Evaluation of Cross Compliance

Prepared for:  Defra Agricultural Change & Environment Observatory  
Department for Environment, Food & Rural Affairs 
Room 311, Foss House, 
1-2 Peasholme Green, 
York YO1 7PX

Prepared by:  ADAS  
Unit 1, Ground Floor, Rubicon Square,  
Pentagon 2, 4205 Park Approach, Thorpe Park,  
Leeds LS15 8GB

Central Science Laboratory  
Sand Hutton, York, YO41 1LZ

Countryside and Community Research Institute  
The Park, Cheltenham, GL50 2RH

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The Team
The team who worked on this evaluation were:

ADAS
Yiying Cao
John Elliott
Glyn Jones
Diane Simpson

Central Science Laboratory
Nigel Boatman
Ruth Laybourn
Phil Northing
Carmel Ramwell
David Turley
Katja van Driel

Countryside and Community Research Institute
Ian Condliffe
Emma Dennis
Janet Dwyer
Jane Mills
Executive Summary

Cross Compliance was introduced in 2005, setting baseline standards that farmers must respect in order to receive their Single Payment. There are two elements to cross compliance: Good Agricultural and Environmental Condition (GAEC) standards largely relating to the protection of soils, habitats and landscape features; and Statutory Management Requirements (SMR) which are either pre-existing legislative requirements or those that Member States must implement under EU law. SMRs cover environmental, public, plant and animal health and, from 2007, animal welfare objectives.

This evaluation was commissioned in September 2008 and has been tasked with answering the following questions:

• how effective is cross compliance in England in meeting its objectives;
• what is the nature and magnitude of the costs imposed on farmers and any others in meeting cross compliance conditions;
• does the policy represent good value for money;
• are there any unintended consequences, and
• has there been a change in farmer behaviour in response to the introduction of cross compliance?

Method

There were three key stages to the work:

(i) Review of secondary evidence – published literature, Rural Payments Agency (RPA) monitoring data and Farm Advisory System (FAS) survey reports

(ii) Collection of primary evidence – a representative farmer survey (300 respondents), two farm advisor workshops, interviews with Technical Advisory Panel (TAP) members and consultation with Defra and staff from key agencies

(iii) Evaluation of effectiveness and value for money – quantifying the costs and benefits of standards using evidence from (i) and (ii) and valuing the benefits using benefits transfer data (from the Defra Environmental Accounts and other sources)

These three stages were reported separately as the project progressed and are brought together in this report.

Results

Effectiveness

The research evidence and monitoring data highlighted generally high levels of compliance but some considerable variation across the measures. Generally, standards relating to legislation that has been in existence for sometime are well observed, but where there are ongoing issues of breaches, notably SMR 7 and 8 (Cattle ID) but also GAEC 8 (Public Rights of Way) and GAEC 11 (Control of weeds). Cross Compliance has delivered increased awareness and in some cases action, associated with the threat of penalty through deduction of a proportion of Single Payment. For other standards (those GAECs with no supporting legislation), Cross Compliance represents the main means to afford environmental protection and impacts are greater. However, there are issues of lack of clarity in terms of what is required (GAEC 9 (Overgrazing and supplementary feeding) and GAEC 12 (Land not in agricultural Production)) and some resistance to comply from farmers.
While the leverage provided by the Single Payment Scheme (SPS) has ensured that Cross Compliance is very effective insofar as farmers are willing to comply, it has relied too much on this at the expense of genuine engagement with farmers on the rationale for sustainable farming. This has created some problems of genuine willingness to comply, with implications for embedding desired behaviour.

Cost to farmers

In terms of the cost to farmers of meeting Cross Compliance requirements, the main evidence came from the farmers’ survey. Farmers were asked if they had made changes in response to the policy. Those that did were further questioned to provide estimates of direct cost, time input, any income forgone and any costs saved. The data was gathered for groups of standards across eight key themes and was aggregated to give an overall net cost per farm. Two estimates were calculated relating to GAEC only and to GAEC and SMRs, where compliance with the latter had substantively changed as a result of cross compliance.

The estimates of cost were in line with the Regulatory Impact Assessment (RIA) at £163 and £289 per farm for GAEC and GAEC plus SMR 4 and SMR 6-8, respectively. These estimates were then scaled up to England level on the basis of the number of farmers who need to comply, using SPS claimants as a proxy. The aggregate cost at England level is estimated to range from £8.7 to 15.5 million for full-time farmers but increases to £17.8-31.5 million if all farmers (including part-time) are counted.

Value for Money

The context for this policy intervention is payment of CAP subsidy to farmers under the SPS and the requirement to respect key elements of legislation and good practice as a condition. While the value of SPS is very significant (£1.45 bn in England in 2007), value for money relates only to the public benefits resulting from the policy and the direct costs of implementing it.

The valuation of the public benefits delivered by Cross Compliance is a very broad brush estimate due to limitations associated with quantifying benefits relating to the scheme (rather than other factors) and the ambitious use of benefits transfer to value these benefits. The estimated value of benefits ranges from £24 million to over £40 million annually. This compares with policy costs of £8.3 million.

While there is always scope for efficiencies, it would be difficult to reduce the public cost of implementing Cross Compliance significantly as it is driven by EC requirements and therefore the main scope to improve value for money lies with improving scheme impact.

