Making The Most Out Of Cross Compliance And Environmental Stewardship To Protect Water Courses

An Association of Rivers Trusts Guide for Rivers Trusts operating in England

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1.0 Introduction

As part of the on-going reform of the Common Agricultural Policy (CAP), 2005 has seen the introduction of both *Cross Compliance* and a new suite of agri-environmental measures in the form of *Environmental Stewardship* (combining Environmental Sensitive Area and Countryside Stewardship schemes). These reforms represent, in part, an attempt to meet a growing number of environmental requirements emanating from the EU; for example, the Water Framework Directive, The Habitats Directive, The Nitrates Directive and the Bathing Water Directive.

Cross Compliance effectively makes receipt of farming subsidies dependent on farmers adhering to a set of basic environmental management practices (GAEC Good Agricultural And Environmental Conditions) and existing legislative requirements (SMRs Statutory Management Requirements).

Environmental Stewardship is an attempt to reward farmers for undertaking activities which go above and beyond those required under Cross Compliance and has been designed to appeal to a far greater number of farmers than has been the case with previous agri-environmental schemes, in particular the Countryside Stewardship initiative.

Taken together, Cross Compliance and Environmental Stewardship represent an environmental protection policy mix which has far greater geographical reach than anything that has existed historically. Cross Compliance captures nearly all commercial farms across the country and it is highly likely that the vast majority of farmers will adopt the new Entry Level Stewardship Scheme (ELS) as a way of making up for reduced commodity payments instigated by the current CAP reforms. As such, Cross Compliance and Environmental Stewardship offer an opportunity to bring about changes in land management across a large area of farmland which has positive implications for water resource protection.

That is not to say that these policy tools are likely to provide us with all the solutions. Critics argue that the measures stipulated within Cross Compliance are not rigorous enough to bring about any significant changes in land management practice. In addition, Environmental Stewardship has been criticised for concentrating on habitat and species enhancement with insufficient emphasis being placed on natural resource protection; particularly water resource protection. There are also a number of questions being asked about the administration costs involved in managing these schemes and whether this expense represents good value for money.

Accepting that the current package of schemes may not be perfect, this briefing document provides a guide to assist an understanding of the water resource protection features contained within Cross Compliance and Environmental Stewardship. Contents include:

- A very short introduction to the policy tools
- A briefing on Cross Compliance obligations relevant to watercourse protection
- A summary of the best options within Environmental Stewardship to protect watercourses

The overall aim of this document is to help Rivers Trust personnel and others get the most out of these policy tools; enabling them to remind land managers of their Cross Compliance obligations relevant to watercourse protection and to encourage land managers to adopt Environmental Stewardship options most likely to result in the protection of rivers and streams.

2.0 Cross Compliance

2.1 Introduction

Cross Compliance came into being on 1st January 2005, comprising a set of rules which farmers must adhere to in order to receive their single payment under the new Single Payment Scheme (SPS). This scheme involves farmers receiving a per hectare payment comprising a flat rate as well as a historic element based on subsidy receipts during the years 2000, 2001 and 2002. Each year, the historic element will reduce as a proportion of the total payment until by 2012 all payments will be based on a flat rate.

Farmers must implement Cross Compliance across the entire agricultural area of their land holdings, irrespective of how much agricultural land they are claiming payments on.

The scope of measures incorporated into the Cross Compliance programme cover a broad church of issues relating to environmental protection, public and plant health, animal health and welfare, and livestock identification and tracing. The measures will be phased in over three years 2005-2007 and may be adapted over time. Cross Compliance will be administered and enforced by the Rural Payments Agency (RPA) with assistance from the Environment Agency and English Nature.

A consortium of organisations including Tamar Consulting (the consultancy division of Westcountry Rivers Trust) has been contracted by DEFRA to provide advice to farmers on how to ensure compliance on their land holdings. For further information on Cross Compliance, visit www.crosscompliance.org.uk.

2.2 Cross Compliance and Water Resource Protection

The following elements of Cross Compliance (Good Agricultural And Environmental Conditions - GAECs - and Statutory Management Requirements - SMRs) represent the **key measures with relevance to the protection of water resources**. A full list of Cross Compliance measures can be found in Appendix 1.

2.2.1. GAEC 1 – Soil Management Plan

In 2006, farmers will be required to draw up a simple risk-based soil management plan which will involve them in identifying risks and planning measures to avoid observed problems. Importantly, the soil management plans will require farmers to prepare a statement of future actions they will take to mitigate soil erosion, should initial measures to deal with the identified problems not work. In theory, farmers entering the Entry Level Stewardship Scheme have access to soil management options

capable of addressing identified risks although it is not a given that farmers will take up the soil management options available to them (see Section 3.1.2).

Soil Management Plans must be adopted from 2007. DEFRA will confirm the precise scope of actions that farmers will be required to undertake during the autumn of 2005.

2.2.2 GAEC 2 – Post-harvest management of land after combinable crops (from harvest to 1 March)

Where land is used for growing oil-seeds, grain legumes (e.g peas and beans) or cereals (other than maize) which have been harvested using a combine harvester or a mower, farmers must undertake to achieve one or more of the following between harvest and 1 March the following year:

- The stubble of the harvested crop remains in the land
- The land is left after cultivation with a rough surface to encourage the infiltration of rain
- The land is sown with a temporary cover crop. If grazed out or cultivated during the autumn or winter, a rough surface must be left as soon as conditions permit
- The land is sown with another crop, and in normal weather within ten days of a final seedbed preparation

Farmers can establish a crop at any time between harvest and 1 March provided they comply with the rules up to the time of sowing.

