EB	Boundary features	
EB1-3	Hedgerow management	Extra labour and machinery
EB4-5	Stone-face hedge management	Repair gaps, stock proof if damaged i.e. fencing. Extra labour and machinery
EB6-7	Ditch management	No cultivations or fert within 2 m, restricted cutting dates and use of cutting rotation. Extra labour and machinery
EB 8-10	Combined hedge & ditch management	Extra labour and machinery
EB11	Stone wall protection & maintenance	Regularly repair gaps – use of waller. Extra labour
EC	Trees & woodland	
EC1-2	In-field trees	Grass establishment, topping once
EC3	Maintenance of woodland fences	Maintain stock-proof fences. Additional labour
EC4	Management of woodland edges	Income foregone – no cultivation within 6 m. No extra costs
ED	Historic & landscape features	
ED1	Maintenance of TFB	Minor repairs, new gutters drainpipes, painting wood/metal work, replacing tiles/slates broken glass, pointing
ED2	Stop cultivation archaeological features	Grass establishment, haymaking, weed control on 20%, site management
ED3	Reduce cultivation on arch. features	No extra costs
ED4-5	Management of scrub/grassland on arch. Features	Prevent expansion of scrub by grazing/mowing. Maintain grass sward. Extra labour, machinery, glyphosate
EE	Buffer strips & margins	
EE1-3	Buffer strips on cultivated land	Grass establishment, topping , weed control on 5%
EE4-6	Buffer strips on intensive grass	Forage costs, weed control on 5%
EE7	Buffer –in-field ponds on grass	Forage costs, weed control on 5%
EE8	Buffer-in-field ponds on arable	Grass establishment, topping, weed control on 20%
EF	Options for arable	

EF1	Management of field corners	Grass establishment, topping, weed control on 20%
EF2	Wild bird seed mixture	seed mix, seed mix establishment, weed control on 10%
EF4	Nectar flower mixture	seed mix, seed mix establishment, weed control on 10%
EF6	Overwintered stubbles	extra cultivation
EF7	Beetle banks	grass establishment, annual topping, additional time for field operations, weed control on 5%
EF8	Skylark plots	Income foregone. No extra costs
EF9	Unfert cereal headlands	Income foregone. Weed control, herbicide application, slower combining, grain cleaning, grain drying
EF10	Unharvested cereal headlands	Weed control
EF11	Uncropped margins for rare plants	Weed control
EG1	Undersown spring cereals	Slower combining
EG4	Cereals for whole-crop silage followed by overwintered stubbles	Weed control, herbicide application, over winter stubble
EJ	Options to protect soils	
EJ2	Management of maize crop to reduce soil erosion	Additional labour and machinery
EK	Options for grass outside SDAs	
EK1	Field corners out of management	Weed control on 10%
EK2	Perm grass with low input	Forage costs, weed control on 10%
EK3	Perm grass with v low inputs	Forage costs, weed control on 20%
EK4	Management of rush pastures	Forage costs, weed control on 50%, cutting
EG2	Wild bird seed mixture on grass	seed mix, seed mix establishment
EG3	Nectar flower mix on grass	seed mix, seed mix establishment
EK5	Option for mixed stocking on grass	
EK5	Mixed stocking	Labour
EL	Options for SDAs	
EL1	Field corners out of management	Weed control on 20%
EL2-3	Perm grass with low/v low inputs	Forage costs, weed control on 20%
EL4	Management of rush pastures	Forage costs, weed control on 50%, cutting.
EL5	Enclosed rough pastures	Forage costs, weed control on 20%
EL6	Unenclosed moorland rough grazing	Weed control on 5%
EM	Plans	
EA1	Farm Environment Record (FER)	

EM1	Soil management plan (pre-RDPE)	
EM2	Nutrient management plan (pre-RDPE)	
EM3	Manure management plan (pre-RDPE)	
EM4	Crop protection management plan (pre-RDPE)	

HLS Option Groupings

code	Options	Potential extra costs
HB	Boundary features	
EB1-3	Hedgerow management	Extra labour and machinery
EB4-5	Stone-face hedge management	Repair gaps, stock proof if damaged i.e. fencing. Extra labour and machinery
EB6-7	Ditch management	No cultivations or fert within 2 m, restricted cutting dates and use of cutting rotation. Extra labour and machinery
EB 8-10	Combined hedge & ditch management	Extra labour and machinery
EB11	Stone wall protection & maintenance	Regularly repair gaps – Extra labour
HB11-12	Management of hedgerows of very high environmental value (both sides)/(one)	Extra labour and machinery
FSB	Sheep fencing – newly restored boundary	
FWB	Post and wire fencing - newly restored boundary	
HR	Hedgerow restoration including laying, coppicing and gapping up	
PH	Hedgerow planting – new hedges	
HF	Hedgerow supplement – removal of old fence lines	
HSC	Hedgerow supplement – substantial pre-work	
HSL	Hedgerow supplement – top binding and staking	
WR	Stone wall restoration	
WRS	Stone wall supplement – stone from holding	
WRQ	Stone wall supplement – stone from quarry	
WRD	Stone wall supplement – difficult sites	
TW	Stone wall supplement – top wiring	
BR	Stone-faced hedge bank repair	
BS	Stone-faced hedge bank restoration	
ER	Earthbank restoration	
ERC	Casting up supplement hedge bank options	
DR	Ditch, dyke and rhine restoration	

FSH	Sheep fencing	
FW	Post and wire	
FD	Deer fencing	
FR/B	Rabbit fencing supplement	
FPE	Permanent electric fencing	
FDS	Fencing supplement – difficult sites	
FHT	High-tensile fencing	High tensile wire, Barbed wire, Strainer posts, Struts, Intermediate posts, Droppers, Labour, Tractor

HC	Trees & woodland	
EC1-2	In-field trees	Grass establishment, topping once
EC3	Maintenance of woodland fences	Maintain stock-proof fences. Additional labour
EC4	Management of woodland edges	No extra costs
HC1-2	Protection of in-field trees – arable/grassland	Grass establishment, Topping once during agreement
HC4	Management of woodland edges	Maintain stock-proof fences. Additional labour
HC5	Ancient trees in arable fields	Grass establishment, Topping twice during agreement
HC6	Ancient trees in intensively managed grass fields	Forage costs
HC7-8	Maintenance/restoration of woodland	Weed control ,Deer control, Tree maintenance, Management time
HC9	Creation of woodland in the Severely Disadvantaged Area (SDA) of the LFA	Weed control ,Deer control, Tree maintenance, Management time
HC10	Creation of woodland outside the LFA SDA and the Moorland Line	Weed control ,Deer control, Tree maintenance, Management time
HC11	Woodland livestock exclusion supplement	Management time
HC12	Maintenance of wood pasture and parkland	Grassland weed control on 50%, Deer control, Labour, Management time
HC13	Restoration of wood pasture and parkland	Weed control around trees, Grassland weed control on 20%, Deer control. Management time
HC14	Creation of wood pasture	Weed control around trees, Grassland weed control on 20%, Deer control. Management time
HC15-16	Maintenance/restoration of successional areas and scrub	Weed control, Vegetation management, Management time

HC17	Creation of successional areas and scrub	Weed control, Vegetation management, Management time
HC18	Maintenance of high-value traditional orchards	
HC19-20	Maintenance/restoration of traditional orchards in production	Weed control around trees, Grassland weed control on 20%, Management time
HC21	Creation of traditional orchards	Weed control around trees, Grassland weed control on 20%, Management time
TR	Spiral rabbit guards	
TSP	Tree and shrub/whips and transplants plus planting	
TT	Tree tube and stake	
STT	Standard parkland tree/hedgerow tree and planting	
TP	Parkland tree guard – post and wire (wood)	
TGS	Welded steel tree guard	
MT/SF	Planting fruit trees	
TO	Orchard tree guard – tube and mesh	
TOF	Orchard tree guard – post and rail	
FP	Orchard tree pruning	
CBT	Coppicing bankside trees	
TS1	Tree surgery, minor – to include minor pollarding	
TS2	Tree surgery, major – to include major pollarding	
TRE	Tree removal	

HD	Historic environment options	
ED1	Maintenance of TFB	Minor repairs, new gutters drainpipes, painting wood/metal work, replacing tiles/slates broken glass, pointing
ED2	Stop cultivation archaeological features	Grass establishment, haymaking, weed control on 20%, site management
ED3	Reduce cultivation on arch. features	No extra costs
ED4-5	Management of scrub/grassland on arch. Features	Prevent expansion of scrub by grazing/mowing. Maintain grass sward. Extra labour, machinery, glyphosate
HC21	Creation of traditional orchards	Weed control around trees, Grassland weed control on 20%, Management time
HD1	Maintenance of weatherproof traditional farm buildings	Minor repairs, new gutters drainpipes, painting

		wood/metal work, replacing tiles/slates broken glass, pointing
HD2	Take out of cultivation archaeological features that are currently on cultivated land	Grass establishment, haymaking, weed control on 20%, site management
HD3	Reduced-depth, non-inversion cultivation on land where there are archaeological features	No extra costs
HD4	Management of scrub on archaeological features	Prevent expansion of scrub by grazing/mowing. Maintain grass sward. Extra labour, machinery, glyphosate
HD5	Management of archaeological features on grassland	
HD6	Crop establishment by direct drilling (non-rotational)	Direct drilling
HD7	Arable reversion by natural regeneration	Scrub + rabbit control, Topping, Management time
HD8	Maintaining high water levels to protect archaeology	Forage, Water level management, Scrub control
HD9	Maintenance of designed/engineered water bodies	Annual maintenance Inspection, Maintenance of masonry, Maintenance of earth banks
HD10	Maintenance of traditional water meadows	Ditch and channel Maintenance, Sluice maintenance, Maintenance of main water Carriers, Thistle control, Reseeding
HD11	Restoration of traditional water meadows	Ditch and channel Maintenance, Sluice maintenance, Maintenance of main water Carriers, Thistle control, Reseeding
HAP	Historical and archaeological feature protection	
HTB	Restoration of historic buildings	
HAP	Historical and archaeological feature protection	
HTB	Restoration of historic buildings	

HE	Options for buffer strip	
EE1-3	Buffer strips on cultivated land	Grass establishment, topping , weed control on 5%
EE4-6	Buffer strips on intensive grass	Forage costs, weed control on 5%

EE7	Buffer –in-field ponds on grass	Forage costs, weed control on 5%
EE8	Buffer-in-field ponds on arable	Grass establishment, topping, weed control on 20%
HE1-3	Buffer strips on cultivated land	Grass establishment, topping, weed control on 5%
HE4-6	Buffer strips on intensive grass	Forage costs, weed control on 5%
HE7	Buffer –in-field ponds on grass	Forage costs, weed control on 5%
HE8	Buffer-in-field ponds on arable	Grass establishment, topping, weed control on 20%
HE10	Floristically enhanced grass margin (non-rotational)	Enhanced margin establishment, annual topping, weed control, management and maintenance

HF	Options for arable	
EF1	Management of field corners	Grass establishment, topping, weed control on 20%
EF2	Wild bird seed mixture	seed mix, seed mix establishment, weed control on 10%
EF4	Nectar flower mixture	seed mix, seed mix establishment, weed control on 10%
EF6	Overwintered stubbles	extra cultivation
EF7	Beetle banks	grass establishment, annual topping, additional time for field operations, weed control on 5%
EF8	Skylark plots	No extra costs
EF9	Unfert cereal headlands	Weed control, herbicide application, slower combining, grain cleaning, grain drying
EF10	Unharvested cereal headlands	Weed control
EF11	Uncropped margins for rare plants	Weed control
EG1	Undersown spring cereals	Slower combining
EG4	Cereals for whole-crop silage followed by overwintered stubbles	Weed control, herbicide application, over winter stubble
HF1	Management of field corners	Grass establishment, topping, weed control on 20%
HF2	Wild bird seed mixture	seed mix, seed mix establishment, weed control on 10%
HF4	Nectar flower mixture	Seed mix, seed mix

		establishment, weed control on 10%
HF6	Overwintered stubbles	extra cultivation
HF7	Beetle banks	grass establishment, annual topping, additional time for field operations, weed control on 5%
HF8	Skylark plots	No extra costs
HF9	Unfert cereal headlands	Weed control, herbicide application, slower combining, grain cleaning, grain drying
HF10	Unharvested cereal headlands	Weed control
HF11	Uncropped margins for rare plants	Weed control
HF12	Enhanced wild bird seed mix plots (rotational or non-rotational)	– seed mix, establishment costs, management and maintenance
HF13	Fallow plots for ground-nesting birds (rotational or non-rotational)	Fallow cultivation, plough/press/disc/roll, fallow cultivation by discing ½ plot at end of June. Weed control, extra management time
HF14	Unharvested, fertiliser-free conservation headland	Extra management time
HF15	Reduced herbicide cereal crop preceding overwintered stubble	Slower combining, drying and cleaning, management time.
HF20	Cultivated fallow plots or margins for arable plants (rotational or non-rotational)	cultivations, plough/press/disc/roll, weed control on plot
HG1	Undersown spring cereals	Slower combining
HG2	Wild bird seed mixture on grass	seed mix, seed mix establishment
HG3	Nectar flower mix on grass	seed mix, seed mix establishment
HG4	Cereals for whole-crop silage followed by overwintered stubbles	Weed control, herbicide application, over winter stubble
HG5	Brassica fodder crops followed by overwintered stubble	Cultivation, fodder crop establishment, reseeding, labour
HG6	Fodder crop management to retain or recreate an arable mosaic	Fodder crop establishment, reseeding, labour
HG7	Low-input spring cereal to retain or recreate an arable mosaic	Crop operations