Unintended consequences

The main impacts of Cross Compliance have been:

- additional engagement of farmers with advisers
- increased awareness of existing legislative requirements
- disproportionate impact on small farms (fixed cost component)
- some farmers are incurring unnecessary costs where they are over-reacting to standards e.g. GAEC 9 (Overgrazing and supplementary feeding)
- unnecessary anxiety on the part of some farmers in terms of the risk of penalty
- the limited scale of penalties may cause some to risk being caught rather than comply, notably where high capital cost is needed to comply with regulation e.g. NVZs
Farmer behaviour

The key behavioural issue is the negative attitudes to Cross Compliance by some farmers as evidenced by a review of media articles and feedback from industry advisers in this research. While many farmers have incurred some additional costs as a result of Cross Compliance, these are generally low in relation the scale of SPS payments; where high costs were reported, they related largely to compliance with the underlying regulations, rather than Cross Compliance per se, indicating a lack of understanding of this distinction. This highlights a need for much more attention to the principles of Cross Compliance in the provision of support (via FAS) and better links with the inspection agencies to ensure a more balanced view of the policy and its implementation.

Despite using a typology of farmer behaviour, there was no clear correlation between farmer type and attitudes to Cross Compliance or the level of breaches. This perhaps reflects some degree of sample bias (the sample was entirely drawn from willing respondents to the annual ADAS Farmers Voice™ Survey and was comprised of full-time farmers).

Conclusions and recommendations

While compliance rates are high for most standards (>95%), environmental and welfare benefits are maximised by embedding the spirit as well as the letter of the rules; this relies on a clear understanding of the purpose of Cross Compliance and effectively linking farm practice to desired outcomes. This is not a case for increasing the scope of the standards but for developing a more positive and open relationship with farmers to engage them more fully with scheme objectives, rules and benefits. The Farm Advisory System is in place to help deliver this but there remain a number of issues around policy scope, understanding of individual requirements and policy implementation. These are considered in the following sections and detailed recommendations made for delivering improved public benefits at existing cost.

Policy scope

A major problem for the Cross Compliance policy relates to farmers not being convinced of the benefits of the standards with consequent partial or reluctant compliance. As such, there are two clear messages that need to be made more effectively: firstly compliance is a prerequisite for receipt of Single Payment and secondly that there are actually good reasons for the rules e.g. public goods such as water quality and access to the countryside or ‘weakest-link’ public goods¹ such as preventing animal disease or weed spread. While, the link to SPS is stated in first paragraph of the General Information section of the Cross Compliance Guide, there is considerable scope for improving effectiveness through clarification of the rationale for a number of the standards, both SMRs and GAECs.

Recommendation 1: Place greater emphasis on presenting the case for Cross Compliance standards, even where they are supported by legislation. This should be across all communications with the industry but particularly at face-to-face events such as FAS workshops, where the rationale can be presented interactively.

The evaluation has found that Cross Compliance has been effective in increasing awareness and delivering compliance in most situations but there is considerable scope for improving effectiveness through clarification of the rationale (GAEC 1: Soil Protection Review; GAEC2: Post harvest management of soils; GAEC 3: Waterlogged soil; GAEC 9: Overgrazing and

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supplementary feeding; GAEC12: Land not in agricultural production & GAEC 14: Protection of hedgerows and watercourses) and / or the rules (GAEC 9: Overgrazing and supplementary feeding & GAEC12: Land not in agricultural production). Where there are issues of practicality, it may be necessary to consult with the industry to find more practical means of delivering the legislation.

**Recommendation 2:** Continue to review the implementation standards where there are problems of observance, particularly relating to record keeping, to make it easier for farmers to comply without comprising delivery of intended environmental impacts.

Some standards have potential overlap with agri-environmental schemes and it is important to distinguish clearly between Cross Compliance, which sets the baseline for the Environmental Stewardship (ES) schemes in England and the schemes themselves. This applies to GAEC 15 (Hedgerows - cutting date element) and also to GAEC 14 (Protection of hedgerows and watercourses). Where possible, clear principles should separate the two policy approaches, including the proposed new Environmental Management condition.

**Recommendation 3:** Define clearly where the cross compliance baseline stops and that for incentive-based management starts. Review the case for existing and new standards to ensure a consistent adherence to this principle.

**Individual standards**

The case for changes to individual standards cuts across the design and implementation of the programme. However, it is perhaps best to make the case for change at individual standard level. Below, we have set out the eight groups of standards and presented the conclusions and recommendations for change relating to each.

**Soil management & protection**

Compliance levels are high; this group of standards has raised awareness of soil management but there are some issues with records (GAEC 1). The Soil Protection Review (SPR) form and process is viewed as having little or no practical value by farmers. Failure to comply with GAEC 1 is attributed to:

- farmers not persuaded that the SPR has any purpose;
- high investment in time; and
- problems in carrying out the review and identifying soil types

There are few issues with GAEC 2-4. In practice erosion and loss of soil organic matter is not an issue for all farmers.

- GAEC 2 (Post harvest management of soils) & GAEC 3 (Waterlogged soil): There are few compliance issues but the scope for impact relies on farmers recognising the need for action. There is a private incentive to manage soil well but farmers need more information and advice on best practice e.g. through knowledge transfer (KT) activities to highlight scope for change. Linking to the GAEC 1 (Soil protection review) process would provide a basis for recording decisions and actions and increase the relevance of GAEC 1 (Soil protection review).

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2 Knowledge transfer is a two way process; learning from others as well as sharing ideas and experiences. Experience shows that the most effective form of knowledge transfer is achieved through human interaction and conversation. [http://www.esrc.ac.uk/ESRCInfoCentre/Support/knowledge_transfer/how_it_works/index.aspx?ComponentId=8791&SourcePageId=8852](http://www.esrc.ac.uk/ESRCInfoCentre/Support/knowledge_transfer/how_it_works/index.aspx?ComponentId=8791&SourcePageId=8852)
• GAEC 4 (Burning of crop residues): This standard is well embedded in existing practice and there is no additional impact of Cross Compliance.