All of the above measures will protect soils from erosion over the winter months and as such, have positive implications for water resource protection.

2.2.3 GAEC 3 – Management of waterlogged soil

In this rule, farmers are prohibited from undertaking any mechanical field operations (including harvesting, cultivation, spreading, feeding livestock) on areas of waterlogged soils (defined as soils saturated throughout the entire plough layer). There are a number of derogations farmers can obtain, for example, when it is essential to harvest a crop of fresh vegetables or fruit to meet contractual deadlines or where the quality of the produce would deteriorate if not lifted. Maize, sugar beet and main crop potatoes (salad potatoes are excluded) fall within the GAEC 3 rules.

GAEC 3 is designed to protect soils from unnecessary compaction which can severely impact on soil structure, thereby reducing rainfall infiltration rates which can lead to increased overland flow and soil erosion. Heavily compacted soils can also lead to an increased risk of flooding in some catchments.

2.2.4 GAEC 5 – Environmental Impact Assessment

Environmental Impact Assessment regulations have been designed to control the agricultural intensification of uncultivated and semi-natural areas e.g species diverse pasture, wetlands, scrub, heathlands, downlands, moorland etc.. Farmers must not begin to undertake any project on such areas without obtaining permission from DEFRA who may require farmers to undertake an impact assessment of the proposed

project prior to permission being granted. If significant impact from a given project is envisaged, it is unlikely permission to go ahead will be given.

The EIA regulations are important for water resource protection because many uncultivated and semi-natural areas are often situated adjacent to rivers and streams and act as buffers between watercourses and intensive agriculture.

2.2.5. GAEC 9 – Avoidance of overgrazing and unsuitable supplementary feeding

This measure applies to land which is characterised as natural or semi-natural vegetation. It does not apply to grassland where the sward contains in excess of 30% rye grass and/or white clover (or other species indicative of high fertiliser applications). It is, therefore, important to note the GAEC 9 does not apply to the vast majority of farmed grassland with a history of receiving medium to heavy fertiliser application rates.

In areas of semi-natural or natural vegetation, farmers must maintain livestock systems which do not result in overgrazing the sward and they must not carry out supplementary feeding which results in excessive trampling or poaching of the land by livestock, or rutting caused by vehicles used to transport feed.

Although GAEC 9 only applies to natural and semi-natural areas, it does force farmers in these areas (often situated in the vulnerable headwaters of catchments) to avoid poaching by livestock which will prevent soil loss to adjacent watercourses. Where farmers currently maintain stocking densities which are likely to result in contravention of GAEC9, they will need to consider taking actions such as increasing livestock housing or reducing stock levels, both of which are likely to reduce the risk of soil erosion taking place.

The definitions of overgrazing and unsuitable supplementary feeding are open to interpretation. At the current time, it appears that should farmers cause damage as a result of their grazing regimes, they will not be in breach of GAEC 9 provided the sward they are managing recovers to a satisfactory state by the end of the growing season.

2.2.6. GAEC 11 – Control of weeds

Under Cross Compliance, farmers must take all reasonable steps to prevent the spread of common ragwort, spear thistle, creeping thistle, broad-leaved dock, curled dock, Rhododendron, Japanese Knotweed, Giant Hogweed and Himalayan Balsam.

Given the spread of invasive weeds is causing significant impacts to many rivers across the country, GAEC 11 represents an important tool to combat the problem. Farmers will not be penalised for having the named weeds on their land; they will, however, be in breach of Cross Compliance if they do not take action to control dispersion.

2.2.7 GAEC 14 – Protection of hedgerows and watercourses

Under this ruling, farmers must not cultivate or apply fertilisers, manures or pesticides to land within 2 meters of the centre of a hedge or watercourse or within 1 meter of the top of the bank of a watercourse. Cultivation is allowed during 2005 for the establishment of a green cover. There are also other exemptions from the general rule for specific circumstances e.g spot spraying of herbicide in the 2 meter protection zones is permitted to control weeds.

Critics argue that a 2m protection zone is not capable of providing any significant buffering of watercourses from nutrient and soil run-off. GAEC 14 does, however, provide a minimum watercourse protection zone for the first time. It is hoped that farmers can be persuaded to adopt additional 2m/4m/6m buffer strips under the Entry Level Stewardship Scheme which will build on the basic requirement stipulated under Cross Compliance.

2.2.8 Compliance with Statutory Management Requirements (SMRs)

Many of the measures within Cross Compliance simply reinforce existing legislation, particularly the so called Statutory Management Requirements of which 19 will be introduced between 2005 and 2007. 3 SMRs have direct relevance to the protection of water resources, requiring farmers to conform to existing legislation relating to groundwater protection (SMR2), the use of sewage sludge (SMR3) and the management of nitrogen in Nitrate Vulnerable Zones (SMR4).

Further information can be found from the following sources:

Groundwater controls:
www.environment-agency.gov.uk/business/444304/444312/660279/660282/?version=1&lang=_e

Sewage sludge:
www.environment-agency.gov.uk/netregs/processes/342469/?lang=_e

Nitrate Vulnerable Zones:
www.defra.gov.uk/corporate/regulat/forms/agri_env/nvz/nvz4.pdf

3.0 Environmental Stewardship (ES)

Environmental Stewardship consists of three elements:

- **Entry Level Scheme (ELS)** is a whole farm scheme open to all farmers and land managers irrespective of geographical location. Acceptance is guaranteed provided farmers can meet scheme requirements.