HJ	Resource protection options	
EJ2	Management of maize crop to reduce soil erosion	Additional labour and machinery

HJ2	Management of maize crop to reduce soil erosion	Additional labour and machinery
HJ3	Arable reversion to unfertilised grassland to prevent erosion or run-off	Grass establishment, Weed control
HJ4	Arable reversion to grassland with low fertiliser input to prevent erosion or run-off	Grass establishment, Weed control
HJ5	In-field grass areas to prevent erosion or run-off	Grass establishment, topping once a year from 2 nd year, weed control
HJ6	Preventing erosion or run-off from intensively managed, improved grassland	Forage costs, weed control
HJ7	Seasonal livestock removal on grassland with no input restriction	Removal of livestock
HJ8	Nil fertiliser supplement	Forage costs, weed control
RPD	Cross-drains under farm tracks	Labour, Tractor & trailer, JCB Hire (exc. operator) Trap and grid top, Plastic pipe 300 mm
RPG	Relocation of gates	Gate hanging post, Gate slamming post Field gate furniture, Labour, JCB Hire (ex operator), Tractor & trailer

HK	Options for grass outside SDAs	
EG2	Wild bird seed mixture on grass	seed mix, seed mix establishment
EG3	Nectar flower mix on grass	seed mix, seed mix establishment
EK1	Field corners out of management	Weed control on 10%
EK2	Perm grass with low input	Forage costs, weed control on 10%
EK3	Perm grass with v low inputs	Forage costs, weed control on 20%
EK4	Management of rush pastures	Forage costs, weed control on 50%, cutting
EK5	Mixed stocking	Labour
HK1	Take field corners out of management outside the SDA (of the LFA) and the Moorland Line	Weed control on 10%
HK2	Permanent grassland with low inputs outside the SDA (of the LFA) and the Moorland Line	Forage costs, weed control on 10%
HK3	Permanent grassland with very low inputs outside the SDA (of the LFA) and the Moorland Line	Forage costs, weed control on 20%
HK4	Management of rush pastures outside the SDA (of the LFA) and the Moorland Line	Forage costs, weed control on 50%, cutting
HK5	Mixed stocking	Labour
HK6-7	Maintenance/restoration of species-rich, semi-natural grassland	Forage, supplementary food, purchase hay/silage, spread

		farmyard manure, topping pasture, extend winter housing management input
HK8	Creation of species-rich, semi-natural grassland	Established sp rich grassland mix, controlling undesirable plant sp, supp. Poor quality silage, purchase hay/silage, spread farmyard manure, topping pasture, farm labour for field boundary work, management
HK9-12	Maintenance/restoration of wet grassland for breeding waders/winter waders and wildfowl	Forage costs, extra operating costs
HK13-14	Creation of wet grassland for breeding waders / wintering waders and wildfowl	Forage costs, extra operating costs
HK15-16	Maintenance/restoration of grassland for target features	Forage costs, extra operating costs
HK17	Creation of grassland for target features	Forage costs, extra operating costs
HE11	Enhanced strips for target species on intensive grassland	Seed, cost of establishment, labour for electric fencing, weed control
HK18	Hay-making supplement	Making hay, management input
HK19	Raised water levels supplement	Labour, Replacement barley, Management time
HQ13	Inundation grassland supplement	Removal of livestock Grassland re-establishment Removal of flood debris Restricted access Management time
HR1	Cattle grazing supplement	
HR2	Native breeds at risk grazing supplement	
HR6	Supplement for small fields	Labour and machinery, Livestock supervision
HR7	Supplement for difficult sites	Labour, transportation
GS	Native seed mix	
CDB	Cattle drinking bay	
CCG	Cattle grids	
WS	Water supply	
WT	Water trough	
CLH	Livestock-handling facilities	

HL	Options for SDAs	
EL1	Field corners out of management	Weed control on 20%
EL2-3	Perm grass with low/v low inputs	Forage costs, weed control on 20%
EL4	Management of rush pastures	Forage costs, weed control on 50%, cutting.

EL5	Enclosed rough pastures	Forage costs, weed control on 20%
EL6	Unenclosed moorland rough grazing	Weed control on 5%
HL1	Take field corners out of management (SDA land within the LFA – excluding parcels within the Moorland Line)	Weed control on 20%
HL2-3	Perm grass with low/v low inputs (SDA land within the LFA – excluding parcels within the Moorland Line)	Forage costs, weed control on 20%
HL4	Management of rush pastures (SDA land within the LFA and Moorland Line parcels under 15 ha)	Forage costs, weed control on 50%, cutting.
HL5	Enclosed rough grazing (SDA land within the LFA and Moorland Line parcels under 15 ha)	Forage costs, weed control on 20%
HL6	Unenclosed moorland rough grazing (Moorland Line land only)	Weed control on 5%
HL9-10	Maintenance/restoration of moorland	Off-wintering ewes Bracken control Farm labour for scrub Management input management etc
HL11	Creation of upland heathland	Supplementary food for cattle, Controlling undesirable plant species, Farm labour, Management input
HL7-8	Maintenance/restoration of rough grazing for birds	Additional food for cattle, Animal health treatments, Control of undesirable plant species, Topping excess vegetation and rush, Farm labour, Management input
HL12	Supplement for management of heather, gorse and grass by burning, cutting or swiping	Additional labour, Fire break creation, Management
HL13	Moorland re-wetting supplement	Maintain grips, inspect grazing livestock
HL15	Seasonal livestock exclusion supplement	Cost of keep, Farm labour for inspection of livestock plus management input
HR1	Cattle grazing supplement	
HR2	Native breeds at risk grazing supplement	
HR6	Supplement for small fields	Labour and machinery, Livestock supervision
HR7	Supplement for difficult sites	Labour, transportation
GBC	Grip-blocking drainage channels	
CDB	Cattle drinking bay	
CCG	Cattle grids	
WS	Water supply	
WT	Water trough	
CLH	Livestock-handling facilities	

HN	Access options	
HN1	Linear and open access – base payment	Labour, Public Liability Insurance
HN2	Permissive open access	Labour
HN3	Permissive footpath access	Labour, machinery
HN4	Permissive bridleway/cycle path access	Labour, machinery
HN5	Access for people with reduced mobility	Labour, Machinery, Weed control, Hardcore
HN7	Upgrading Countryside and Rights of Way (CROW) Act access for people with reduced mobility	Labour, Machinery, Weed control, Hardcore
HN6	Upgrading CROW Act access for cyclists/horses	
HN8	Educational access – base payment	Farmer time, public liability insurance
HN9	Educational access – payment per visit	Farmer time labour
CP	Hard standing for car parking	
ADC	Hard standing for disabled paths	
GB	Bridle gate	
GK	Kissing gate	
GD	Kissing gate for disabled access	
ADG	Dog gate	
ST	Timber stile	
LS	Ladder stile	
WSS	Step over stile in a stone wall	
WST	Step through stile in stone wall	
FB	Wooden footbridge	
B	Bench	
TN	Helping prepare teachers' information pack	

HO	Lowland heathland options	
HO1	Maintenance of lowland heathland	Burning/cutting, creation of bare ground, provision of fire breaks, payment to grazier, management time.
HO2	Restoration of lowland heathland on neglected sites	Removal of organic litter, disturbance of organic litter, provision of fire breaks, reversal of drainage, payment to grazier, control of invasive species, management time
HO3	Restoration of forestry areas to lowland heathland	Removal of organic litter, disturbance of organic litter, burning/cutting, creation of bare ground, provision of fire breaks, reversal of drainage, payment to grazier, management of site.

HO4	Creation of lowland heathland from arable or improved grassland	Control of invasive sp, grazing, management time
HO5	Creation of lowland heathland on worked mineral sites	Nurse crop, grazier, weed control, management time
LHX	Major preparatory work for heathland recreation	

HP	Inter-tidal and coastal options	
HP1-2	Maintenance/restoration of sand dunes	Forage, Supplementary feed, Purchase hay/silage, Control undesirable plant species, Scrub/weed control half area, Access & livestock management, Removal of litter, Management time
HP3	Creation of coastal vegetated shingle and sand dunes on arable land	Forage, Supplementary feed, Purchase hay/silage, Control undesirable plant species, Scrub/weed control half area, Access & livestock management, Removal of litter, Management time
HP4	Creation of coastal vegetated shingle and sand dunes on grassland	Forage, Supplementary feed, Purchase hay/silage, Control undesirable plant species, Scrub/weed control half area, Access & livestock management, Removal of litter, Management time
HP5-6	Maintenance/restoration of coastal salt marsh	Removal of litter, management time
HP7	Creation of inter-tidal and saline habitat on arable land	Weed/vegetation control, fencing/boundary/repair/maintenance, removal of debris, maintenance of infrastructure, maintenance of drainage system, access/conservation management, management time
HP8	Creation of inter-tidal and saline habitat on grassland	Weed/vegetation control, fencing/boundary/repair/maintenance, removal of debris, maintenance of infrastructure, access management, management time
HP9	Creation of inter-tidal and saline habitats by non-intervention	Weed/vegetation Control, Fencing/boundary Maintenance, Removal of debris, Infrastructure

		maintenance, Maintenance of drainage, Access management, Management time
HP10	Supplement for extensive grazing on salt marsh	No extra costs
HP11	Salt marsh livestock exclusion supplement	Managing exclusion, Fencing repair maintenance

HQ	Wetland options	
HQ1-2	Maintenance of ponds of high wildlife value (less than 100 m ²)/(more than 100 m ²)	Vegetation management, Management
HQ3-5	Maintenance/restoration/creation of reedbeds	Water management, Scrub control, Dyke maintenance, Management
HQ6-8	Maintenance/restoration/creation of fen	Scrub control, Dyke maintenance, Management
HQ9-10	Maintenance/restoration of lowland raised bog	Dyke maintenance, Nutrient pollution/weed control, Management
HQ11	Wetland cutting supplement	Harvesting of reed, Harvesting of sedge, Cutting non-commercial vegetation, Removal/disposal of cut vegetation, Reed royalty payment, Management
HQ12	Wetland grazing supplement	Grazing management, Management
WDC	Creation of ditches – rhines and dykes	
WGC	Creation of gutters	
S1	Soil bund	
C	Culvert	
S2	Timber sluice	
S3	Brick, stone or concrete sluice	
SCR	Scrape creation – first 100 m ²	
SCP	Scrape creation – over 100 m ²	
STP	Silt trap provision	
WWP	Wind pumps for water-level measures	
WDI	Drove improvement	
WLB	Ligger and bridge provision	
WPS	Construction of water-penning structures	
PC	Pond creation – first 100 m ²	
PCP	Pond creation – over 100 m ²	
PR	Pond restoration – first 100 m ²	
PRP	Pond restoration – over 100 m ²	

HL	Additional supplement	
HL16	Shepherding supplement	Farm labour, vehicle and

		trained dog, management input
HR4	Supplement for control of invasive species	Glyphosate, Labour for cutting Spot spraying 2 hours @£22/hr
HR8	Supplement for group applications	Management

HLS	Landscape and Species capital items	
GF	Wooden field/river gate	
LSP	Stone gate post	
E	Removal of eyesore	
LWW	Wooden wings for gates	
OH1	Otter holt – log construction	
OH2	Otter holt – concrete pipe and chamber construction	
SBB	Bat/bird box	
SBS	Bird strike markers	Markers, labour
SSM	Small mammal boxes	
SBG	Badger gates	Labour, badger gate materials