These findings indicate that more training and/or advice may be beneficial to enhance the acceptance / effectiveness of the SPR.

**Recommendation 4:** Review GAEC 1 (Soil protection review) form and process to make it a more useful decision-tool for farmers.

**Recommendation 5:** Bundle GAEC 1 (Soil protection review) together with GAEC 2 (Post harvest management of soils), GAEC 3 (Waterlogged soil) and GAEC 4 (Burning of crop residues) to make a single soil protection and management standard.

**Recommendation 6:** Initiate a soil management educational programme under FAS. Link where possible to other relevant initiatives such as the Environment Agency (EA) ‘Think Soils’ programme.

**Water Quality**

Compliance levels are high but inclusion in Cross Compliance has had a significant impact on awareness of SMR 4 (NVZs) and SMR 2 (Ground water). Twenty two percent of respondents in the farmer survey had made changes to comply with the water quality SMRs since the introduction of Cross Compliance. Most of the changes related to SMR 4 (47%) and SMR 2 (44%).

This was reinforced by the practitioner workshops and TAP interviews. However, concerns were expressed about the difficulties of completing records and the complying with the underlying regulation, notably SMR 4 (NVZs). Given the need for capital investment, some farmers may opt not to comply with the wider Nitrates Regulation and risk suffering a penalty if inspected.

Cross-compliance raises awareness of and provides a financial incentive to adhere to legislation on water quality. Farmers need more help with the paperwork, notably from SMR 4 (NVZs) which is a new requirement for many farms following extension of NVZs from 2009.

**Recommendation 7:** Ensure a good level of support is available to farmers on compliance with SMR 4 (NVZs), in particular record keeping, through FAS.

**Historic and Landscape features**

• GAEC 8 (Public rights of way): It appears that, in spite of being a regulatory reinforcement measure, the inclusion of public rights of way as a cross-compliance requirement has had an impact on a minority of farmers who were not fully observing the regulations but were not being prosecuted by Local Authorities. However, it is difficult to respond to all referrals in a timely manner through the 1% compliance audit.

• GAEC 13 (Stone walls): This is the only form of protection for stone walls and is likely to have prevented the removal of stone in some cases; it is difficult to ascertain the extent to which this applies.

• GAEC 15 (Hedgerows): It is difficult to determine the precise impact of cross-compliance, because of the application of similar rules to the large proportion of ELS agreement holders who have undertaken hedgerow management options. Nevertheless, evidence indicates that a substantial proportion of farmers have amended their practice on cutting dates with just over half of the farmers in the survey making changes relating to GAEC 15.
• There is little evidence of compliance issues for GAEC 16 (Felling of trees) and GAEC 17 (Tree Preservation Orders).

Standards relating to historic and landscape features could be grouped together to improve presentation and acceptance. The element of GAEC 15 (Hedgerows, cutting dates element) which relates to the timing of hedge cutting is in effect a biodiversity action and would sit more comfortably in the ‘Habitats and Wildlife’ group in terms of presentation. It is not backed by legislation but has been effective in changing practice. GAEC 13 (Stone walls) is not backed by legislation and while evidence of impact is limited, it is appropriate to include it in Cross Compliance to protect stone walls against removal.

**Recommendation 8:** Group GAEC 7 (Scheduled monuments), GAEC 8 (Public rights of way), GAEC 13 (Stone walls), GAEC 15 (Hedgerows) part, GAEC 16 (Felling of trees) and GAEC 17 (Tree Preservation Orders) under a ‘protection of historic and landscape features’ banner to help present the rationale for these standards.

**Recommendation 9:** Subject to the decision of the European Court of Justice, GAEC 8 (Public rights of way) should be retained in Cross Compliance but a separate inspection process established to deal with referrals (also for other breaches where referrals are significant). This would allow more timely response to breaches and focus on this rather than being a full Cross Compliance inspection.

### Habits and wildlife

Most of the GAEC and SMR standards in this category have a high level of compliance but there are some issues of effectiveness:

• **GAEC 9 (Overgrazing and supplementary feeding):** there is considerable confusion over the requirement of this standard, notably ‘unsuitable supplementary feeding’. In practice, issues of overgrazing may be less relevant going forward due to the decoupling of subsidy and falling livestock numbers but in the absence of Cross Compliance, there is no other provision for protection at present.

• **GAEC 11(Control of weeds):** compliance issues are limited but relate disproportionately to small farms. Enforcement is difficult as the regulation relates to preventing spread of weeds rather than their presence. Lack of effective enforcement by Local Authorities causes resentment from neighbouring farms.

• **GAEC 12 (Eligible land not in agricultural production):** rules are badly written and there is considerable confusion over the requirement of this standard, with some farmers using set aside rules.

• **GAEC 14 (Protection of hedgerows and watercourses):** Awareness of requirements is good, in part due to the media attention that it has received but there is limited understanding of environmental benefits and some resistance to the value of 2 m strips. In practice, little management is required and crop yields and quality from the outer metre or so of the field are poor, thus little income is likely to be foregone. However, this is not necessarily the perception of farmers, and greater provision of information and advice about the rationale for and benefits of the measure may foster more positive attitudes.

For many of the other standards in this category, there are low levels of non-compliance although it is likely that the introduction of Cross Compliance has raised farmers’ awareness of legislation, notably Environmental Impact Assessment Regulations (GAEC 5).

There is a need to:

• clarify the rules (GAEC 9 and 12);
• respond directly to breaches (GAEC 11);
• promote the private and public benefits to farmers; and
• link with ELS options to extend buffer width (GAEC 14).