- **Organic Entry Level Scheme (OELS)** is a whole farm scheme similar to ELS, open to farmers who manage all or part of their land organically and who are not receiving aid under the Organic Aid Scheme (OAS) or the Organic Farming Scheme (OFS)

- **Higher Level Stewardship (HLS)** aims to deliver significant environmental benefits in high priority situations and areas. HLS is discretionary and concentrates on more complex types of management

ES is managed by the Rural Development Service (RDS) which will administer the scheme in the regions, assess all ELS and HLS applications and provide advice to applicants where requested. The RDS is responsible for ensuring the ES programme delivers a number of regional targets (see Section 3.2.1 below) which vary considerably from region to region. To explain how ES will be rolled out locally, a number of regional meetings will be convened to provide relevant information specific to individual geographic areas. Details of regional meetings can be found at http://www.defra.gov.uk/erdp/schemes/es/default.htm.

The following summary focuses on ELS and HLS only as these schemes represent by far the greatest proportion of the ES scheme as a whole. OELS largely mirrors the ELS list of options and prescriptions - but will be tailored specifically to organic systems. Organic farmers will have to achieve a points target covering all of the land comprising their organic unit and select options from a menu of tailored organic prescriptions to reach that target.

3.1 Entry Level Scheme

3.1.1 Background to the scheme

The idea behind the Entry Level Scheme is to encourage large numbers of farmers to adopt simple management activities that go beyond those required under Cross Compliance. The objectives of the scheme, as defined by DEFRA, are four-fold:

- Improve water quality and reduce soil erosion by encouraging management which can help to meet these aims
- Improve conditions for farmland wildlife including birds, mammals, butterflies and bees
- Maintain and enhance landscape character by helping to maintain important features such as traditional field boundaries
- Protect the historic environment including archaeological features and artefacts

Farmers applying for ELS have to prepare a simple record of features on their farm - a so called 'Farm Environmental Record' - using a map supplied by RDS. They will then be given a 'points target' which is calculated based on farm size. The points target must be achieved by farmers choosing from a range of options (e.g hedgerow management, low input grassland, buffer strips, soil protection plans). Each option will earn points (e.g 400 points per hectare) towards the total points' target. Farmers are given the flexibility to decide how much of each option to choose and where to situate them. A maximum of two options on the same area of land is allowed.

In all cases, farmers must achieve 30 points per hectare across their land holding except land in Less Favoured Areas in parcels of 15 hectares or more where 8 points per hectare is required.

Farmers receive a flat rate of £30 per hectare per year. Each ELS agreement runs for five years and can only be established for land that is agricultural or part of the farmed environment.

For a detailed outline of the scheme, the two best information sources are DEFRA's publication entitled **Entry Level Stewardship Handbook, PB 10355 February 2005** and the Stewardship website http://www.defra.gov.uk/erdp/schemes/es/default.htm.

3.1.2 Water Resource protection opportunities within ELS

An analysis of the various options within ELS suggests that many are targeted towards the protection of landscape features, habitats and species i.e water resource protection is not a stated objective. There are, however, a small number of measures explicitly focussed on soil erosion and a much larger number of options which are billed as being designed to improve species and habitats but, on closer examination, have considerable resource protection potential. For example, under 'Options To Encourage A Range Of Crop Types', there is an option involving undersowing of spring cereals (Option EG1) which is targeted at providing habitat for birds. Under sowing techniques can, however, significantly reduce soil erosion and, therefore, have potential to protect watercourses from sedimentation and nutrient enrichment.

The following 30 ELS options have been selected from the entire menu of 60 (see Appendix 2), the aim being to provide a shortlist of options most likely to deliver water resource protection within the scheme as a whole. Each option is listed with an accompanying identification code as stated in the ELS guidance handbook. For the sake of simplicity, options with similar characteristics have been grouped into generic clusters (e.g Ditch management options) using headings which do not appear in the ELS handbook or accompanying literature.

3.1.2.1 Ditch management options

EB6	Ditch Management
EB7	Half Ditch Management
EB8,9 & 10	Combined Hedge & Ditch Management

These measures are focussed on rotational cutting of vegetation in ditches and reducing the occurrence of ditch cleaning. Whilst the stated objectives in the ELS

literature are to 'establish a varied bankside and aquatic vegetation and to provide undisturbed wildlife habitat adjacent to the ditch' these measures will also have the effect of increasing the ability for bankside vegetation to trap silt and absorb nutrients from the water within the ditch. Well vegetated ditches can be described as linear wetlands and provide many of the denitrifying and siltation absorption functionalities associated with wetland ecosystems.

3.1.2.2 Buffer strip and field margin options

EE1	2m Buffer Strips On Cultivated Land
EE2	4m Buffer Strips On Cultivated Land
EE3	6m Buffer Strips On Cultivated Land
EE4	2m Buffer Strips On Intensive Grassland
EE5	4m Buffer Strips On Intensive Grassland
EE6	6m Buffer Strips On Intensive Grassland
EF9	Conservation Headlands In Cereal Fields
EF10	Conservation Headlands In Cereal Fields With No Fertilisers/Manure
EF11	6m Uncropped, Cultivated Margins On Arable Land

The use of buffer strips and low input or uncultivated field margins has been well established as a means of reducing the migration of nutrients and agricultural chemicals into watercourses. This management practice has also been used to good effect as a means of reducing soil loss.

ELS makes provision for a number of buffer strip and field margin options to enhance field margin habitats, most of which involve the reduction or cessation of inputs and the establishment of green cover or uncultivated field margins. Strategic use of these options offers an opportunity to achieve considerable water resource protection objectives whilst at the same time enhancing and creating valuable on-farm habitats. As outlined above, there are a wide variety of options to choose from under ELS; hopefully farmers can be encouraged to adopt as many of them as possible.