HSB	Scrub and bracken control	
SS	Scrub management – base payment	
SA	Scrub management – less than 25% cover	
SB	Scrub management – 25–75% cover	
SC	Scrub management – over 75% cover	
BMB	Mechanical bracken control – base payment	
BMA	Mechanical bracken control – area payment	
BCB	Chemical bracken control – base payment	
BCA	Chemical bracken control – area payment	
BDS	Difficult site supplement for bracken and scrub control	
HR5	Bracken control supplement	Chemical control, mechanical control

HM	Plans	
EA1	Farm Environment Record (FER)	
EM1	Soil management plan (pre-RDPE)	
EM2	Nutrient management plan (pre-RDPE)	
EM3	Manure management plan (pre-RDPE)	
EM4	Crop protection management plan (pre-RDPE)	
PAH	Professional help with management plan	

HOES	Special projects	
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OELS Option Groups

code	Options	Potential extra costs
OB	Boundary features	
OB1-3	Hedgerow management	1 every 2 or 3 years trimming. Extra labour and machinery
OB4-5	Stone-face hedge management	Repair gaps, stock proof if damaged i.e. fencing. Extra labour and machinery
OB6-7	Ditch management	No cultivations or fert within 2 m, restricted cutting dates and use of cutting rotation. Extra labour and machinery
OB8-10	Combined hedge & ditch management	Extra labour and machinery

OC	Trees & woodland	
OC1-2	In-field trees	Income foregone under canopy. Grass establishment, forage
OC3	Maintenance of woodland fences	Maintain stock-proof fences. Additional labour
OC4	Management of woodland edges	Income foregone – no cultivation within 6 m. No extra costs

OD	Historic environment options	
OD1	Maintenance of TFB	Minor repairs, new gutters drainpipes, painting wood/metal work, replacing tiles/slates broken glass, pointing
OD2	Stop cultivation archaeological features	Haymaking, weed control, site management
OD3	Reduce cultivation on arch. features	No extra costs
OD4-5	Management of scrub/grassland on arch. Features	Prevent expansion of scrub by grazing/mowing. Maintain grass sward. Extra labour, machinery,

OE	Options for buffer strips	
OE1-3	Buffer strips on cultivated land	Income foregone. Grass establishment, topping , physical removal of weeds
OE4-6	Buffer strips on intensive grass	Income foregone. Forage costs, weed control
OE7	Buffer –in-field ponds on grass	Income foregone. Forage costs, weed control
OE8	Buffer-in-field ponds on arable	Income foregone. Grass establishment, topping, weed

		control
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OHF	Options for arable	
OF1	Management of field corners	Topping, weed control
OF2	Wild bird seed mixture	seed mix, seed mix establishment, weed control (50% of area)
OF4	Nectar flower mixture	Income foregone + seed mix, seed mix establishment, weed control (50% of area)
OF6	Overwintered stubbles	Income foregone, extra cultivation
OF7	Beetle banks	Grass establishment, annual topping, additional time for field operations, weed control (on 50% of area)
OF8	Skylark plots	No extra costs
OG1	Undersown spring cereals	Income foregone. Overwintered stubble
OG4	Cereals for whole-crop silage followed by overwintered stubbles	Income foregone. Weed control, herbicide application, over winter stubble

OK	Options for grass outside SDAs	
OG2	Wild bird seed mixture on grass	Income foregone + seed mix, seed mix establishment, weed control (on 50% of area)
OG3	Nectar flower mix on grass	Income foregone + seed mix, seed mix establishment, weed control (on 50% of area)
OK1	Field corners out of management	Income foregone. Weed control
OK2	Perm grass with low input	Income foregone. Forage costs, weed control
OK3	Perm grass with v low inputs	Income foregone. Forage costs, weed control
OK4	Management of rush pastures	Income foregone. Forage costs, weed control
OK5	Mixed stocking	Labour

OJ	Resource protection options	
OJ2	Management of maize crop to reduce soil erosion	Additional labour and machinery

OL	Options for SDAs	
OL1	Field corners out of management	Income foregone. Weed control
OL2-3	Perm grass with low/v low inputs	Income foregone. Forage costs, weed control
OL4	Management of rush pastures	Income foregone. Forage costs, weed control.

OL5	Enclosed rough pastures	Forage costs, weed control
EM	Plans	
OA1	Farm Environment Record (FER)	
OM1	Soil management plan (pre-RDPE)	
OM2	Nutrient management plan (pre-RDPE)	
OM3	Manure management plan (pre-RDPE)	
OM4	Crop protection management plan (pre-RDPE)	

OHLS Options Groupings

code	Options	Potential extra costs
OHB	Boundary features	
EB1-3	Hedgerow management	Extra labour and machinery
EB4-5	Stone-face hedge management	Repair gaps, stock proof if damaged i.e. fencing. Extra labour and machinery
EB6-7	Ditch management	No cultivations or fert within 2 m, restricted cutting dates and use of cutting rotation. Extra labour and machinery
EB 8-10	Combined hedge & ditch management	Extra labour and machinery
EB11	Stone wall protection & maintenance	Regularly repair gaps – Extra labour
OB1-3	Hedgerow management	Reduction in use of contractors? – 1 every 2 or 3 years trimming. Extra labour and machinery
OB4-5	Stone-face hedge management	Repair gaps, stock proof if damaged i.e. fencing. Extra labour and machinery
OB6-7	Ditch management	No cultivations or fert within 2 m, restricted cutting dates and use of cutting rotation. Extra labour and machinery
OB8-10	Combined hedge & ditch management	Extra labour and machinery
OB11	Stone wall protection & maintenance	Regularly repair gaps – use of waller. Extra labour
HB11-12	Management of hedgerows of very high environmental value (both sides)/(one)	Extra labour and machinery
FSB	Sheep fencing – newly restored boundary	
FWB	Post and wire fencing - newly restored boundary	
HR	Hedgerow restoration including laying,	

	coppicing and gapping up	
PH	Hedgerow planting – new hedges	
HF	Hedgerow supplement – removal of old fence lines	
HSC	Hedgerow supplement – substantial pre-work	
HSL	Hedgerow supplement – top binding and staking	
WR	Stone wall restoration	
WRS	Stone wall supplement – stone from holding	
WRQ	Stone wall supplement – stone from quarry	
WRD	Stone wall supplement – difficult sites	
TW	Stone wall supplement – top wiring	
BR	Stone-faced hedge bank repair	
BS	Stone-faced hedge bank restoration	
ER	Earthbank restoration	
ERC	Casting up supplement hedge bank options	
DR	Ditch, dyke and rhine restoration	
FSH	Sheep fencing	
FW	Post and wire	
FD	Deer fencing	
FR/B	Rabbit fencing supplement	
FPE	Permanent electric fencing	
FDS	Fencing supplement – difficult sites	
FHT	High-tensile fencing	High tensile wire, Barbed wire, Strainer posts, Struts, Intermediate posts, Droppers, Labour, Tractor

OHC	Trees & woodland	
EC1-2	In-field trees	Grass establishment, topping once
EC3	Maintenance of woodland fences	Maintain stock-proof fences. Additional labour
EC4	Management of woodland edges	No extra costs
OC1-2	In-field trees	Income foregone under canopy. Grass establishment, forage
OC3	Maintenance of woodland fences	Maintain stock-proof fences. Additional labour
OC4	Management of woodland edges	Income foregone – no cultivation within 6 m. No extra costs
OHC1-2	Protection of in-field trees – arable/grassland	Grass establishment, Topping once during agreement
OHC4	Management of woodland edges	Maintain stock-proof fences.

		Additional labour
HC5	Ancient trees in arable fields	Grass establishment, Topping twice during agreement
HC6	Ancient trees in intensively managed grass fields	Forage costs
HC7-8	Maintenance/restoration of woodland	Weed control ,Deer control, Tree maintenance, Management time
HC9	Creation of woodland in the Severely Disadvantaged Area (SDA) of the LFA	Weed control ,Deer control, Tree maintenance, Management time
HC10	Creation of woodland outside the LFA SDA and the Moorland Line	Weed control ,Deer control, Tree maintenance, Management time
HC11	Woodland livestock exclusion supplement	Management time
HC12	Maintenance of wood pasture and parkland	Grassland weed control on 50%, Deer control, Labour, Management time
HC13	Restoration of wood pasture and parkland	Weed control around trees, Grassland weed control on 20%, Deer control. Management time
HC14	Creation of wood pasture	Weed control around trees, Grassland weed control on 20%, Deer control. Management time
HC15-16	Maintenance/restoration of successional areas and scrub	Weed control, Vegetation management, Management time
HC17	Creation of successional areas and scrub	Weed control, Vegetation management, Management time
HC18	Maintenance of high-value traditional orchards	
HC19-20	Maintenance/restoration of traditional orchards in production	Weed control around trees, Grassland weed control on 20%, Management time
HC21	Creation of traditional orchards	Weed control around trees, Grassland weed control on 20%, Management time
TR	Spiral rabbit guards	
TSP	Tree and shrub/whips and transplants plus planting	
TT	Tree tube and stake	
STT	Standard parkland tree/hedgerow tree and planting	
TP	Parkland tree guard – post and wire (wood)	
TGS	Welded steel tree guard	

MT/SF	Planting fruit trees	
TO	Orchard tree guard – tube and mesh	
TOF	Orchard tree guard – post and rail	
FP	Orchard tree pruning	
CBT	Coppicing bankside trees	
TS1	Tree surgery, minor – to include minor pollarding	
TS2	Tree surgery, major – to include major pollarding	
TRE	Tree removal	

OHD	Historic environment options	
ED1	Maintenance of TFB	Minor repairs, new gutters drainpipes, painting wood/metal work, replacing tiles/slates broken glass, pointing
ED2	Stop cultivation archaeological features	Grass establishment, haymaking, weed control on 20%, site management
ED3	Reduce cultivation on arch. features	No extra costs
ED4-5	Management of scrub/grassland on arch. Features	Prevent expansion of scrub by grazing/mowing. Maintain grass sward. Extra labour, machinery, glyphosate
OD1	Maintenance of TFB	Minor repairs, new gutters drainpipes, painting wood/metal work, replacing tiles/slates broken glass, pointing
OD2	Stop cultivation archaeological features	Haymaking, weed control, site management
OD3	Reduce cultivation on arch. features	No extra costs
OD4-5	Management of scrub/grassland on arch. Features	Prevent expansion of scrub by grazing/mowing. Maintain grass sward. Extra labour, machinery,
OHD1	Maintenance of weatherproof traditional farm buildings	Minor repairs, new gutters drainpipes, painting wood/metal work, replacing tiles/slates broken glass, pointing
OHD2	Take out of cultivation archaeological features that are currently on cultivated land	Grass establishment, haymaking, weed control, site management
OHD3	Reduced-depth, non-inversion cultivation on land where there are archaeological features	No extra costs
OHD4	Management of scrub on archaeological	Prevent expansion of scrub

	features	by grazing/mowing. Maintain grass sward. Extra labour, machinery, glyphosate
OHD5	Management of archaeological features on grassland	
HD6	Crop establishment by direct drilling (non-rotational)	Direct drilling
HD7	Arable reversion by natural regeneration	Scrub + rabbit control, Topping, Management time
HD8	Maintaining high water levels to protect archaeology	Forage, Water level management, Scrub control
HD9	Maintenance of designed/engineered water bodies	Annual maintenance Inspection, Maintenance of masonry, Maintenance of earth banks
HD10	Maintenance of traditional water meadows	Ditch and channel Maintenance, Sluice maintenance, Maintenance of main water Carriers, Thistle control, Reseeding
HD11	Restoration of traditional water meadows	Ditch and channel Maintenance, Sluice maintenance, Maintenance of main water Carriers, Thistle control, Reseeding
HAP	Historical and archaeological feature protection	
HTB	Restoration of historic buildings	
HAP	Historical and archaeological feature protection	
HTB	Restoration of historic buildings	

OHE	Options for buffer strips	
EE1-3	Buffer strips on cultivated land	Grass establishment, topping , weed control on 5%
EE4-6	Buffer strips on intensive grass	Forage costs, weed control on 5%
EE7	Buffer –in-field ponds on grass	Forage costs, weed control on 5%
EE8	Buffer-in-field ponds on arable	Grass establishment, topping, weed control on 20%
OE1-3	Buffer strips on cultivated land	Income foregone. Grass establishment, topping , physical removal of weeds
OE4-6	Buffer strips on intensive grass	Income foregone. Forage costs, weed control
OE7	Buffer –in-field ponds on grass	Income foregone. Forage

		costs, weed control
OE8	Buffer-in-field ponds on arable	Income foregone. Grass establishment, topping, weed control
OHE1-3	Buffer strips on cultivated land	Grass establishment, topping, weed control on 5%
OHE4-6	Buffer strips on intensive grass	Forage costs, weed control on 5%
OHE7	Buffer –in-field ponds on grass	Forage costs, weed control on 5%
OHE8	Buffer-in-field ponds on arable	Grass establishment, topping, weed control on 20%
HE10	Floristically enhanced grass margin (non-rotational)	Enhanced margin establishment, annual topping, weed control, management and maintenance
HE11	Enhanced strips for target species on intensive grassland	Seed, cost of establishment, labour for electric fencing, weed control