**Recommendation 10:** Clarify the rules for GAEC 5, 9 and 12 through development of case studies and FAS activities.

**Recommendation 11:** Improve effectiveness of GAEC 11 by responding directly to reported breaches, outside the 1% audit if feasible.

**Recommendation 12:** Revise GAEC management rules in line with set aside rules where this is appropriate and promote to the industry through FAS.

**Recommendation 13:** Make more explicit links to ELS field margin options through FAS to improve the environmental effectiveness of GAEC 14.

**Recommendation 14:** Add GAEC 15 (cutting date element) to this group of standards.

**Recommendation 15:** Group GAEC 5 (EIA), GAEC 6 (SSSIs), GAEC 9 (Overgrazing and supplementary feeding), GAEC 10 (Heather and grass burning), GAEC 11, GAEC 12 and GAEC 14 together with SMR 1 (Wild birds) and SMR 5 (Habitats) under a single ‘habitat and wildlife protection’ banner to help present the rationale for these standards.

**Animal identification**

Animal identification SMRs represent the main area of non-compliance across all standards; the percentage of animals failing inspection ranged from 8.7% to 9.8% between 2005 and 2007 with an overall failure rate for inspections of around 50%. This is of concern given the timescale over which the legislation has been in place and the inability of Cross Compliance to impact on the extent of breaches. It is in part at least due to the fact that while farmers understand the broad principles of traceability and managing disease spread, they do not give sufficient priority to day-to-day actions to meet the requirements of the SMR. Many do not realise the potential for BCMS links while there is also an issue with record keeping. There is a need to reinforce the purpose of and public good argument for SMR 7 and 8, to ensure the process is as clear and simple as possible and to change behaviour. The latter might involve, for example, more FAS workshops on record keeping or referring those who fail inspections to the FAS programme.

**Recommendation 16:** The RPA Inspectorate needs to analyse and highlight the key issues which relate to common breaches and work effectively with FAS advisers to identify actions which will help all farmers to comply with SMR 7&8 (Cattle ID).

**Control of chemicals, food and feedstuffs**

SMR 9-11 (SMR9: Plant protection products; SMR 10: Restriction on substances having hormonal or thyrostatic action and beta-agonists; SMR11: Food and feed law) relate to observation of legislation through good practice and evidencing this through record keeping. Compliance levels are high but inclusion on the list helps to avoid breaches amongst occasional users of pesticides, for example livestock farmers using products such as sheep dips and herbicides and who may be less aware of the pertinent rules and regulations.

Cross compliance has improved the observance of correct practice, notably with regard to pesticide application (SMR 9).
**Recommendation 17:** Group the SMRs relating to chemicals, food and feedstuffs under a single 'control of chemical substances' banner to help present the rationale for these standards.

**Animal Welfare**

SMRs 16-18 relate to existing welfare legislation and while non-compliance is significant, this often relates to minor breaches such as failing to record deaths of lambs or piglets. However, the inspection agencies have to work within the EU requirements and farmers need to recognise the rules and implement change where this is relevant. As with animal ID, this is in part an issue of awareness and support and again there is a significant role for FAS in promoting the principles as well as the rules. Consultees raised an issue of overlap with Quality Assurance Schemes (QAS) which is seen as unhelpful; as with environmental measures, Cross Compliance requirements should set the baseline with additional welfare demands being rewarded by the market. As such it should be possible to have consistency between QAS and Cross Compliance records and inspections.

It is too early to make a full impact assessment of SMR 16 (Welfare of calves), SMR 17 (Welfare of pigs) and SMR 18 (Welfare of farmed animals), since they were only introduced in 2007 and there are differences in inspection assessments from previous on-farm welfare inspection. Cross Compliance inspections need to be able to accommodate referrals on welfare issues and there is a case for a separate inspection process outside the 1% audit; in practice Animal Health already selects the maximum feasible proportion of inspections on the basis of risk, and follows-up all referrals it receives by carrying out on-farm checks that do not form part of the 1% inspection target. The fact that additional inspections were triggered in 2008 (from breaches found during the random and scored risk parts of their selection) suggests that additional effort needs to be made in this area.

**Recommendation 18:** RPA and Animal Health need to continue to work closely with increased support from FAS to ensure farmers are aware of the SMR baseline for animal welfare and that breaches are reduced. Referrals for breaches need to continue to be followed up outside the 1% audit as part of this effort.

**Recommendation 19:** Treat membership of Quality Assurance Schemes as evidence of reduced risk when selecting claimants for inspection; both are based on EU animal welfare legislation, with Cross Compliance representing the baseline standard for QAS.

**Policy Implementation**

The FAS is specifically tasked with supporting farmers to meet Cross Compliance standards and it is clear that much remains to be done. While this is partly about policy design, there is a need for increased emphasis on education and knowledge transfer, linking requirements with best farming practices to help farmers understand how best to meet requirements and to recognise when and why legislation is relevant to them e.g. GAEC 1-4 (Soil management) and GAEC 12 (Land not in agricultural production).

**Recommendation 20:** Focus FAS activity on those standards and industry segments where there is most uncertainty and use knowledge transfer to link requirements with best farming practice.

In terms of farmer behaviour, a key issue is that of negative attitudes associated with Cross Compliance, both in concept and application. Fundamentally this relates to the risk of penalties and additional costs but it signifies some failure of communication of the rationale and the detail of the standards. It is also linked to the perception that public subsidy through
SPS is ‘of right’ rather than a payment for public goods. Contrary to some media comment and feedback from some consultees, most feedback on the inspection process itself is positive. It would therefore be helpful to have better links between policy support (through FAS) and the inspection process so that this issue is addressed explicitly.

**Recommendation 21:** Review the extent of partnership working between the FAS and inspection bodies and ensure the rationale for Cross Compliance and the positive feedback on inspections is communicated widely to the industry.