3.1.2.3 Soil stability options

EF6	Over Wintered Stubbles
EF7	Beetle Banks
EG1	Under Sown Spring Cereals
EG4	Cereals For Whole Crop Silage Followed By Over Wintered Stubbles

Within the ELS package, there are certain options identified above which involve undersowing, maintaining stubbles/creating rough surfaces over the winter months and the adoption of spring sown crops. These measures will improve infiltration of water into the soil profile, thereby reducing overland flow, and will assist in maintaining soil structure and stability; all of which will protect soil against erosion, particularly during the winter months.

The Beetle Bank option has the potential to be used across the contour of fields to provide a physical feature (similar to a hedge) capable of reducing overland flow and catching eroded soil particles.

3.1.2.4 Options for changing cropping regimes and timing of operations

EJ1	Management Of High Erosion Risk Cultivated Land
EJ2	Management Of Maize Crops To Reduce Soil Erosion

The two options cited here are the **only** options within ELS which are specifically targeted at the protection of soils. EJ1 prevents farmers from keeping outdoor pigs or growing root crops such a potatoes, sugar beet, or maize in fields at risk of soil erosion or run-off. EJ2 focuses on the early harvesting of maize and the establishment of a rough soil surface or an autumn crop to prevent soil loss. Under sowing maize with a grass or clover-based mixture is also advocated.

3.1.2.5 Options to reduce nutrient inputs

EK2	Permanent Grassland With Low Inputs
EK3	Permananet Grassland With Very Low Inputs
EK4	Management Of Rush Pastures (outside the LFA)
EL2	Manage Permanent In Bye Grassland With Low Inputs
EL3	Manage In Bye Pasture And Meadows With Very Low Inputs
EL4	Management Of Rush Pastures (LFA Land)

There is scope within ELS for farmers to maintain low fertiliser applications (both organic and inorganic) on permanent grassland, rush pasture and meadows, the aim being to protect fragile habitats reliant on low nutrient inputs. Options EK2, 3 and 4 are available for Lowland areas whilst EL2, 3 and 4 are for the Uplands (LFA land). Low fertiliser applications will also reduce the risk of nutrient run off to adjacent watercourses.

3.1.2.6 Management Plan options

In addition to specific management options within ELS, farmers also have a choice of adopting up to 4 Management Plans which must be prepared in the first year of an ELS agreement.

EM1	Soil Management Plan
EM2	Nutrient Management Plan
EM3	Manure Management Plan
EM4	Crop Protection Management Plan

These plans provide an opportunity for farmers to take a broader view of the way they manage soil, nutrients and other inputs such as pesticides and serve as a opportunity to raise awareness of these management issues in a structured format. A summary of requirements specific to each Plan is outlined below:

Soil Management Plan - should set out how a farmer will manage his land to reduce the risk of erosion and maintain good soil structure. Risks must be identified and logged on a map. A field by field record of steps that will be taken during the coming year to minimise the risk of run-off and soil erosion must be undertaken and must be repeated each year incorporating the experiences of previous years.

Nutrient Management Plan – should demonstrate an account of all sources of nutrient supply (organic and inorganic) and an understanding of soil nutrient status. The plan should follow a recognised fertiliser recommendation system and should be prepared with assistance from a FACTS (Fertiliser Advisers Certification Training Scheme) qualified person. The plan must be updated at the start of each cropping year and must contain accurate field records of cropping, organic manure and fertiliser applications.

Manure Management Plan – should include the preparation of a field risk map (water pollution risk) and an assessment of the need for any extra slurry or dirty water storage. Identification of areas where no spreading should take place and areas where selective spreading should be undertaken should form a central element of the plan.

Crop Protection Management Plan – should identify measures to reduce the use of chemicals where possible and make optimum use of chemical inputs. Record keeping must form an on-going process within the plan.

3.1.2.7 ELS soil erosion risk analysis

An interesting feature of the ELS application process requires all farmers to assess the risk of on-farm soil erosion. As part of developing a Farm Environmental Record map, farmers must consider whether any of their land is at risk from soil erosion or run-off. This process involves an assessment of each field to determine the presence of rill or gully erosion, whether soil enters watercourses or is deposited on roads or whether wind erosion occurs on sandy or peaty soils. In addition to assessing existing risks, farmers must also identify future risks where they intend to change the management of a particular parcel of land e.g cultivate grassland or increase the intensity of cropping or grazing.

Where farmers identify current or future risks, they are encouraged to consider choosing the Soil Management Plan option and options to reduce run-off and soil erosion (outlined above). These soil management options are, however, optional and there is no requirement for farmers to take up soil management options even where significant risks have been identified. There is, therefore, a role for Rivers Trust personnel to encourage farmers to take up suitable management options where soil loss is identified as a problem. Where farmers cannot be persuaded, it is hoped the process of identifying soil erosion risk will at least raise awareness of the issue which hopefully may form the basis for suitable action in the future.

3.1.3 Protecting Water Resources; making the most of ELS

Which options farmers will choose, in order to obtain the required number of points will, to a large extent, depend on the individual characteristics of the applicant. In the majority of cases, farmers will be likely to choose options which represent the easiest way for them to meet their total points' target, irrespective of whether these protect watercourses or not. In many cases, they will choose options for activities they are already undertaking e.g low fertiliser inputs on marginal land.

In order to encourage farmers to maximise water resource protection opportunities within ELS, the measures outlined in Section 3.1.2 need to be promoted **to enable**

farmers to make informed choices. Obviously, farmers may have their own particular conservation interests and may, therefore, wish to choose specific options to support these. However, in cases where a farmer demonstrates no particular preferences, an opportunity to channel them into protecting watercourses would appear to exist.