OHF	Options for arable	
EF1	Management of field corners	Grass establishment, topping, weed control on 20%
EF2	Wild bird seed mixture	seed mix, seed mix establishment, weed control on 10%
EF4	Nectar flower mixture	seed mix, seed mix establishment, weed control on 10%
EF6	Overwintered stubbles	extra cultivation
EF7	Beetle banks	grass establishment, annual topping, additional time for field operations, weed control on 5%
EF8	Skylark plots	No extra costs
EF9	Unfert cereal headlands	Weed control, herbicide application, slower combining, grain cleaning, grain drying
EF10	Unharvested cereal headlands	Weed control
EF11	Uncropped margins for rare plants	Weed control
OF1	Management of field corners	Topping, weed control
OF2	Wild bird seed mixture	seed mix, seed mix establishment, weed control (50% of area)
OF4	Nectar flower mixture	Income foregone + seed mix,

		seed mix establishment, weed control (50% of area)
OF6	Overwintered stubbles	Income foregone, extra cultivation
OF7	Beetle banks	Grass establishment, annual topping, additional time for field operations, weed control (on 50% of area)
OF8	Skylark plots	No extra costs
EG1	Undersown spring cereals	Slower combining
EG4	Cereals for whole-crop silage followed by overwintered stubbles	Weed control, herbicide application, over winter stubble
OG1	Undersown spring cereals	Income foregone. Overwintered stubble
OG4	Cereals for whole-crop silage followed by overwintered stubbles	Income foregone. Weed control, herbicide application, over winter stubble
OHF1	Management of field corners	Grass establishment, topping, weed control on 20%
OHF2	Wild bird seed mixture	seed mix, seed mix establishment, weed control on 10%
OHF4	Nectar flower mixture	Seed mix, seed mix establishment, weed control on 10%
OHF6	Overwintered stubbles	extra cultivation
OHF7	Beetle banks	grass establishment, annual topping, additional time for field operations, weed control on 5%
HF8	Skylark plots	No extra costs
HF10	Unharvested cereal headlands	Weed control
HF11	Uncropped margins for rare plants	Weed control
HF12	Enhanced wild bird seed mix plots (rotational or non-rotational)	– seed mix, establishment costs, management and maintenance
HF13	Fallow plots for ground-nesting birds (rotational or non-rotational)	Fallow cultivation, plough/press/disc/roll, fallow cultivation by discing ½ plot at end of June. Weed control, extra management time
HF14	Unharvested, fertiliser-free conservation headland	Extra management time
HF15	Reduced herbicide cereal crop preceding overwintered stubble	Slower combining, drying and cleaning, management time.
HF20	Cultivated fallow plots or margins for arable plants (rotational or non-rotational)	cultivations, plough/press/disc/roll, weed

		control on plot
OHG1	Undersown spring cereals	Slower combining
OHG4	Cereals for whole-crop silage followed by overwintered stubbles	Weed control, herbicide application, over winter stubble
HG5	Brassica fodder crops followed by overwintered stubble	Cultivation, fodder crop establishment, reseeding, labour
HG6	Fodder crop management to retain or recreate an arable mosaic	Fodder crop establishment, reseeding, labour
HG7	Low-input spring cereal to retain or recreate an arable mosaic	Crop operations

OHJ	Resource protection options	
EJ2	Management of maize crop to reduce soil erosion	Additional labour and machinery
OJ2	Management of maize crop to reduce soil erosion	Additional labour and machinery
OHJ2	Management of maize crop to reduce soil erosion	Additional labour and machinery
HJ3	Arable reversion to unfertilised grassland to prevent erosion or run-off	Grass establishment, Weed control
HJ4	Arable reversion to grassland with low fertiliser input to prevent erosion or run-off	Grass establishment, Weed control
HJ5	In-field grass areas to prevent erosion or run-off	Grass establishment, topping once a year from 2 nd year, weed control
HJ6	Preventing erosion or run-off from intensively managed, improved grassland	Forage costs, weed control
HJ7	Seasonal livestock removal on grassland with no input restriction	Removal of livestock
HJ8	Nil fertiliser supplement	Forage costs, weed control
RPD	Cross-drains under farm tracks	Labour, Tractor & trailer, JCB Hire (exc. operator) Trap and grid top, Plastic pipe 300 mm
RPG	Relocation of gates	Gate hanging post, Gate slamming post Field gate furniture, Labour, JCB Hire (ex operator), Tractor & trailer

OHK	Options for grass outside SDAs	
EG2	Wild bird seed mixture on grass	seed mix, seed mix establishment
EG3	Nectar flower mix on grass	seed mix, seed mix establishment
OG2	Wild bird seed mixture on grass	Income foregone + seed mix, seed mix establishment, weed control (on 50% of area)
OG3	Nectar flower mix on grass	Income foregone + seed mix,

		seed mix establishment, weed control (on 50% of area)
EK1	Field corners out of management	Weed control on 10%
EK2	Perm grass with low input	Forage costs, weed control on 10%
EK3	Perm grass with v low inputs	Forage costs, weed control on 20%
EK4	Management of rush pastures	Forage costs, weed control on 50%, cutting
EK5	Mixed stocking	Labour
OK1	Field corners out of management	Income foregone. Weed control
OK2	Perm grass with low input	Income foregone. Forage costs, weed control
OK3	Perm grass with v low inputs	Income foregone. Forage costs, weed control
OK4	Management of rush pastures	Income foregone. Forage costs, weed control
OK5	Mixed stocking	Labour
OHG2	Wild bird seed mixture on grass	Income foregone + seed mix, seed mix establishment
OHG3	Nectar flower mix on grass	Income foregone + seed mix, seed mix establishment
OHK1	Take field corners out of management outside the SDA (of the LFA) and the Moorland Line	Weed control on 10%
OHK2	Permanent grassland with low inputs outside the SDA (of the LFA) and the Moorland Line	Forage costs, weed control on 10%
OHK3	Permanent grassland with very low inputs outside the SDA (of the LFA) and the Moorland Line	Forage costs, weed control on 20%
OHK4	Management of rush pastures outside the SDA (of the LFA) and the Moorland Line	Forage costs, weed control on 50%, cutting
OHK5	Mixed stocking	Labour
HK6-7	Maintenance/restoration of species-rich, semi-natural grassland	Forage, supplementary food, purchase hay/silage, spread farmyard manure, topping pasture, extend winter housing management input
HK8	Creation of species-rich, semi-natural grassland	Established sp rich grassland mix, controlling undesirable plant sp, supp. Poor quality silage, purchase hay/silage, spread farmyard manure, topping pasture, farm labour for field boundary work, management
HK9-12	Maintenance/restoration of wet grassland for breeding waders/winter waders and	Forage costs, extra operating costs

	wildfowl	
HK13 -14	Creation of wet grassland for breeding waders / wintering waders and wildfowl	Forage costs, extra operating costs
HK15-16	Maintenance/restoration of grassland for target features	Forage costs, extra operating costs
HK17	Creation of grassland for target features	Forage costs, extra operating costs
HK18	Hay-making supplement	Making hay, management input
HK19	Raised water levels supplement	Labour, Replacement barley, Management time
HR1	Cattle grazing supplement	
HR2	Native breeds at risk grazing supplement	
HR6	Supplement for small fields	Labour and machinery, Livestock supervision
HR7	Supplement for difficult sites	Labour, transportation
GS	Native seed mix	
CDB	Cattle drinking bay	
CCG	Cattle grids	
WS	Water supply	
WT	Water trough	
CLH	Livestock-handling facilities	

OHL	Options for SDAs	
EL1	Field corners out of management	Weed control on 20%
EL2-3	Perm grass with low/v low inputs	Forage costs, weed control on 20%
EL4	Management of rush pastures	Forage costs, weed control on 50%, cutting.
EL5	Enclosed rough pastures	Forage costs, weed control on 20%
EL6	Unenclosed moorland rough grazing	Weed control on 5%
OL1	Field corners out of management	Income foregone. Weed control
OL2-3	Perm grass with low/v low inputs	Income foregone. Forage costs, weed control
OL4	Management of rush pastures	Income foregone. Forage costs, weed control.
OL5	Enclosed rough pastures	Forage costs, weed control
OHL1	Take field corners out of management (SDA land within the LFA – excluding parcels within the Moorland Line)	Weed control on 20%
OHL2-3	Perm grass with low/v low inputs (SDA land within the LFA – excluding parcels within the Moorland Line)	Forage costs, weed control on 20%
OHL4	Management of rush pastures (SDA land within the LFA and Moorland Line parcels under 15 ha)	Forage costs, weed control on 50%, cutting.

OHL5	Enclosed rough grazing (SDA land within the LFA and Moorland Line parcels under 15 ha)	Forage costs, weed control on 20%
HL6	Unenclosed moorland rough grazing (Moorland Line land only)	Weed control on 5%
HL9-10	Maintenance/restoration of moorland	Off-wintering ewes Bracken control Farm labour for scrub Management input management etc
HL11	Creation of upland heathland	Supplementary food for cattle, Controlling undesirable plant species, Farm labour, Management input
HL7-8	Maintenance/restoration of rough grazing for birds	Additional food for cattle, Animal health treatments, Control of undesirable plant species, Topping excess vegetation and rush, Farm labour, Management input
HL12	Supplement for management of heather, gorse and grass by burning, cutting or swiping	Additional labour, Fire break creation, Management
HL13	Moorland re-wetting supplement	Maintain grips, inspect grazing livestock
HL15	Seasonal livestock exclusion supplement	Cost of keep, Farm labour for inspection of livestock plus management input
HR1	Cattle grazing supplement	
HR2	Native breeds at risk grazing supplement	
HR6	Supplement for small fields	Labour and machinery, Livestock supervision
HR7	Supplement for difficult sites	Labour, transportation
GBC	Grip-blocking drainage channels	
CDB	Cattle drinking bay	
CCG	Cattle grids	
WS	Water supply	
WT	Water trough	
CLH	Livestock-handling facilities	

OHN	Access options	
HN1	Linear and open access – base payment	Labour, Public Liability Insurance
HN2	Permissive open access	Labour
HN3	Permissive footpath access	Labour, machinery
HN4	Permissive bridleway/cycle path access	Labour, machinery
HN5	Access for people with reduced mobility	Labour, Machinery, Weed control, Hardcore
HN7	Upgrading Countryside and Rights of Way	Labour, Machinery, Weed

	(CRoW) Act access for people with reduced mobility	control, Hardcore
HN6	Upgrading CRoW Act access for cyclists/horses	
HN8	Educational access – base payment	Farmer time, public liability insurance
HN9	Educational access – payment per visit	Farmer time labour
CP	Hard standing for car parking	
ADC	Hard standing for disabled paths	
GB	Bridle gate	
GK	Kissing gate	
GD	Kissing gate for disabled access	
ADG	Dog gate	
ST	Timber stile	
LS	Ladder stile	
WSS	Step over stile in a stone wall	
WST	Step through stile in stone wall	
FB	Wooden footbridge	
B	Bench	
TN	Helping prepare teachers' information pack	

OHO	Lowland heathland options	
HO1	Maintenance of lowland heathland	Burning/cutting, creation of bare ground, provision of fire breaks, payment to grazier, management time.
HO2	Restoration of lowland heathland on neglected sites	Removal of organic litter, disturbance of organic litter, provision of fire breaks, reversal of drainage, payment to grazier, control of invasive species, management time
HO3	Restoration of forestry areas to lowland heathland	Removal of organic litter, disturbance of organic litter, burning/cutting, creation of bare ground, provision of fire breaks, reversal of drainage, payment to grazier, management of site.
HO4	Creation of lowland heathland from arable or improved grassland	Control of invasive sp, grazing, management time
HO5	Creation of lowland heathland on worked mineral sites	Nurse crop, grazier, weed control, management time
LHX	Major preparatory work for heathland recreation	