Increased targeting would improve the effectiveness of Cross Compliance based on reported breaches of legislative requirements e.g. GAEC 7 (Monuments), GAEC 8 (PROW), GAEC 13 (Stone walls) and SMRs. While all referrals to RPA and Animal Health are dealt with through the targeted element of inspection, many breaches require a prompt response and are often temporal in nature. A separate process outside the 1% compliance inspections could address the breach specifically, without need for a full inspection and would allow a more timely response.

**Recommendation 22:** Research the case for a separate inspection process, outside the 1% inspection, for reported breaches of standards.

While we have reported that there is limited scope to reduce the public costs of Cross Compliance, it is clear that a more effective approach to promoting the conditions to farmers and providing well targeted support through FAS would reduce unnecessary farmer costs as a side effect.
## List of Acronyms

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<tr>
<th>Abbreviation</th>
<th>Full title</th>
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<tr>
<td>ACEO</td>
<td>Agricultural Change and Environment Observatory</td>
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<td>ADAS</td>
<td>ADAS (UK) Limited</td>
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<td>BAP</td>
<td>Biodiversity Action Plan</td>
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<td>BCMS</td>
<td>British Cattle Movement Scheme</td>
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<td>CAP</td>
<td>Common Agricultural Policy</td>
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<td>CATI</td>
<td>Computer-Aided Telephone Interviewing</td>
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<td>CCA</td>
<td>Competent Control Authority</td>
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<td>CCRI</td>
<td>Countryside and Community Research Institute</td>
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<td>CEC</td>
<td>Commission of the European Communities</td>
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<td>CSL</td>
<td>Central Science Laboratory</td>
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<td>Countryside Stewardship Scheme</td>
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<td>DEFRA</td>
<td>Department for Environment, Food and Rural Affairs</td>
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<td>EA</td>
<td>Environment Agency</td>
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<td>English Woodland Grants Scheme</td>
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<td>Farm Advisory System</td>
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<td>Farmers Guardian</td>
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<td>Farmers Weekly</td>
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<td>GAEC</td>
<td>Good Agricultural and Environmental Condition</td>
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<td>HFA</td>
<td>Hill Farming Allowance</td>
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<td>ID</td>
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<td>LFA</td>
<td>Less Favoured Area</td>
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<td>N</td>
<td>Nitrate</td>
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<td>Non Governmental Organisation</td>
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<td>Quality Assurance Scheme</td>
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<td>Fertiliser Recommendations for Agricultural and Horticultural Crops</td>
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<td>RIA</td>
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1 Introduction

In September 2008, ADAS working with CSL and CCRI, was commissioned by Defra to undertake an evaluation of Cross Compliance in England. The detailed objectives are as follows:

- to provide an assessment of the effectiveness of cross compliance conditions in England in meeting their objectives;
- to identify the nature and magnitude of the costs imposed on farmers and any others in meeting cross compliance conditions;
- to assess value for money of the measures given the EU Regulatory framework and to recommend any areas for improvement where either environmental enhancements can be delivered without additional compliance costs or where the same level of environmental benefit can be achieved with a lower cost of compliance;
- to identify any unintended consequences, either detrimental or beneficial, of the cross compliance conditions, making recommendations for actions that will counter the former or reinforce the latter; and
- to evaluate the behavioural change of farmers and land managers since the introduction of cross compliance.

The evaluation covers the period since the launch of the Cross Compliance programme in 2005 and builds on an earlier study by CCRU/CSL\(^3\) which provided recommendations on how to monitor and evaluate the impact of cross-compliance in England.

1.1 Background

Cross compliance measures were implemented in 2005, setting baseline standards that farmers must meet in order to receive their Single Payment. There are two elements to cross compliance: Good Agricultural and Environmental Condition (GAEC) standards largely relating to the protection of soils, habitats and landscape features; and Statutory Management Requirements (SMR) which are either pre-existing legislative requirements or those that Member States must implement under EU law. SMRs cover environmental, public, plant and animal health and, from 2007, animal welfare objectives. A summary of SMRs and GAECs applying in England are listed at Appendix 1. Further details can be found in the Cross Compliance handbooks\(^4\) and Statutory Instruments, with the EU regulatory framework set in particular by Council Regulation 1782/2003 and Commission Regulation 796/2004.

The CAP reform of 2003 introduced an obligation for Member States to set up a system of advising farmers on land and farm management, the ‘Farm Advisory System’ (FAS), to be operated by one or more designated authorities or private bodies (Article 13 of Regulation (EC) No 1782/2003). The use of the system by farmers is on a voluntary basis but Member States have to give priority to farmers

\(^3\) CCRU and CSL (2007) Assessing the Impacts of Cross Compliance in England
https://statistics.defra.gov.uk/esg/ace/crosscompliance/index.htm and

\(^4\)http://www.rpa.gov.uk/rpaindex.nsf/ContentByTaxonomy/RPA%20Schemes**Single%20Payment%20Scheme**Cross%20Compliance**Farmer%20Guidance**?OpenDocument
who receive more than €15,000 of direct payments per year. The objectives of the Farm Advisory System are to ‘help farmers to meet the standards of modern, high quality agriculture by establishing a comprehensive system offering advice to commercial farms, as well as to help farmers to become more aware of material flows and on-farm processes relating to the environment, food safety, animal health and welfare’.

In England, the key element of FAS is a programme of workshops and demonstration events to support farmers in the implementation of Cross Compliance. The input was contracted to Momenta, which has worked with a network of farm advisors to deliver the programme. A number of participant surveys have been carried out as part of the contract to provide a baseline and monitor progress on farmer awareness and understanding of their commitments under Cross Compliance; these represent a useful element of evidence for this evaluation.