From the perspective of protecting water resources, it is suggested that farmers should be assisted to identify ELS options which they will find easy to implement AND that will benefit watercourses. For example, if a farmer is positive towards the idea of introducing 2m buffer strips, it is preferable that he locates these around field margins with adjacent watercourses than field margins with no water features.

In addition, there will be occasions where a farmer is equally disposed to two options, one of which will protect watercourses (e.g EB6 Ditch Management) and one that will be unlikely to have this outcome (EC2 Protection of in-field trees). Channelling the farmers' interests towards the water protection option would obviously be a result in this instance.

Persuading farmers to adopt options which involve significant changes in practice will be difficult. It is suggested that such options will only be adopted where a strong cost/benefit case can be made. Having assessed the various ELS options in detail, it is difficult to identify options which provide sufficient incentive to instigate major changes (e.g changing cropping patterns). However, in situations where a farmer has low grade arable land around field headlands, it may be possible to construct a financial argument in favour of adopting wide buffer strips (4m of 6m), field margins and conservation headlands on a robust scale. These options will be unlikely to be appealing on good quality land where a reduction in yield outweighs the benefits of the ELS payment.

3.2 Higher Level Scheme

3.2.1 Background to the scheme

The second tier of Environmental Stewardship – The Higher Level Scheme – contains many similarities with the Countryside Stewardship and Environmentally Sensitive Areas scheme and has been designed to pay farmers to deliver specific environmental outputs which involve greater levels of income forgone than ELS activities. The 5 main objectives of the scheme, as defined by DEFRA, are:

- Wildlife conservation
- Maintenance and enhancement of landscape quality and character
- Natural Resource Protection
- Protection of the historic environment
- Promotion of public access and understanding of the countryside

Two secondary objectives are flood management and conservation of genetic resources.

HLS options are designed to contribute to one or more of the 5 primary objectives and will normally only be suitable for land that is regarded as of 'significant environmental interest'. HLS agreements will include ELS options (in nearly all cases, farmers have to enter ELS in order to apply for HLS) and as such will form a combined Stewardship Agreement containing HLS and ELS options.

The objectives outlined above have been translated into a series of localised targets taken from 150 Joint Character Areas (JCAs), each of which has priority targets for the management of a variety of features. All HLS applications will be scored directly against these targets. Any applications not addressing priority targets will be rejected.

The JCAs outline 'key characteristics of different parts of the English countryside'. Farmers will be informed which JCA their landholding falls within. They will also be provided with a targeting statement relevant to that area within their HLS application form.

JCAs were established by DEFRA in discussion with other Government Agencies including English Nature and The Countryside Agency. A map providing the location and detailed descriptions of each area can be found on the Countryside Agency website: http://www.countryside.gov.uk/LAR/Landscape/CC/index.asp

HLS agreements are for 10 years with a break clause after 5 years. Eligible land under HLS must be agricultural or part of the farmed environment. In exceptional cases (e.g on SSSIs) vulnerable non-agricultural land might be eligible. The HLS application procedure involves preparation of a Farm Environmental Plan (based on the Farm Environmental Record under ELS) which takes into account the local targeting statement. HLS options should then be chosen accordingly and should also be compatible with ELS options. Highest priority in the scoring system is given to maintenance options (i.e maintaining existing features in good condition), followed by restoration options and finally creation options.

Given the development of a Farm Environmental Plan involves considerable effort and expense, DEFRA will pay farmers to produce this document irrespective of whether the eventual HLS application is successful. Payment rates depend on the size of the applicant's landholding and range from £395 to £3,350.

Unlike ELS, HLS makes provision for both land management activities AND capital works through a Capital Works Plan (CWP). Capital items relevant to water resource protection and accompanying payment rates are listed below:

Item	**Rate**
Sheep fencing	£1.80m
Post & Wire fencing	£1.20m
Permanent electric fencing	£1.20m
Fencing supplement (difficult sites)	£2.50m
High tensile fencing	£1.25m
Tree and shrub/whips and transplants plus planting	£1.60 each
Coppicing bankside trees	£29.00 each
Grip blocking drainage channels	£3.40 sq/m
Culvert	£153.00 each
Silt trap provision	60% of costs
Cross drains under farm tracks	£139.00 each
Relocation of gates	£136.00 each

It is not possible, however, to apply for a CWP without agreeing to deliver one or more HLS land management options.

3.2.2 Water Resource protection opportunities within HLS

As with the ELS scheme, it appears that the majority of HLS options are targeted towards the protection of landscape features, habitats and species with resource protection measures constituting a small proportion of the whole. An analysis of the HLS targeting statements demonstrates that resource protection issues are often regarded as 'secondary' as opposed to 'key' targets and are numerically very scarce.

However, as identified in relation to the ELS options, there are a considerable number of HLS options that target landscape or biodiversity issues but will also have the potential to protect watercourses. Indeed, many options within HLS involve either the reduction of agricultural inputs (e.g fertilisers or pesticides) or raising water levels, both of which can deliver positive water protection outcomes.

The following 41 HLS options have been selected from the entire menu of 108 options (see Appendix 3), the aim being to provide a shortlist of options most likely to deliver water resource protection within the scheme as a whole. Each option is listed with an accompanying identification code as stated in the HLS guidance handbook and options have been grouped in a similar way to the ELS options in Section 3.1.2.