OHP	Inter-tidal and coastal options	
HP1-2	Maintenance/restoration of sand dunes	Forage, Supplementary feed, Purchase hay/silage, Control

		undesirable plant species, Scrub/weed control half area, Access & livestock management, Removal of litter, Management time
HP3	Creation of coastal vegetated shingle and sand dunes on arable land	Forage, Supplementary feed, Purchase hay/silage, Control undesirable plant species, Scrub/weed control half area, Access & livestock management, Removal of litter, Management time
HP4	Creation of coastal vegetated shingle and sand dunes on grassland	Forage, Supplementary feed, Purchase hay/silage, Control undesirable plant species, Scrub/weed control half area, Access & livestock management, Removal of litter, Management time
HP5-6	Maintenance/restoration of coastal salt marsh	Removal of litter, management time
HP7	Creation of inter-tidal and saline habitat on arable land	Weed/vegetation control, fencing/boundary/repair/maintenance, removal of debris, maintenance of infrastructure, maintenance of drainage system, access/conservation management, management time
HP8	Creation of inter-tidal and saline habitat on grassland	Weed/vegetation control, fencing/boundary/repair/maintenance, removal of debris, maintenance of infrastructure, access management, management time
HP9	Creation of inter-tidal and saline habitats by non-intervention	Weed/vegetation Control, Fencing/boundary Maintenance, Removal of debris, Infrastructure maintenance, Maintenance of drainage, Access management, Management time
HP10	Supplement for extensive grazing on salt marsh	No extra costs
HP11	Salt marsh livestock exclusion supplement	Managing exclusion, Fencing repair maintenance

OHQ	Wetland options	
HQ1-2	Maintenance of ponds of high wildlife value	Vegetation management,

	(less than 100 m2)/(more than 100 m2)	Management
HQ3-5	Maintenance/restoration/creation of reedbeds	Water management, Scrub control, Dyke maintenance, Management
HQ6-8	Maintenance/restoration/creation of fen	Scrub control, Dyke maintenance, Management
HQ9-10	Maintenance/restoration of lowland raised bog	Dyke maintenance, Nutrient pollution/weed control, Management
HQ11	Wetland cutting supplement	Harvesting of reed, Harvesting of sedge, Cutting non-commercial vegetation, Removal/disposal of cut vegetation, Reed royalty payment, Management
HQ12	Wetland grazing supplement	Grazing management, Management
HQ13	Inundation grassland supplement	Removal of livestock Grassland re-establishment Removal of flood debris Restricted access Management time
WDC	Creation of ditches – rhines and dykes	
WGC	Creation of gutters	
S1	Soil bund	
C	Culvert	
S2	Timber sluice	
S3	Brick, stone or concrete sluice	
SCR	Scrape creation – first 100 m2	
SCP	Scrape creation – over 100 m2	
STP	Silt trap provision	
WWP	Wind pumps for water-level measures	
WDI	Drove improvement	
WLB	Ligger and bridge provision	
WPS	Construction of water-penning structures	
PC	Pond creation – first 100 m2	
PCP	Pond creation – over 100 m2	
PR	Pond restoration – first 100 m2	
PRP	Pond restoration – over 100 m2	

OHR	Additional supplement	
HL16	Shepherding supplement	Farm labour, vehicle and trained dog, management input
HR4	Supplement for control of invasive species	Glyphosate, Labour for cutting Spot spraying 2 hours @£22/hr

HR8	Supplement for group applications	Management
OHLS	Landscape and Species capital items	
GF	Wooden field/river gate	
LSP	Stone gate post	
E	Removal of eyesore	
LWW	Wooden wings for gates	
OH1	Otter holt – log construction	
OH2	Otter holt – concrete pipe and chamber construction	
SBB	Bat/bird box	
SBS	Bird strike markers	Markers, labour
SSM	Small mammal boxes	
SBG	Badger gates	Labour, badger gate materials
OHSB	Scrub and bracken control	
SS	Scrub management – base payment	
SA	Scrub management – less than 25% cover	
SB	Scrub management – 25–75% cover	
SC	Scrub management – over 75% cover	
BMB	Mechanical bracken control – base payment	
BMA	Mechanical bracken control – area payment	
BCB	Chemical bracken control – base payment	
BCA	Chemical bracken control – area payment	
BDS	Difficult site supplement for bracken and scrub control	
HR5	Bracken control supplement	Chemical control, mechanical control
OHM	Plans	
EA1	Farm Environment Record (FER)	
EM1	Soil management plan (pre-RDPE)	
EM2	Nutrient management plan (pre-RDPE)	
EM3	Manure management plan (pre-RDPE)	
EM4	Crop protection management plan (pre-RDPE)	
PAH	Professional help with management plan	
OOES	Special projects	

Appendix 5: Contractor, Supplier and Advisor Questionnaires

Estimating the Incidental Benefits of Environmental Stewardship Countryside and Community Research Institute Contractors Face-to-Face Interview

Complete prior to the interview

Questionnaire No: (ID no. from spreadsheet)	
Name of Respondent:	
Address of Business (including postcode):	
Telephone No:	
Date and time of interview:	
Name of interviewer:	
Landscape Type area in which business located:	

Introduction

Thank you very much for agreeing to be interviewed. As Defra explained in their original letter, Natural England and Defra have asked us to carry out a project to examine the incidental benefits of the environmental stewardship scheme. They are interested in finding out the income and employment impacts of the schemes on the local economy. The results of the survey will enable these agencies to identify the additional benefits of the schemes that go beyond the primary environmental and landscape objectives.

Everything you tell me will be treated confidentially and the results of the survey will be aggregated and conclusions reported as part of the study. We would under no circumstances release any individual information about your farm or your business to anyone else. We stress this because some of the questions cover financial aspects to do with the running of your business.

1 Employment and turnover

Please could you give me some general information about the business.

1 What is your status?

- are you the owner/manager, a partner, or an employee of the contracting business;

(n.b. tick one box only)

Owner/manager	
Partner	
Employee	
Other (specify)	

2. Is the business a full-time contracting business?

Yes **if yes, go to Q3**

No

If no,

2a What proportion does contracting contribute to your total business income?

..... %

2b What other businesses are you involved in?

.....

..

3 Where do you live? _____ Town/village

4 Including yourself, how many people are employed at the business address? (Including working proprietors)

		Of which, how many:	
Employee Type	Persons	Live within a 40 minute travel time	Live within a 1 hour travel time
Regular Full-time (>30hrs/week)			
Regular Part-time (<30 hrs/week)			
Seasonal/Casual			
Total			

(Show map 1)

[Interviewer: if easier/relevant, use table 4a for seasonal/casual workers]

4a

			Of which, how many:	
Employee Type	Persons	Avg. no. Of man weeks per year	Live within a 40 minute travel time	Live within a 1 hour travel time
Seasonal/Casual				
Total				

5. Which of the following best describes your establishment?

- Independent firm
- Firm HQ with branches elsewhere in UK
- Firm HQ with branches outside UK
- Branch of UK company
- Branch of an international company

6. Roughly what percentage of your total contracting turnover comes from working on Stewardship schemes?

a%

b. Don't know

2 Purchases and sales

7. What proportion of all the goods and services (i.e. supplies) you purchase for contracting are from the following areas? (**Show map**)

	Within a 40 minute travel time	Within a 1 hour travel time	Elsewhere	TOTAL
Total Value Of Purchases				100%

8. What proportion of all the goods and services (i.e. supplies) you purchase is used for the Stewardship schemes?

a%
.....

b. Don't know

3 Impact of Stewardship Schemes on Business

9. Approximately how many people with Stewardship Schemes has this business worked with since 2005?

a

b. Don't know

10. Please provide details of the scheme options or activities you have worked on since 2005 (e.g. hedgerow cutting, fencing, scrub clearance etc) and the total number of contracts for each activity/option since 2005.

Stewardship Scheme Activity/Option Description	No. of contracts*

**include a regular annual contract as separate contract for each year*

11. Turning to the main activities of your contracting business since 2005 and distinguishing between Stewardship scheme work and other activities, could you please indicate the approximate proportions of your total revenue and expenditure for each Stewardship scheme activity? (**enter proportions**)

Stewardship Scheme Activity/Option Description*	% of total sales revenue (i.e. turnover)	% expenditure on all labour (staff)	% of all expenditure on supplies (Non-staff)	% of all expenditure on sub-contractors
All other work				
Total	100%	100%	100%	100%

*Refer back to previous question, if necessary

12. Please provide further details about how the business spends money on contracts funded by ES schemes.

Please provide the approximate proportion of total spent on each item (i.e. 'staff costs'). For each row the total % should be the total of '% 40 min., % 1 hour, % UK, '% elsewhere' (see map).

Table 1

Item	% of all expenditure on scheme-related contracts	% 40 min. travel time	% 1 hour travel time	% UK	% Elsewhere	Total %	Please name the main local business/es you use for each category.
<i>Example</i>	30%	10%	30%	60%		100%	<i>John's Ironmongers</i>
a) Staff (excluding sub-contractors)	% of all expenditure on scheme-related contracts	% 40 min. travel time	% 1 hour travel time	% UK	% Elsewhere	Total %	Please name the main local business/es you use for each category.
Staff costs (excl. NI and pension)							
NI, pensions							
Sub-total a)							
b) Supplies	% of all expenditure on scheme-related contracts	% 40 min. travel time	% 1 hour travel time	% UK	% Elsewhere	Total %	Please name the main local business/es you use for each category.
Raw Materials 1 (please specify)							
Raw materials 2 (please specify)							
Raw materials 3 (please specify)							
Other inputs							
Other inputs							
Sub-total b)							

12 Business expenditure (Cont.)

c) Type* of Sub-contractors	% of all expenditure on scheme-related contracts	% 40 min. travel time	% 1 hour travel time	% UK	% Elsewhere	Total %	Please name the main local business/es you use for each category.
Sub-total c)							

*Specify type of sub-contractor in left hand column, i.e. electrician, plumber, landscaper, joiner etc

c) Other expenditure	% of all expenditure on scheme-related contracts	% 40 min. travel time	% 1 hour travel time	% UK	% Elsewhere	Total %	Please name the main local business/es you use for each category.
Fuel & utilities							
Plant and machinery repairs							
Insurance							
Additional taxes (VAT, Corporation Tax and business rates)							
Other* (please specify)							
Sub-total d)							
Total a – d	100%						

*Might include loan repayments, rent/mortgages, fees and bonuses, drawings (if sole owner)

13. What affect have the Stewardship schemes had on the overall turnover (i.e. sales) of this business since 2005?

-10% or less	<input type="checkbox"/>	-10 to 0%	<input type="checkbox"/>
0 %	<input type="checkbox"/>	+1 to +10%	<input type="checkbox"/>
+10 to +30%	<input type="checkbox"/>	+ 30 to +50%	<input type="checkbox"/>
+50% or more	<input type="checkbox"/>		

- 13a If positive or negative, why has this occurred?

14. Please indicate the proportion of Stewardship scheme work described in Q10 by value of all contracts that were carried out by
a) this business and b) sub-contractors.

Scheme activity/option	a) Business %	b) Sub-contractors %	TOTAL
			100%

15. Have any additional people been employed to help specifically with the Stewardship scheme work?

Yes
 No if no, go to Q17

If yes:

16. Please provide further information about these additional employees (or additional hours for existing employees): (**Show prompt card**) (**Interviewer: See notes**)

<i>Occupation</i>	<i>Employment fraction (i.e. 0.2, 0.5, 1 etc)</i>	<i>Left previous job in 40/60 minute drive time?</i>	<i>Place of residence 40 min, 60 min or elsewhere (show map)</i>

(Show map 1)

17. Prior to working on Environmental Stewardship schemes, from what sources would income have been drawn? Please estimate an approximate percentage for each income source.

<i>Income source</i>	<i>%</i>
Total	100%

18. Approximately what proportion of these main sources of income would have been derived from within 40 minutes area, 60 minutes area, or elsewhere (**Show map**)

40 minutes.....%
 60 minutes.....%
 Elsewhere.....%

19. If the Stewardship scheme work had not provided contracts since 2005, what would have been the likely impact on the business?