The FAS is a core element of the CAP reform in 2003 and recently its importance has increased as the Commission Regulation (EC) No 1550/2007 of 20 December 2007 establishes that the participation of a farmer to the FAS could be seen as a factor in the risk analysis for the selection of the holdings for on-the-spot checks. This is not currently the case in England (see Appendix 2).

A key conclusion from the CCRU/CSL research was that the introduction of cross-compliance had a strong impact on farmer perceptions (e.g. inspections and penalties) but this did not necessarily translate into changes in farmer attitudes or practices. However, given the relatively limited time elapsed since scheme initiation, this would suggest that observable environmental outcomes will be less visible than apparent changes in awareness and attitudes (which may be pre-cursors to future behaviour and farm practice changes).

1.2 Policy Context

Although it has earlier origins in the USA, cross compliance in relation to agricultural policy was first discussed in Europe in the late 1980s, as measures to integrate environmental considerations into agricultural policy were first debated. During the late 1980s and early 90s the view started to emerge that production could no longer be the main goal of public support for agriculture. There was increasing debate about the possibility of requiring farmers to meet higher environmental standards and to provide society with tangible environmental benefits, in return for support. At the same time there was concern that farmers were receiving public funds while failing to meet legislative requirements. As part of the 1992 MacSharry reforms of the CAP, elements of environmental cross compliance were first introduced. Member States were allowed to introduce environmental conditions on direct payments to producers in a variety of sectors. The UK was one of the few Member States to apply the conditions to livestock sector payments and to the arable set-aside regime, threatening to withdraw subsidies if the conditions were breached.

The principle that farmers should comply with environmental protection requirements as a condition for benefiting from market support was incorporated in the Agenda 2000 reform. Member States had three options for fulfilling this obligation: giving support for agri-environmental commitments, fixing general mandatory environmental requirements (based on environmental legislation), and setting out specific environmental standards. Where farmers did not respect the environmental requirements, appropriate sanctions were to be applied, which could include the reduction or even the withdrawal of direct aids. Only a limited number of Member
States set down conditions for direct payments, including Denmark, France, Greece, the Netherlands and the UK.

The subsequent 2003 CAP reform placed greater emphasis on Cross Compliance. Cross compliance was introduced as a compulsory measure and its scope extended from its original environmental focus to one dealing with a wider range of public concerns. From January 2005 all farmers claiming direct payments under the Single Payment Scheme (SPS) and its attendant schemes (Area Payment for Nuts, Aid for Energy Crops and Protein Crop Premium) were required to meet a range of Cross Compliance requirements in the areas of the environment, public, animal and plant health and Good Agricultural and Environmental Condition (GAEC). From January 2007, farmers also had to comply with requirements in the area of animal welfare, and the need to comply with cross compliance requirements was extended to farmers who entered into new commitments under certain Pillar 2 schemes (Environmental Stewardship, Hill Farm Allowance and the English Woodland Grant Scheme. Farmers that are found to have breached any of the range of 17 GAECs and 18 Statutory Management Requirements (SMRs) that now make up the cross compliance requirements in England may be subject to reduction or withdrawal of those payments (Council Regulation No 1782/2003 and Commission Regulation No 796/2004). Member States also have to ensure that the extent of permanent pasture (as at the level of the reference year) is maintained (now withdrawn, see below), and that a comprehensive advisory system to support cross compliance is established (this was obligatory from the first of January 2007).

As stated by the EU Commission (CEC, 2007) cross compliance has two objectives: The first is to promote sustainable agriculture by integrating basic standards for the environment, food safety, animal health and welfare and good agricultural and environmental condition by linking direct aid to rules relating to agricultural land, agricultural production and activity. The second objective is to make the CAP more compatible with the expectations of society at large. There is now a growing body of opinion that agricultural payments should no longer be granted to farmers who fail to comply with basic rules in certain important areas of public policy. Thus the measures are also seen as a means of enforcing compliance with pre-existing legislation in the agriculture sector (Farmer & Swales, 2007).

In March 2007, the Commission adopted a report (CEC, 2007) which suggested legal modifications to the control and sanction system of cross compliance. The main aim was to simplify the system, making it less onerous for farmers and for the government authorities charged with inspecting farms and enforcing penalties where rules have been broken. Among the changes included in the proposal which were subsequently adopted by the Agricultural Council in January 2008 were:

- The option to implement a de minimis rule to exempt from reductions any penalty falling below €100. A warning letter would be issued rather than apply the one per cent penalty deduction for minor cases of non-compliance;

- There will be a measure of tolerance allowing the authorities not to penalise for minor breaches of cross compliance, subject to appropriate follow-up procedures.

---

5 The text states: “In line with the principle of proportionality, Member States should be allowed not to pursue instances which would not trigger the 3% reduction foreseen in case of negligence, which may in certain cases be reduced to a 1% minimum reduction. Nevertheless, in these cases, a warning letter should be sent to the farmer indicating that remedial action is necessary.”
• Introduction of a three year phasing-in for the new Member States (not applicable to the UK).

Further changes to Cross Compliance were considered as part of the ‘Health Check’ of the CAP. The Health Check was intended ‘not to re-invent or re-reform the Common Agricultural Policy’ but to make it more efficient, effective and simple. Political agreement on the Health Check was achieved at the Agricultural Council 24-25th November 2008. Among decisions affecting Cross Compliance relevant in the UK were:

• A number of GAEC compulsory standards became optional, including:
  o Soil organic matter: Standards for crop rotations;
  o Soil structure: Appropriate machinery use;
  o Minimum livestock stocking rates and/or appropriate regimes.