3.2.2.1 Woodland creation and management options

HC14	Creation of wood pasture
HC7	Maintenance of woodland
HC8	Restoration of woodland
HC9	Creation of woodland in the LFA
HC10	Creation of woodland outside the LFA

There are a number of HLS options outlined above which concentrate on the maintenance, restoration and creation of woodland habitats. These schemes are focussed on small areas of woodland and have a number of habitat and species protection objectives. However, woodland can also provide effective buffering of watercourses from nutrients and as such, can be used as an effective water protection measure.

3.2.2.2 Options to create and manage uncultivated land

HC15	Maintenance of successional areas and scrub
HC16	Restoration of successional areas and scrub
HC17	Creation of successional areas and scrub
HD7	Arable reversion by natural regeneration
HK15	Maintenance of semi-improved or rough grassland for target species
HK16	Restoration of semi-improved or rough grassland for target species
HK17	Creation of semi-improved or rough grassland for target species
HL7	Maintenance of rough grazing for birds
HL8	Restoration of rough grazing for birds
HL15	Seasonal livestock exclusion supplement

Within the HLS package, there are several options designed to promote marginal scrub habitats or low input grassland systems to deliver a number of conservation objectives. Some e.g HD7 above are designed to protect archeological features by reducing ploughing and other sub-surface cultivations.

The options identified above have similar possibilities to the woodland management options already identified in relation to water resource protection. In particular, the establishment and maintenance of scrubland and grassland can be used to buffer watercourses from nutrient inputs and can also be used to protect watercourses from soil erosion.

3.2.2.3 Water level management

HD8	Maintaining high water levels to protect archaeology
HK9	Maintenance of wet grassland for breeding waders
HK10	Maintenance of wet grassland for wintering waders and wildfowl
HK11	Restoration of wet grassland for breeding waders
HK12	Restoration of wet grassland for wintering waders and wildfowl
HK13	Creation of wet grassland for breeding waders
HK14	Creation of wet grassland for wintering waders and wildfowl
HK19	Raised water levels supplement
HQ13	Inundation grassland supplement

HL13	Moorland re-wetting supplement
HQ3	Maintenance of reedbeds
HQ4	Restoration of reedbeds
HQ5	Creation of reedbeds
HD10	Maintenance of traditional water meadows
HD11	Restoration of traditional water meadows

A plethora of options exist within HLS involving the management of water tables and wetland habitats, many of which are targeted at developing habitats and suitable feeding opportunities for wetland birds. Regarding water resource protection, the options identified above will also facilitate the absorption of nutrients by vegetation and/or the capture of sediment from adjacent land.

3.2.2.4 Land management options to reduce inputs and protect soils

HF14	Unharvested, fertiliser-free conservation headlands (rotational)
HF15	Reduced herbicide, cereal crop management preceding over-wintered stubble and spring crop (rotational)
HF16	Cultivated fallow plots or margins for arable flora as an enhanced set-aside option (rotational or non-rotational)
HF18	Reduced herbicide, cereal crop management preceding enhanced set-aside (rotational)
HF19	Unharvested, fertiliser-free conservation headlands preceding enhanced set-aside (rotational)

All of the above options involve reduction of fertiliser and chemical inputs and some result in the establishment of buffer strips or over wintered stubbles. All of these measures are likely to have a beneficial effect on watercourses.

3.2.2.5 Specific resource protection options to combat diffuse pollution

HJ3	Arable reversion to unfertilised grassland to prevent erosion or run-off
HJ4	Arable reversion to grassland with low fertiliser input to prevent erosion or run-off
HJ5	In-field grass areas to prevent erosion or run-off
HJ6	Preventing erosion or run-off from intensively managed improved grassland
HJ7	Seasonal livestock removal on grassland with no input restriction
HJ8	Nil fertiliser supplement

HJ3 to HJ8 are the only options within HLS which are specifically categorised as resource protection measures. They focus on soil protection and run off management and provide opportunities within the context of both arable and grassland situations.

3.2.3 Protecting Water Resources; making the most of HLS

As demonstrated in Section 3.2.2, HLS contains a number of options which present an opportunity to protect watercourses, even if many of the options are not presented as resource protection measures within the HLS literature and guidebooks. As with ELS, it is suggested that where diffuse pollution presents a serious issue within a

given catchment, farmers should be encouraged to adopt HLS options which meet the requirements of the scheme – as defined within the local targeting statements – but also provide enhanced water resource protection where possible.

Given that the targeting statements are currently weighted towards habitat, species and landscape protection, it will be necessary for applicants to concentrate on these targets in order to submit a successful application. It is not possible for farmers to base their application purely on resource protection measures and expect to gain access to the scheme. However, based on conversations with regional RDS staff, applications will be regarded favourably where they can be shown to include options which protect natural resources in addition to meeting the priority issues listed in the targeting statements. It makes sense, therefore, for Rivers Trusts to encourage farmers to adopt measures where possible which have dual functionality (i.e conservation and resource protection outcomes) as this will increase the chances of a successful application.

It is interesting to note that there appears to be differences of opinion within the RDS regarding whether there is sufficient emphasis placed on resource protection within the HLS package as a whole. Internally, the RDS will soon be reviewing this particular issue with a view to possibly revising the targeting statements to include more water protection issues. However, it is not certain what the precise outcome will be at this stage.

It is also worth noting that the individual RDS staff reviewing the applications will have considerable scope when interpreting the relative merits of each application. Rivers Trust personnel working with RDS officers may wish to provide relevant information and guidance on localised diffuse pollution issues to ensure RDS officers give sufficient weight to water protection options chosen by farmers where these options will be likely to produce significant outcomes.