<i>Outcome: the business would have:</i>	1	2	3	4	5	N/A
Continued at the same level of turnover						
Taken a drop in turnover by ____%						
Diversified into other areas of business such as: 1) 2) 3)						
Been forced to look for business further afield (i.e. beyond 60 minute area)						
Ceased trading						
Increased the number employed by ____ employees						
Decreased the number employed by ____ employees						
Provided more training for its employees						
Provided less training for its employees						

1 = Definitely

2 = Possibly

3 = Unsure

4 = Probably not

5 = Definitely not

4 Training and skills

20. Have you undertaken any training to assist in your contracting work for Environmental Stewardship schemes?

Yes

No if no, go to Q22

If Yes

21. What training have you undertaken and over how many days?

Training	Days

5 Impacts of Environmental Stewardship schemes on the local economy

22. Are there any further comments or observations you would like to make about the impact of the Environmental Stewardship schemes on the local economy of the area (i.e. within 40 minutes) and the wider area (i.e. within 60 minutes)? This will help us to paint a clearer picture of local economic and social impacts arising from the schemes

**Estimating the Incidental Benefits of Environmental Stewardship
Countryside and Community Research Institute
Suppliers Face-to-Face Interview**

Complete prior to the interview

Questionnaire No: (ID no. from spreadsheet)	
Name of Respondent:	
Address of Business:	
Telephone No:	
Date and time of interview:	
Name of interviewer:	
Landscape Type area in which business located:	

Introduction

Thank you very much for agreeing to be interviewed. As Defra explained in their original letter, Natural England and Defra have asked us to carry out a project to examine the incidental benefits of the environmental stewardship scheme. They are interested in finding out the income and employment impacts of the schemes on the local economy. The results of the survey will enable these agencies to identify the additional benefits of the schemes that go beyond the primary environmental and landscape objectives.

Everything you tell me will be treated confidentially and the results of the survey will be aggregated and conclusions reported as part of the study. We would under no circumstances release any individual information about your farm or your business to anyone else. We stress this because some of the questions cover financial aspects to do with the running of your business.

1 Employment and turnover

Please could you give me some general information about this business?

1 What is your status:

- are you the owner/manager, a partner, or an employee;
- is your job full-time?

(*n.b. tick one box only*)

	Full-time	Part-time
Owner/manager		
Partner		
Employee		
Other (specify)		

1a Where do you live ? _____ town/village

(*Show map to assist*)

2 Including yourself, how many people are employed at this address?
(Including working proprietors)

Employee Type	Persons	Of which, how many:	
		Live within a 40 minute travel time	Live within a 1 hour travel time
Regular Full-time (>30hrs/week)			
Regular Part-time (<30 hrs/week)			
Seasonal/Casual			
7.3 Total			

(*Show map 1*)

3 Approximately what proportion of your average annual turnover is spent on goods and services (i.e. supplies), excluding labour?

.....%
.....%

2 Purchases and sales

4 What proportion of all the goods and services (i.e. supplies) you purchase are from the following areas? (*Show map 1*)

	Within a 40 minute travel time	Within a 1 hour travel time	Elsewhere	TOTAL
Total Value Of Purchases				100%

5. Which of the following best describes your establishment?

- Independent firm
 Firm HQ with branches elsewhere in UK
 Firm HQ with branches outside UK
 Branch of UK company
 Branch of an international company

6 What proportion of all sales (by value) is to customers in the following areas?

(Show map 1)

	Within a 40 minute travel time	Within a 1 hour travel time	Elsewhere	TOTAL
Total Value Of Sales				100%

7 Approximately what proportion of your turnover relates to providing supplies for Environmental Stewardship Schemes?

a%

b. Don't know

8 Please provide further details about how the business spends its money

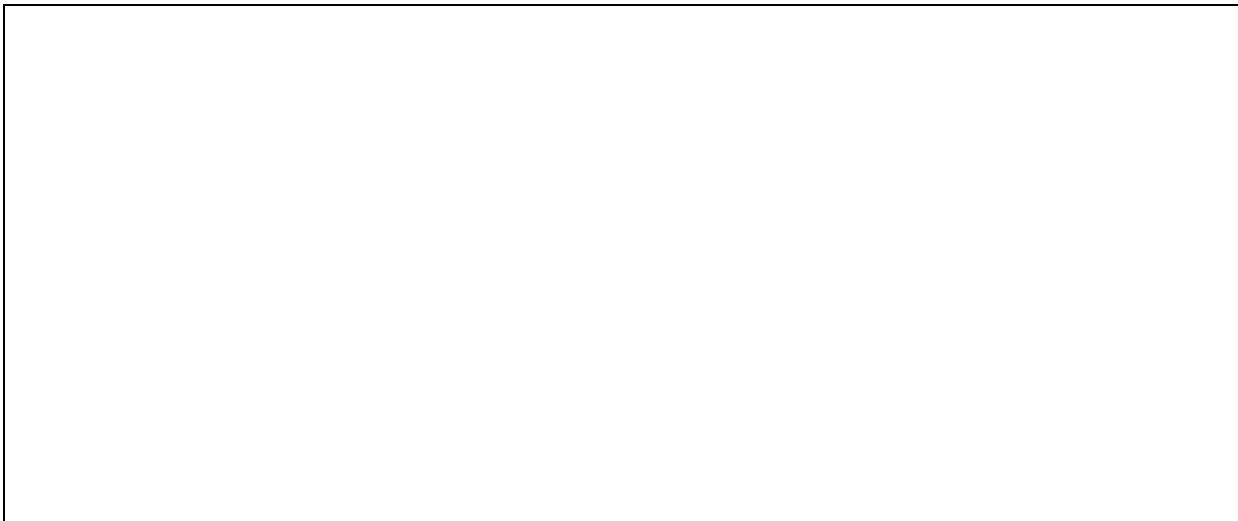
Please provide the approximate proportion of total expenditure spent on each item (i.e. 'staff costs'). For each row the total % should be the total of '% 40 min., % 1 hour, % UK, '% elsewhere' (see map).

Table 1

Item	% of business turnover	% 40 min. travel time	% 1 hour travel time	% Elsewhere	Total %
a) Staff (excluding sub-contractors)	% of business turnover	% 40 min. travel time	% 1 hour travel time	% Elsewhere	Total %
Staff costs (excl. NI and pension)					
NI, pensions					
Sub-total a)					
b) Supplies	% of business turnover	% 40 min. travel time	% 1 hour travel time	% Elsewhere	Total %
Raw materials 1 (please specify)					
Raw materials 2 (please specify)					
Other expenditure					
Sub-total b)					
c) Other expenditure	% of business turnover	% 40 min. travel time	% 1 hour travel time	% Elsewhere	Total %
Fuel & utilities					
Plant and machinery repairs					
Insurance					
Additional taxes (VAT, Corporation Tax and business rates)					
Other* (please specify)					
Sub-total c)					
Total a – c	100%				

3 Impacts of Environmental Stewardship schemes on the local economy

- 9 Are there any further comments or observations you would like to make about the impact of the Environmental Stewardship schemes on the local economy of the area (i.e. within 40 minutes) and the wider area (i.e. within 60 minutes)? This will help us to paint a clearer picture of local economic and social impacts arising from the schemes



Estimating the Incidental Benefits of Environmental Stewardship
Countryside and Community Research Institute
Advisors Face-to-Face Interview

Complete prior to the interview

Questionnaire No: (ID no. from spreadsheet)	
Name of Respondent:	
Address of Business (including postcode):	
Telephone No:	
Date and time of interview:	
Name of interviewer:	
Landscape Type area in which business located:	

Introduction

Thank you very much for agreeing to be interviewed. As Defra explained in their original letter, Natural England and Defra have asked us to carry out a project to examine the incidental benefits of the environmental stewardship scheme. They are interested in finding out the income and employment impacts of the schemes on the local economy. The results of the survey will enable these agencies to identify the additional benefits of the schemes that go beyond the primary environmental and landscape objectives.

Everything you tell me will be treated confidentially and the results of the survey will be aggregated and conclusions reported as part of the study. We would under no circumstances release any individual information about your farm or your business to anyone else. We stress this because some of the questions cover financial aspects to do with the running of your business.

1 Employment and turnover

Please could you give me some general information about this advisory business.

1 What is your status:

- are you the owner/manager, a partner, or an employee;
- is your job full-time?

(n.b. tick one box only)

	Full-time	Part-time
Owner/manager		
Partner		
Employee		
Other (specify)		

2 Where do you live _____ (village/town)

3 Including yourself, how many people are employed at the business address? (Including working proprietors)

Employee Type	Persons	Of which, how many:	
		Live within a 40 minute travel time	Live within a 1 hour travel time
Regular Full-time (>30hrs/week)			
Regular Part-time (<30 hrs/week)			
Seasonal/Casual			
7.4 Total			

(Interviewer: if easier/relevant, use table 3a for seasonal/casual workers)

3a

Employee Type	Persons	Of which, how many:		
		Avg. no. Of man weeks per year	Live within a 40 minute travel time	Live within a 1 hour travel time
Seasonal/Casual				
7.5 Total				

4. Which of the following best describes your establishment?

Independent advisor / consultant	<input type="checkbox"/>
Firm HQ with branches elsewhere in UK	<input type="checkbox"/>
NGO HQ with branches elsewhere in UK	<input type="checkbox"/>
Branch of UK company	<input type="checkbox"/>
Branch of NGO organisation	<input type="checkbox"/>
Government agency	<input type="checkbox"/>

5. What percentage of your total turnover comes from advising on Stewardship schemes?

a%

b. Don't know

2 Purchases and sales

6. What proportion of all the goods and services (i.e. supplies) you purchase for your advisory business is from the following areas?
(Show map 1)

	Within a 40 minute travel time	Within a 1 hour travel time	Elsewhere	TOTAL
Total Value Of Purchases				100%

7. Approximately what proportion of your spend on goods and services relates to advising on Stewardship schemes?

a?

b. Don't know

3 Impact of Environmental Stewardship on Advisory Business

8. Have you assisted in preparing any Environmental Stewardship schemes applications since 2005? If so, which ones and approximately how many schemes? **Complete table**

Environmental Stewardship scheme applications	No. of schemes
HLS – Farm Environment Plan	
OHLS – Farm Environment Plan	
ELS – Application	
OELS – Application	
Other	

9. Please provide details of any scheme options or activities you have advised on since 2005 once schemes have been accepted.
Please provide a breakdown of the approximate proportion of advice delivered on each.

Environmental Stewardship scheme Activity/Option Description	% of total advice delivered
	100%

10. Turning to the main activities of your business since 2005, and distinguishing between Environmental Stewardship scheme work and other activities, could you please indicate the approximate proportions of your total revenue and expenditure for each activity? (**enter proportions**)

Stewardship Scheme Advice activity	% of total sales revenue (i.e. turnover)	% expenditure on all labour (staff)	% of all expenditure on supplies (Non-staff)	% of all expenditure on sub-contractors
HLS – Farm Environment Plan				
OHLS – Farm Environment Plan				
ELS - Application				
OEALS - Application				
Other subsequent scheme advice by activity/option using list in Q10				
Any other work (please specify)				
Total	100%	100%	100%	100%

*Refer back to previous question, if necessary

11. Please provide further details about all business expenditure on work funded through Environmental Stewardship schemes.

Please provide the approximate proportion of total scheme-related expenditure spent on each item (i.e. 'staff costs'). For each row the total % should be the total of '% 40 min., % 1 hour, % UK, % elsewhere' (see map).

Item	% of all scheme related expenditure	% 40 Min. travel time	% 1 hour travel time	% UK	% Elsewhere	Total %
<i>Example</i>		10%	30%	40%	20%	100%
Office supplies						100%
Computers/IT						100%
Other supplies (please specify)						100%
Professional services						100%
Subcontractors						100%
Staff costs (excl. NI and pension)						100%
NI, pensions, and training						100%
Vehicles, machinery purchase/maintenance						
Fuel and utilities						100%
Taxes (VAT, Corporation Tax & business rates)						100%
Loan repayments, inc. rent & mortgage						100%
New investment						100%
Other expenses						100%
Total:	100%					

12. What affect have the Environmental Stewardship schemes had on the overall turnover (i.e. sales) of this business since 2005?

-10% or less	<input type="checkbox"/>	-10 to 0%	<input type="checkbox"/>
0 %	<input type="checkbox"/>	+1 to +10%	<input type="checkbox"/>
+10 to +30%	<input type="checkbox"/>	+ 30 to +50%	<input type="checkbox"/>
+50% or more	<input type="checkbox"/>		

- 12a If positive or negative, why has this occurred?

13. Have any additional people been employed to help specifically with Environmental Stewardship scheme advice?

Yes
 No if no, go to Q15

If yes:

14. Please provide further information about these additional employees (or additional hours for existing employees): (**Show prompt card**) (**Interviewer: See notes**)

Occupation	Employment fraction (i.e. 0.2, 0.5, 1 etc)	Left previous job in 40/60 minute drive time?	Place of residence 40 min, 60 min or elsewhere (show map)

(Show map)

15. Prior to delivering Environmental Stewardship scheme advice, from what sources would income have been drawn? Please estimate an approximate percentage for each income source.