• Some standards were deleted, including:
  o Minimum level of maintenance: Protection of permanent pasture.

• Some additional standards were added, including:
  o Minimum level of maintenance: Establishment and/or retention of habitats (optional);
  o Protection and management of water: Establishment of buffer strips along watercourses (compulsory);
  o Protect water against pollution and runoff and manage the use of water: Where use of water for irrigation is subject to authorisation, compliance with authorisation procedures.

These changes come into force from 1 January 2010, except for the standard for buffer strips, which has to be implemented not later than 2012.

With regard to the simplification of Cross Compliance, there is a declaration that:

“The Council and Commission declare that work will continue with the objective of obtaining further simplification for farmers as well as national administrations regarding the application of requirements on Cross Compliance”.

---

6 Mariann Fischer Boel, European Agriculture Commissioner, Opening Speech, Green Week, Berlin 17 January 2008
7 However, publication of the council Regulation in January 2009 made it clear that this does not apply where: “(a) a Member State had defined, for such a standard, a minimum requirement for the good agricultural and environmental condition before 1 January 2009; and/or (b) national rules addressing the standard are applied in the Member State.” Removal of existing standards is therefore not allowed, but improvement/consolidation is permitted so long as the issue continues to be addressed as effectively as before.
2 Cross Compliance Impacts in England

In this section, the impact of Cross Compliance as a whole is reviewed. Key sources of evidence are discussed in turn and used to provide an overview of the effects of the scheme and the relative impact of its components on farm businesses and the environment. Impacts on public accounts will be considered in a later report as part of the cost-benefit analysis, along with more detailed consideration of the costs to farm businesses and the valuation of benefits.

2.1 Literature review

2.1.1 Regulatory Impact Assessment

In 2004, prior to the implementation of Cross Compliance, Defra conducted a Regulatory Impact Assessment (RIA). This was confined to proposals for GAEC requirements, because the SMRs were pre-existing legal requirements arising from EU Directives and Regulations which have been transposed into English law, and were understood to have been subject to previous assessment. The RIA included set-side management, but this is not discussed further here as it has generally been considered separately from other Cross Compliance measures, and in any case is no longer operational since the setting of a zero rate for 2007/8, coupled with the abolition of set-aside as part of the 2008 CAP ‘Healthcheck’.

In the section describing the policy background, the RIA notes that an evolutionary approach was to be adopted to the introduction of GAEC measures, particularly in relation to the soil management components. The response to the stakeholder consultation was also summarised. Largely positive responses were received to the evolutionary approach and timing for phasing in soil management plans, proposed measures for the protection of stone walls, land not wholly in agricultural production, and compliance with the Heather and Grass Burning Regulations and associated Code. Views on 2m margins and public rights of way were however divergent, with farming groups opposed and environmental groups in favour of the proposed measures.

Although it was acknowledged that Cross Compliance would impose some costs on farmers, it was emphasised that it provides a means by which farmers are accountable to society for the Single Farm Payments, in terms of being good stewards of their land. It was also noted that farmers may wish to pass on costs to the consumer or retailer, though in the case of the wider retail market this may not be possible.

In developing proposals for Cross Compliance measures, account was taken of the five principles of the Better Regulation Task Force that regulations should be ‘proportionate, accountable, consistent, transparent and targeted’. Proposals were evaluated using the Integrated Policy Appraisal framework and considered against the environmental objectives of Defra in the context of sustainable development. The RIA included assessments of economic impacts for public accounts and farm businesses, environmental impacts, broader rural impacts, regional impacts, application and enforcement issues, and equity issues.
Environmental and economic (farm business) impacts

Proposals for GAEC requirements to ensure compliance with existing legislation were considered to have no additional impact because farmers should already be complying with the legislation. Similarly additional environmental impacts were not expected, except where improved compliance occurred because farmers were reminded of their responsibilities or feared losing payments if they were caught flouting the law.

Measures included, with the requirement number allocated in the Cross Compliance provisions as eventually developed, were as follows:

- Tree Preservation Orders (GAEC 17);
- Hedgerow Regulations 1997 (GAEC 15 (part));
- Environmental Impact Assessment Regulations (GAEC 5);
- SSSI legislation (GAEC 6);
- Heather and Grass Burning Regulations (GAEC 10);
- Scheduled Monuments Legislation (GAEC 7);
- Forestry Regulations (GAEC 5 and 16).

Controls on overgrazing had already been implemented through the EU optional Cross Compliance powers since the mid 1990s, in relation to payments under the Hill Farming Allowance (HFA), agri-environment schemes, and sheep and beef headage schemes. However, additional costs of widening these controls (GAEC 9) could arise for farmers previously unaffected by the rules such as those outside the LFA who were not in an agri-environment scheme. Environmental benefits would be expected and impacts on policy targets would include improved condition of SSSIs and achievement of BAP targets.

A number of proposed and possible new requirements for farmers were also assessed in some detail. Those eventually adopted, along with their eventual designation, were:

- Soil Management Plan (now Soil Protection Review, GAEC 1);
- Protection of dry stone walls (GAEC 13);
- Management of hedgerows (cutting dates, now part of GAEC 15);
- Land not wholly in agricultural production (GAEC 12);
- Public Rights of Way (GAEC 8);
- 2m hedge and ditch protection measures (GAEC 14).

The measures considered most likely to have a new economic cost to farm businesses were considered to be the soil management plan and 2m field margins, and these were considered in some detail. The other measures were considered to have little impact on farm businesses. The proposal for Public Rights of Way reinforced existing legislation and so should already be observed by farmers.