3.2.3.1 Encouraging group schemes involving multiple landholdings

Although likely to be difficult to arrange, there is provision within HLS for farmers to group together to submit a joint application to manage a resource (e.g a wetland or common land) which cuts across individual landholdings. From a resource protection perspective, bringing farmers together to jointly manage an area of land -where fragmented management prevents solutions to a diffuse pollution problem – makes a lot of sense. Indications from the RDS suggest that joint applications will be regarded very favourably, with individual farmers being more likely to gain access to the scheme where they form joint applications.

The HLS literature does not refer to the notion of bringing farmers together on a catchment or a sub-catchment basis to manage a problem across these geographical scales. Rivers Trusts may wish to explore the possibilities of working with local RDS offices to determine whether this would be advantageous and feasible within the current framework of the scheme.

APPENDIX 1: COMPLETE LIST OF CROSS COMPLIANCE COMPONENTS

1. GOOD AGRICULTURAL AND ENVIRONMENTAL CONDITION (GAEC) STANDARDS

GAEC 1, 2, 3, 4	Soil management & protection
GAEC 5	Environmental Impact Assessment
GAEC 6	SSSIs
GAEC 7	Scheduled Monuments
GAEC 8	Public Rights of Way
GAEC 9	Overgrazing & unsuitable supplementary feeding
GAEC 10	Heather & Grass burning
GAEC 11	Control of weeds
GAEC 12	Eligible land which is not in agricultural production
GAEC 13	Stone walls
GAEC 14	Protection of hedges and watercourses
GAEC 15	Hedgerows
GAEC 16	Felling of trees
GAEC 17	Tree Preservation Orders

2. STATUTORY MANAGEMENT REQUIREMENTS (SMRS)

SMR 1	Wild Birds
SMR 2	Groundwater
SMR 3	Sewage Sludge
SMR 4	Nitrate Vulnerable Zones
SMR 5	Habitats
SMR 6	Animal ID and registration – pigs, goats and sheep
SMR 7 & 8	Cattle Identification
SMR 8a	Animal ID and registration – sheep and goats

3. PERMANENT PASTURE

There is a National requirement to retain the area of permanent pasture to 95% of the area in 2003. This excludes long term set aside.

APPENDIX 2: COMPLETE LIST OF ENTRY LEVEL SCHEME COMPONENTS

EB1 Hedgerow management (on both sides of hedge)
EB2 Hedgerow management (on one side of hedge)
EB3 Enhanced hedgerow management
EB4 Stone-faced hedgebank management on both sides
EB5 Stone-faced hedgebank management on one side
EB6 Ditch management
EB7 Half ditch management
EB8 Combined hedge and ditch management (incorporating EB1 hedge management)
EB9 Combined hedge and ditch management (incorporating EB2 hedge management)
EB10 Combined hedge and ditch management (incorporating EB3 hedge management)
EB11 Stone wall protection and maintenance

EC1 Protection of in-field trees – arable Tree
EC2 Protection of in-field trees – grassland Tree
EC3 Maintenance of woodland fences
EC4 Management of woodland edges

ED2 Take archaeological features currently on cultivatedbland out of cultivation
ED3 Reduce cultivation depth on land where there are archaeological features
ED4 Management of scrub on archaeological sites
ED5 Archaeological features on grassland

EE1 2 m buffer strips on cultivated land
EE2 4 m buffer strips on cultivated land
EE3 6 m buffer strips on cultivated land
EE4 2 m buffer strips on intensive grassland
EE5 4 m buffer strips on intensive grassland
EE6 6 m buffer strips on intensive grassland
EE7 Buffering in-field ponds in improved grassland
EE8 Buffering in-field ponds in arable land

EF1 Field corner management
EF2 Wild bird seed mixture
EF3 Wild bird seed mixture on set-aside land
EF4 Pollen and nectar flower mixture
EF5 Pollen and nectar flower mixture on set-aside land
EF6 Over-wintered stubbles
EF7 Beetle banks
EF8 Skylark plots plot
EF9 Conservation headlands in cereal fields
EF10 Conservation headlands in cereal fields with no fertilisers or manure

EF11 6m uncropped, cultivated margins on arable land

EG1 Under sown spring cereals
EG2 Wild bird seed mixture in grassland areas
EG3 Pollen and nectar seed mixtures in grassland areas
EG4 Cereals for whole crop silage followed by over-wintered stubbles
EG5 Brassica fodder crops followed by over-wintered stubbles

EJ1 Management of high erosion risk cultivated land
EJ2 Management of maize crops to reduce soil erosion

EK1 Take field corners out of management
EK2 Permanent grassland with low inputs
EK3 Permanent grassland with very low inputs
EK4 Management of rush pastures (outside the LFA)
EK5 Mixed stocking

EL1 Field corner management (LFA land)
EL2 Manage permanent in-bye grassland with low inputs
EL3 Manage in-bye pasture and meadows with very low inputs
EL4 Management of rush pastures (LFA land)
EL5 Enclosed rough grazing
EL6 Moorland and rough grazing

EM1 Soil management plan
EM2 Nutrient management plan
EM3 Manure management plan
EM4 Crop protection management plan

APPENDIX 3: COMPLETE LIST OF HIGHER LEVEL SCHEME COMPONENTS

1. WOODLAND TREES AND SCRUB OPTIONS

Ancient trees in arable fields HC5
Ancient trees in intensively managed grass fields HC6
Maintenance of wood pasture and parkland HC12
Restoration of wood pasture and parkland HC13
Creation of wood pasture HC14
Maintenance of woodland HC7
Restoration of woodland HC8
Creation of woodland in the LFA HC9
Creation of woodland outside of the LFA HC10
Maintenance of successional areas and scrub HC15
Restoration of successional areas and scrub HC16
Creation of successional areas and scrub HC17
Woodland livestock exclusion supplement HC11