<i>Income source</i>	%
Total	100%

16. Approximately what proportion of this income would have been derived from within a 40 minutes area, 60 minutes area, or elsewhere (**Show map**)

40 minutes.....%
 60 minutes.....%
 Elsewhere.....%

17. If the Environmental Stewardship scheme advice had not provided contracts since 2005, what would have been the likely impact on the business?

<i>Outcome: the business would have:</i>	1	2	3	4	5	N/A
Continued at the same level of turnover						
Taken a drop in turnover by ____ %						
Diversified into other areas of business such as: 1) 2) 3)						
Been forced to look for business further afield (i.e. beyond 60 minute area)						
Ceased trading						
Increased the number employed by ____ employees						
Decreased the number employed by ____ employees						
Provided more training for its employees						
Provided less training for its employees						

- 1 = Definitely
 2 = Possibly
 3 = Unsure
 4 = Probably not
 5 = Definitely not

4 Training and skills

18. Have you undertaken any training to assist in advice provision for Environmental Stewardship schemes?

Yes

No if no, go to Q20

If Yes,

19. What training have you undertaken and over how many days

Training	Days

5 Impacts of Environmental Stewardship schemes on the local economy

20 Are there any further comments or observations you would like to make about the impact of the Environmental Stewardship schemes on the local economy of the area (i.e. within 40 minutes) and the wider area (i.e. within 60 minutes)? This will help us to paint a clearer picture of local economic and social impacts arising from the schemes

Appendix 6: LM3 Model for Aggregate ELS Schemes

Direct effects	Total ELS grant awarded (£)	Agreement holder contribution	Total injection (ELS grant + AH contribution)				
Total injection	347,047,898	-	347,047,898				
Total spent (based on % of total injection spent by AH)			41,645,748				
Less additionality (based on % of work undertaken by AH without scheme)			19,989,959				
Total Direct effects	100		19,989,959				
Indirect effects I	Total Injection (£)	Expenditure		% Local 40	% Local 60	Total injection (40)	Total injection (60)
Scheme expenditure	19989959	0	0				
Main supplies 1	0.1652	3,302,341		0.8463	0.0894	2,794,771	3,090,001
Main supplies 2	0.059	1,179,408		0.7879	0.0909	929,255	1,036,463
Main supplies 3	0.006	119,940		1	0	119,940	119,940
Main supplies 4	0	0		0	0	0	0
Main supplies 5	0	0		0	0	0	0
Staff wages	0.3323	6,642,663		0.9	0.05	5,978,397	6,310,530
Training	0.0048	95,952		1	0	95,952	95,952
Contractors 1	0.3514	7,024,472		0.9321	0.0355	6,547,510	6,796,879
Contractors 2	0	0		0	0	0	0
Scheme advisory services	0.0101	201,899		0.6667	0	134,606	134,606
Professional services	0.0435	869,563		0.7333	0.1333	637,651	753,563
Fuel and utilities	0.0277	553,722		1	0	553,722	553,722
Total Indirect effects I	1	19,989,959	0.000	0.66	0.03	11,813,406	12,581,125

Indirect effects II		Expenditure 40	Expenditure 60	% Local 40	% Local 60	Total injection (40)	Total injection (60)
Contractors, suppliers and advisors expenditure	%	11,813,406	12,581,125				
Staff wages	0.5137	6,068,547	6,462,924	0.8128	0.0309	4,932,515	5,452,769
NI	0.0273	322,506	343,465	0	0	0	0
Raw materials 1	0.0805	950,979	1,012,781	0.3441	0.0985	327,232	448,257
Raw materials 2	0.0434	512,702	546,021	0.1579	0.1921	80,956	191,107
Raw materials 3	0.0139	164,206	174,878	0.2658	0.0947	43,646	63,043
Office supplies	0.0305	360,309	383,724	0.4696	0.0087	169,201	183,535
Sub contractors	0.012	141,761	150,974	0.6643	0.1071	94,172	116,461
Fuel	0.1829	2,160,672	2,301,088	0.8682	0.0341	1,875,895	2,076,272
Vehicles	0.0778	919,083	978,812	0.7154	0.0154	657,512	715,315
Other	0.02	236,268	251,623	0.4488	0.1662	106,037	154,748
Total Indirect effects II	1.00	11,837,033	12,606,288	0.44	0.08	3,354,651	3,948,739
Indirect effects III							
Estimate of subsequent spending						2,635,797	4,277,800
Total Indirect effects III						17,803,855	20,807,664
Indirect multipliers						0.89	1.04
Indirect multipliers (additional)						0.43	0.50
Induced effects		Expenditure		% Local 40	% Local 60	Total injection (L)	Total injection (WL)
Wages to all Staff and owners		10,910,912	11,763,299				
Disposable income (less tax, rent etc)		3,927,928	4,234,788				

Household expenditure	%*						
Food	0.31	1,217,658	1,312,784	0.9445	0.0091	1,150,078	1,251,871
Clothing	0.14	549,910	592,870	0.6977	0.0909	383,672	467,538
Durables	0.17	667,748	719,914	0.775	0.1045	517,505	633,164
Services/other	0.38	1,492,613	1,609,219	0.7727	0.0386	1,153,342	1,305,560
Total	1	3,927,928	4,234,788	0.80	0.06	3,204,596	3,658,132
Subsequent rounds of spending						12,818,385	22,471,385
TOTAL INDUCED EFFECTS						16,022,982	26,129,518
Induced effect multipliers						0.80	1.31
Induced effect multipliers (additional)						0.38	0.63
						Total injection (L)	Total injection (WL)
Total income effects						53,816,795	66,927,141
Income effect multiplier						2.69	3.35
Income effect multiplier (additional)						1.29	1.61
'ELS scheme' income multiplier						0.16	0.19
* From ONS Family Spending 2002-2003							

Appendix 7: Summary of multipliers for aggregate level analysis

1. Schemes

ELS	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.69	3.35	55.46
Income effect multiplier (additional) A	1.29	1.61	26.62
'Scheme' income multiplier C	0.16	0.19	3.19
Employment multiplier	1.16	1.17	1.18

HLS	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.82	3.38	67.23
Income effect multiplier (additional) A	2.23	2.67	53.11
'Scheme' income multiplier C	1.43	1.72	34.18
Employment multiplier	2.14	2.23	2.60

OELS	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.88	3.50	65.71
Income effect multiplier (additional) A	1.47	1.78	33.51
'Scheme' income multiplier C	0.35	0.43	8.04
Employment multiplier	n.d.	n.d.	n.d.

OHLS	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.84	3.47	62.53
Income effect multiplier (additional) A	1.82	2.22	40.02
'Scheme' income multiplier C	0.72	0.88	15.86
Employment multiplier	n.d.	n.d.	n.d.

Non Organic	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.76	3.38	63.15
Income effect multiplier (additional) A	1.41	1.73	32.21
'Scheme' income multiplier C	0.24	0.30	5.54
Employment multiplier	1.23	1.24	1.28

Organic	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.82	3.67	69.18
Income effect multiplier (additional) A	1.49	1.94	36.67
'Scheme' income multiplier C	0.39	0.51	9.57
Employment multiplier	1.98	2.38	2.62

All Schemes	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.78	3.40	63.33
Income effect multiplier (additional) A	1.42	1.73	32.30
'Scheme' income multiplier C	0.26	0.32	5.87
Employment multiplier	1.25	1.28	1.32

2. Regions

East Midlands	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.68	3.30	59.25
Income effect multiplier (additional) A	1.37	1.68	30.22
'Scheme' income multiplier C	0.05	0.07	1.21
Employment multiplier	1.11	1.12	1.12

East of England	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.60	3.36	58.47
Income effect multiplier (additional) A	1.33	1.71	29.82
'Scheme' income multiplier C	0.25	0.33	5.71
Employment multiplier	1.35	1.41	1.47

North East	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.84	3.36	65.29
Income effect multiplier (additional) A	1.45	1.71	33.30
'Scheme' income multiplier C	0.32	0.38	7.39
Employment multiplier	n.d.	n.d.	n.d.

North West	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.90	3.50	66.61
Income effect multiplier (additional) A	1.48	1.78	33.97
'Scheme' income multiplier C	0.71	0.86	16.32
Employment multiplier	1.55	1.61	1.71

South East	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.76	3.36	62.91
Income effect multiplier (additional) A	1.41	1.71	32.08
'Scheme' income multiplier C	0.35	0.43	8.07
Employment multiplier	1.58	1.65	1.83

South West	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.79	3.46	65.52
Income effect multiplier (additional) A	1.42	1.76	33.42
'Scheme' income multiplier C	0.25	0.30	5.75
Employment multiplier	1.17	1.19	1.21

West Midlands	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.91	3.49	66.94
Income effect multiplier (additional) A	1.48	1.78	34.14
'Scheme' income multiplier C	0.24	0.29	5.57
Employment multiplier	1.22	1.23	1.25

Yorkshire & Humber	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.75	3.36	60.82
Income effect multiplier (additional) A	1.40	1.71	31.02
'Scheme' income multiplier C	0.25	0.31	5.62
Employment multiplier	n.d.	n.d.	n.d.

3. Landscapes

Chalk and Limestone	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.65	3.33	62.94
Income effect multiplier (additional) A	1.35	1.70	32.10
'Scheme' income multiplier C	0.26	0.32	6.14
Employment multiplier	1.26	1.29	1.34

Eastern Arable	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.72	3.40	59.23
Income effect multiplier (additional) A	1.39	1.73	30.21
'Scheme' income multiplier C	0.24	0.30	5.16
Employment multiplier	1.31	1.34	1.39

South East Mixed	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.69	3.28	60.31
Income effect multiplier (additional) A	1.37	1.68	30.76
'Scheme' income multiplier C	0.29	0.35	6.48
Employment multiplier	1.30	1.33	1.40

Upland	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.76	3.35	62.46
Income effect multiplier (additional) A	1.41	1.71	31.85
'Scheme' income multiplier C	0.48	0.59	10.93
Employment multiplier	1.71	1.74	1.96

Upland Fringe	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.93	3.46	64.89
Income effect multiplier (additional) A	1.50	1.76	33.09
'Scheme' income multiplier C	0.23	0.27	5.01
Employment multiplier	1.31	1.33	1.39

Western Mixed	Local (40 mins)	Local (60 mins)	Elsewhere
Income effect multiplier B	2.93	3.53	67.73
Income effect multiplier (additional) A	1.49	1.80	34.54
'Scheme' income multiplier C	0.21	0.25	4.88
Employment multiplier	1.18	1.19	1.20

Appendix 8: Scheme Case studies

To further illustrate the benefits of ES, this section highlights four case studies of agreement holders that have undertaken work under one of the ES schemes. These case studies have been selected in consultation with the project Steering Group to illustrate, as far as possible, the range and scale of incidental/socio-economic benefits as a result of ES schemes.

1. ELS Case Study

This case study agreement is located on a large, arable and vegetable producing farm of nearly 2,000 ha located in the East of England. Most of the land is owner occupied, with around 20% of the total area rented out to tenants. The farm is run by a farm manager, whilst the owner lives in the area and takes a strong interest in the management and development of the farm. Due to the vegetable production side of the business it has a large workforce, employing 14 full-time people and around 50 casual staff. Generally, the farm purchases most of its goods and services locally, with around 50% purchased from within 40 minutes drive time of the farm, with another 25% from within 60 minutes of the farm. Only 25% of all goods and services are purchased beyond the 60 mins drive time from the farm.

Scheme options

The farm signed up to ELS in December 2006. The work undertaken fits into 4 option groups. Boundary work (EB) is comprised of hedgerow management and ditch management which involve cutting hedges and clearing out ditches. The trees and woodland options (EC) include protection of in-field trees and the management of woodland edges which requires them to leave uncultivated areas under the trees and around woodland edges. An important element of the scheme is work related to the arable (EF) options, covering 10% of the farm area. This includes field corner management, over-wintered stubbles, skylark plots, unfertilised cereal headlands within arable fields and the establishment of wild bird and nectar flower mixtures, which involves cultivating and planting the seed and then re-establishing every 2 to 3 years. Finally, the agreement holder paid for an agronomist to produce soil, nutrient and crop management plans (EM) as part of the scheme.

Impact of scheme on farm

The agreement holder selected options that fitted well with the existing farm management practices. Under the EF options the farm is only losing crop around the headlands, which were areas producing generally low yields. The additionality provided by the scheme is high as the agreement holder would not have considered undertaking the options in the absence of the scheme, with the exception of EC, as they tend not to cultivate areas under the trees and woodland edges. Overall, the scheme is reported to have resulted in an increase in the farm workload. This is due to the increased paperwork generated by the scheme and management time involved in organising scheme implementation. A little more labour was required in implementing EB

and EF options. All this additional work has been undertaken by existing farm labour and has helped to create work for underemployed farm labour, particularly during the winter months.