Maintenance of high value traditional orchards HC18
Restoration of traditional orchards HC20
Maintenance of traditional orchards in production HC19
Creation of traditional orchards HC21

3. HISTORIC ENVIRONMENT OPTIONS

Arable reversion by natural regeneration HD7
Crop establishment by direct drilling (non-rotational) HD6
Maintaining high water levels to protect archaeology HD8
Maintenance of designed/engineered water bodies HD9
Maintenance of traditional water meadows HD10
Restoration of traditional water meadows HD11

4. ARABLE OPTIONS

Floristically enhanced grass margin HE10
Enhanced wild bird seed mix plots (rotational or non-rotational) HF12
Fallow plots for ground-nesting birds (rotational or non-rotational) HF13
Unharvested, fertiliser-free conservation headlands (rotational) HF14
Reduced herbicide, cereal crop management preceding over-wintered stubble and a spring crop (rotational) HF15
Fodder crop management to retain or re-create an arable mosaic (rotational) HG6
Cultivated fallow plots or margins for arable flora as an enhanced setaside option (rotational or non-rotational) HF16
Fallow plots for ground-nesting birds as an enhanced set-aside option (rotational or non-rotational) HF17
Reduced herbicide, cereal crop management preceding enhanced set-aside (rotational) HF18

Unharvested, fertiliser-free conservation headlands preceding enhanced set-aside (rotational) HF19
Low input spring cereal to retain or re-create an arable mosaic HG7
Cultivated fallow plots or margins for arable flora (rotational or non-rotational) HF20

5. RESOURCE PROTECTION OPTIONS

Arable reversion to unfertilised grassland to prevent erosion or run-off HJ3
Arable reversion to grassland with low fertiliser input to prevent erosion or run-off HJ4
In-field grass areas to prevent erosion or run-off HJ5
Preventing erosion or run-off from intensively managed improved grassland HJ6
Seasonal livestock removal on grassland with no input restriction HJ7
Nil fertiliser supplement HJ8

6. GRASSLAND OPTIONS

Maintenance of species-rich, semi-natural grassland HK6
Restoration of species-rich, semi-natural grassland HK7
Creation of species-rich, semi-natural grassland HK8
Maintenance of wet grassland for breeding waders HK9
Maintenance of wet grassland for wintering waders and wildfowl HK10
Restoration of wet grassland for breeding waders HK11
Restoration of wet grassland for wintering waders and wildfowl HK12
Creation of wet grassland for breeding waders HK13
Creation of wet grassland for wintering waders and wildfowl HK14
Maintenance of semi-improved or rough grassland for target species HK15
Restoration of semi-improved or rough grassland for target species HK16
Creation of semi-improved or rough grassland for target species HK17
Enhanced buffer strips on intensive grassland HE11
Hay-making HK18
Raised water levels HK19
Inundation grassland HQ13

7. MOORLAND AND UPLAND ROUGH GRAZING OPTIONS

Maintenance of moorland HL9
Restoration of moorland HL10
Creation of upland heathland HL11
Maintenance of rough grazing for birds HL7
Restoration of rough grazing for birds HL8
Shepherding HL16
Seasonal livestock exclusion HL15
Moorland re-wetting HL13
Management of heather, gorse and grass by burning, cutting or swiping HL12

8. ACCESS OPTIONS

Permissive open access HN2
Permissive footpath access HN3
Access for people with reduced mobility HN5
Upgrading CRoW access for people with reduced mobility HN7
Permissive bridleway/cycle path access HN4
Upgrading CRoW access for cyclists/horses HN6
Educational access – payment per visit HN9
Linear and open access – base payment HN1
Educational access – base payment HN8

9. LOWLAND HEATHLAND

Maintenance of lowland heathland HO1
Restoration of lowland heathland on neglected sites HO2
Restoration of forestry areas to lowland heathland HO3
Creation of lowland heathland from arable or improved grassland HO4
Creation of lowland heathland on worked mineral sites HO5

10. INTER-TIDAL AND COASTAL OPTIONS

Maintenance of coastal saltmarsh HP5
Restoration of coastal saltmarsh HP6
Creation of inter-tidal and saline habitat on arable land HP7
Creation of inter-tidal and saline habitat on grassland HP8
Creation of inter-tidal and saline habitat by unmanaged breach or regular inundation HP9
Maintenance of sand dunes HP1
Restoration of sand dunes HP2
Creation of coastal vegetated shingle and sand dunes on arable land HP3
Creation of coastal vegetated shingle and sand dunes on grassland HP4
Extensive grazing on saltmarsh HP10
Saltmarsh livestock exclusion supplement HP11

11. WETLAND OPTIONS

Maintenance of ponds of high wildlife value < 100 sq m HQ1
Maintenance of ponds of high wildlife value > 100 sq m HQ2
Maintenance of reedbeds HQ3
Restoration of reedbeds HQ4
Creation of reedbeds HQ5
Maintenance of fen HQ6
Restoration of fen HQ7
Creation of fen HQ8
Maintenance of lowland raised bog HQ9
Restoration of lowland raised bog HQ10
Wetland cutting HQ11
Wetland grazing HQ12

12. ADDITIONAL SUPPLEMENTS

Supplement for the control of invasive plant species HR4
Bracken control supplement HR5
Supplement for small fields HR6
Supplement for difficult sites HR7
Supplement for group applications HR8