Impact of scheme on local economy

The scheme produces a high multiplier of 2.75 which means that for every £1 spent in the local economy for scheme goods and services, another £1.75 is generated within 40 minutes drive of the farm, because most of the purchases for the ELS scheme are made locally. The scheme multiplier is 0.30, which is higher than the average calculated for ELS schemes which was 0.16. Thus for every £1 of scheme payment £0.30 ends up in the local economy. Much of the additional spend in the local economy is on specialist wild bird and nectar seeds for EF options and also additional fuel costs associated with boundary management work and EF options. Payments were also made to a local agronomist to produce scheme management plans.

Social benefits of scheme

As a result of the scheme the farm manager has attended several open days and feels he has learnt much more about the wildlife on the farm. He also believes that through visits from local schools, including his wife's school, there has been an increase in environmental knowledge in the local area. Since joining the scheme they have become LEAF mark accredited and have more contact with farmers who come to observe the work they are doing under the scheme. Also their contact with the general public has increased through LEAF farm walks. The farm manager reported that he now has a much greater pride in what the farm looks like. They are no longer just an arable farm growing crops, but they can take the public around and take pride in showing them the wildlife on the farm. This change in attitude on the part of the farm manager is highly significant. They now see themselves as 'stewards of the environment' and much more likely to engage with the public, and with innovative schemes, than before. They are now considering entering the farm into an HLS scheme. As the farm is a large employer locally it can have a substantial potential impact on the social and economic life of local communities. The knock-on effect if the farm manager and owner change their ideas about the importance of wildlife and how to manage the farm, may be significant.

Summary

This scheme is a good example of what can be achieved with ELS schemes. They have chosen options that fit well with their existing management practices, but also benefit wildlife. The scheme has clearly influenced their management of the farm and their thinking, although they are taking a very level headed view of how to balance environmental improvements with the economic realities. They are now even considering the possibility of applying for HLS, but will look carefully at the financial implications first. There are economic benefits to the local economy, largely through the purchase of specialist wildlife and nectar seeds. They have not employed any local

contractors but are making good use of underemployed farm labour to fulfil scheme obligations.

2. HLS (LFA livestock farm) Case Study

This HLS agreement is located on a very large LFA livestock farm of over 1,400 ha in the North West of England. The agreement holder rents the farm from a utility company, which has a strong interest in the maintenance and enhancement of water quality within the farm's catchment area. The farm is a family unit with no full-time employed labour but does hire casual and contract labour at peak times. Household income comes entirely from agricultural enterprises and support payments. The remote rural location of the farm has a significant influence on the pattern of goods and services it purchases. Only 30% of purchases are located within a 40-minute travel time and half are located more than an hour away.

Scheme options

The farm has been in the scheme for just over two years and has selected a wide range of management activities from a total of six option groups. Boundary work includes the protection, maintenance and restoration of dry-stone walls and enhanced hedgerow management. Woodland restoration and the protection of in-field trees are being undertaken as part of the trees and woodlands option group. Historic features are being protected through the maintenance of traditional farm buildings option and the management of archaeological features on grassland. A number of low input options have been selected for the farm's enclosed grassland and meadows along with options for the management of the farms enclosed rough grazing and moorland. An important feature of this HLS agreement is the range of options selected to maintain and/or restore parts of the farm's rough grazing and moorland, including the seasonal removal of livestock and the reseeding of depleted areas of moorland habitat.

Impacts of the scheme on the farm

The agreement holder has made some major changes to his farming system to comply with the schemes prescriptions. The sheep enterprise has been adjusted to reduce stock numbers and stocking density on areas of rough grazing and moorland. Overall participation in the scheme had created more work as the management of the sheep enterprise is now more complex involving an increase in sheep movements around the farm. A move to in-wintering some stock has been made as well as a change to lambing inside. The move to a low input system has reduced grassland productivity. The agreement holder felt that he adapted well to the scheme and this was helped by the support and assistance provided by his landlord and the scheme officers. The agreement holder also stated that he would not have contemplated making such changes in the absence of the scheme.

Impacts of the scheme on the local economy

The scheme produces a high multiplier of 2.24 which means that for every £1 spent in the local economy for scheme goods and services, another £1.24 is generated within 40 minutes drive of the farm, because most of the purchases

for the HLS scheme are made locally. The scheme multiplier of 3.70 is very high. Thus for every £1 of scheme payment £3.70 ends up in local economy, reflecting a significant agreement holder contribution to the costs of using a local contractor. This HLS agreement provides a good illustration of the growing market for habitat restoration expertise. Habitat restoration is often a complex and technically demanding activity which is frequently beyond the capability of the agreement holders to carry out themselves. In marked contrast to traditional skills such as dry-stone walling and hedge laying, the restoration of moorland habitats, can for example, involve a series of technically challenging operations and remote area which are difficult to access without specialist equipment. The agreement holder employed a local specialist contractor to undertake the habitat restoration work. A follow-up interview with the contractor revealed that existence of HLS with its range of options involving capital expenditure had provided the context for the business to develop expertise in a range of habitat restoration and resource protection techniques. The company has created at least 10 new jobs in the local area as a result of the ES schemes.

Summary

This is an example of a scheme where the agreement holder, with the support of his landlord and scheme officers, has made significant changes to his farming system. The farm is now being managed in a very different way than prior to the scheme. The highly technical and complex nature of some of the management options provides an illustration of some of the incidental economic benefits of the scheme where companies have developed to provide a range of new environmental services.

3. HLS (mainly dairy farm) Case Study

This HLS agreement is located on a 160-hectare dairy farm in the upland fringe of the North West. It is a wholly owned family farm employing three full-time family members and provides 100 per cent of the household's income. The area has a good transport network and the farm is situated within easy reach of the central and east Lancashire conurbations. The agreement holder purchases 60% of the farms goods and services locally within 40 minutes travel time and a further 20% within 1 hour.

Scheme options

The HLS agreement has been running for three years and a range of activities have been selected under 6 option groups. Opening up access to the farm for public enjoyment of the countryside and education is an important feature of this agreement. A number of the access options have been combined to create access for school parties and people with reduced mobility to all parts of the farm. Grassland options have been particularly important on this farm with a reduction in inputs on some areas of permanent pasture. In other areas which continue to be intensively managed, buffer strips have been inserted and erosion prevention measures implemented. The agreement holder has also undertaken work to restore an area of species rich semi-natural grassland. Furthermore, resource protection is being addressed through the scheme and management plans for soils, nutrients and farm-yard manure had been prepared. Work has also been undertaken to maintain and restore the farms network of hedgerows and to fence and protect the farm's woodland.

Impacts of the scheme on the farm

The main impact of the scheme on the farm system was a reduction in grass production resulting from the buffer strips and a reduction in fertilizer use. This had to be made up through an increase in purchased supplementary feed to maintain productivity. However, the agreement holder felt that even though the farm had a commercial dairy enterprise and some fairly intensive grassland practices there was enough flexibility for it to fit well with the scheme. Labour use on the farm has increased as a result of the educational access element of the scheme. The agreement holder had created an additional part-time job as he was now spending time managing the educational access element of the scheme.

Impacts of the scheme on the local economy

The scheme produces a high multiplier of 3.01 which means that for every £1 spent in the local economy for scheme goods and services, another £2.01 is generated within 40 minutes drive of the farm, because most of the purchases for the HLS scheme are made locally. The scheme multiplier of 3.43 is very high. Thus for every £1 of scheme payment £3.43 ends up in local economy, reflecting a significant agreement holder contribution to the costs of materials and contractors to create a public access route around the farm. Three

quarters of the additional work generated by the scheme was let to contractors and all of these were local and within 40 minutes travel time. The capital items (trees, fencing materials, materials for the access paths) were also locally sourced.

Social impacts of the scheme

The agreement holder runs a successful commercial dairy farm but wanted to break down the barriers between urban and rural areas and help people gain a deeper understanding of the way their food is produced. Initially this was a daunting task as the agreement holder felt ill prepared to engage with the public. The scheme enabled the infrastructure to be created to provide all weather access to all parts of the dairy farm for both able bodied and people with reduced mobility. Communication training, undertaken through a LEAF initiative, has enabled the agreement holder to become more confident in public speaking and interacting with a wide range of people from different backgrounds. The agreement holder said that this activity was immensely rewarding and would not have been possible without the scheme. These new skills were also being transferred into his day-to-day commercial farming activities. For example the agreement holder was more confident in his dealings with the plethora of regulating bodies' impact upon his farm and negotiating contracts for purchases and sales.

Summary

This scheme produces both a high income and scheme multiplier. The agreement holder makes a significant contribution to the costs of the options and also uses local suppliers and contractors to implement the scheme. An important element of the scheme is the access option, which has resulted in improvements in the agreement holders's communication skills.

4. OHLS Case Study

This OHLS case study agreement is located on a tenanted, organic mixed arable and livestock farm of 650 ha located in the South West of England. The farm employs 6 full-time workers and 1 regular part-time and 1 casual worker. Around 75% of the household income comes from the agricultural enterprises, the remainder is derived from on-farm food processing and on-farm stays and camping. The farm purchases most of its goods and services locally, with around 90% purchased from within 40 minutes drive time of the farm, with only 15% of all goods and services purchased beyond the 60 mins drive time from the farm.

Scheme options

This OHLS agreement has been running for three years and includes 23 different options, reflecting the wide range of farm enterprises on this mixed farm. The work undertaken fits into 8 option groups. Boundary work (OHB) is comprised of mainly hedgerow management options, but also includes some stone wall protection and maintenance. The trees and woodland options (OHC) include protection of in-field trees and the maintenance of woodland fences. Options OHD and OHE involve taking archaeological features out of production and establishing 6 m buffer strips. An important element of the scheme is work related to the arable (OHF) options, covering 10% of the farm area. This includes the establishment of enhanced wild bird seed mix plots and nectar flower mixed and fallow plots for ground-nesting birds, unharvested, fertiliser-free conservation headland, field corner management, over-wintered stubbles, and beetle banks. Grassland options (OHK) are also important on the farm. Some grassland areas are in an SSSI so options were selected that would maintain this area. Three fields have also been brought into the scheme to create grassland for target features. Whilst there had previously been some educational access on the farm, the scheme has enabled them to expand this venture, improving facilities and drawing up teacher's packs. Finally, the agreement holder paid for an advisor to produce soil and manure management plans.

Impacts of the scheme on the farm

The agreement holder selected options that fitted in well with the existing farm management practices. Some of the work would have been undertaken in the absence of the scheme, such as the hedge management, maintenance of the SSSI grassland area and woodland fencing, although not always to the same standard. The agreement holder would have not undertaken any of the stone wall work or creation of the grassland areas in the absence of the scheme. Whilst they had hosted some educational visits before joining the scheme, they have done many more as a result of the scheme. The scheme has resulted in some reduction in production as a result of land taken out of production under OHF option under because the disruption of rotation cycles by permanent grassland introduced un OHK has lead to less arable production.

Impacts of the scheme on the local economy

The scheme produces a multiplier of 1.24 which means that for every £1 spent in the local economy for scheme goods and services, another £0.24 is generated within 40 minutes drive of the farm. Much of the additional spend in the local economy is on specialist wild bird, nectar seeds and seeds for the beetle banks under the EF options and the use of contractors to establish these arable options. A follow-up interview with the seed supplier suggests that ES schemes are a small, but important part of their business. Payments were also made to a local advisor to produce scheme management plans and to an additional part-time worker, who had not worked previously in the local area, to help with farm visits. The majority of the purchases were made within 40 minutes of the farm.

Social impacts of the scheme

The agreement holder reported an increase in skills and knowledge as a result of the scheme. One of the farm workers undertook training in stone walling and now does all the walling work on the farm under scheme. They believe that they have also improved the knowledge and awareness of the local public through farm visits and potentially created a circle of interest/involvement around farm. The agreement holder has gained a personal understanding of issues of dealing with the public. Overall it was felt that the scheme has led to a little more diversification and given some stability to the farm business.

Summary

This case study provides a good example of a scheme that is designed to fit in well with existing management practices. The scheme has enabled the farm to build on what they were already doing in terms of good organic management and public access. Due to the mix of enterprises on the farm, they were able to undertake a wide range of options. Although few supplies were purchases in the local economy, the scheme has resulted in skills training and the employment of an additional part-time worker.