The expected impacts are discussed in more detail under individual options in Appendix 4.
2.1.2 Momenta survey results

Surveys of farmers have been carried out by Associa on behalf of Momenta using a Computer-Aided Telephone Interviewing (CATI) system. The aim was to support the Advisory programme by collecting information on farmer awareness of Cross Compliance measures, their actions in relation to the measures and response to the components of the Advisory Programme. Data were available from four surveys. A baseline survey was undertaken in April 2005, with a follow-up survey in November of the same year. Further surveys were undertaken in 2006 and 2007. Many of the questions were related to the advisory programme itself and are not reported here. This section summarises the results for some generic questions about awareness and understanding of Cross Compliance.

Awareness of Cross Compliance

In November 2005, 97% of those questioned had heard of the term Cross Compliance. By autumn 2006, 53% said that they fully understood their obligations under Cross Compliance, with a further 44.7% indicating that they partially understood them. In 2007, the question was phrased slightly differently. In response, 21.1% said that they fully understood their obligations, 64.2% said they understood most and 12.9% said they understood some of their obligations. However, the surveyors noted that inspection failure rates indicated that farmers tended to overestimate their understanding.

In the autumn 2005 survey, 76% thought that their knowledge of cross compliance had improved since January 2005, with nearly 40% saying that their knowledge had improved to a large extent; only 25% thought their knowledge had changed little or not at all. Similar proportions thought that their knowledge had improved, improved greatly or had not improved in autumn 2006 and 2007.

Changes in farming practices

In the baseline survey, only 32% thought they would have to change farming practices in order to comply with the SPS regulations. However, by November 2005 this had increased to 54.4%. In autumn 2006, 40.5% said that they had had to change their farm practices in order to comply, but by the 2007 survey this had decreased slightly to 36.5%. Also in 2007, 49% said that they had no difficulties in implementing Cross Compliance. Areas identified as causing concern were hedgerows and ditches (6%) and paperwork (5.1%).

In 2007, respondents were asked about the nature of changes made to farm practices in order to comply with Cross Compliance requirements. The major changes reported were insertion of 2m margins against hedgerows and watercourses (71.4%), hedge cutting (54.5%), and management of manure, slurry and nitrogen (48.4%). Other changes included improved record keeping (6.1%), reduced stocking densities (5.6%), improved soil management (5.6%), improved disposal of waste (2.8%), improved livestock care (1.4%), improved cropping practices (1.4%), checking ear tags (0.9%) and ‘other’ (4.7%).

It should be borne in mind that farmers’ assertions as to changes in management practices have not always been borne out by results of field surveys, e.g. Boatman et al. (2007).
Costs and benefits

In 2006 and 2007, respondents were asked whether there had been any costs or savings arising from Cross Compliance. The results are reported in Table 1. Although a majority of farmers questioned thought that Cross Compliance had resulted only in additional costs, the proportion believing that they had made some savings increased from 8% to 13% between 2006 and 2007.

Table 1: Percentage of survey respondents indicating additional costs or savings arising from Cross Compliance

<table>
<thead>
<tr>
<th>Response</th>
<th>2006 (%)</th>
<th>2007 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra costs only</td>
<td>62.4</td>
<td>54.5</td>
</tr>
<tr>
<td>Savings in some areas but extra costs in others</td>
<td>5.7</td>
<td>8.9</td>
</tr>
<tr>
<td>Savings only</td>
<td>2.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Neither</td>
<td>26.8</td>
<td>25.8</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

In 2006, farmers were asked if they were aware of any environmental or other benefits. 34% responded positively and 61% negatively, with 5% saying they didn’t know. In 2007, the percentage reporting no environmental benefits had increased to 72.4%. Twenty-one percent believed that there was increased wildlife, mainly as a result of increased protection for hedgerows and watercourses.

Evidence for individual requirements

Results of questions relating to individual requirements are summarised below.

Applicability of SMRs and GAECs to individual farms

Table 2 shows the percentage of farmers who thought that the various SMR and GAEC requirements were applicable to them. Not all requirements were covered in every survey. SMRs 9-18 and GAECs 9 and 11 were not included in any of the surveys, and so are omitted. In the 2005 surveys, GAEC 14 was considered separately as applicable to watercourses, with hedgerow-related provisions under GAEC 14 and 15 being treated together.

The most widely applicable of the provisions surveyed were GAECs 14 and 15, (Protection of hedgerows and watercourses) applicable to around 90% of farms, though where only watercourses were considered, GAEC 14 only applied to around 70%. GAEC 1 (General requirements including Soil Protection Review) applied to between 80 and 90%, and GAEC 8 (Public Rights of Way) to around 70%.

Less than half of the respondents thought that GAEC 2 (Groundwater protection) and GAEC 3 (Waterlogged soil) and SMR 4 (NVZs) applied to them. GAEC 5 (Environmental Impact Assessment) was thought to be applicable by 30% in November 2005 but this increased to 50% in 2006. Percentages for SMRs related to animal identification changed during the survey period, with those for pigs, sheep and goats increasing in the early surveys whilst those for cattle declined slightly from around 60 to around 50%.

---

*At this time, 55% of England was designated as NVZ. The proportion increased to 70% from 1 January 2009.*
Table 2: Percentage of respondents to Momenta surveys who said that different SMR and GAEC requirements were applicable to them

<table>
<thead>
<tr>
<th>SMR/GAEC</th>
<th>Apr 2005</th>
<th>Nov 2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 1 Wild birds SPAs</td>
<td>16.0</td>
<td>17.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SMR 2 Groundwater protection</td>
<td>34.4</td>
<td>51.4</td>
<td>62.3</td>
<td>-</td>
</tr>
<tr>
<td>SMR 3 Sewage sludge</td>
<td>7.9</td>
<td>12.1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SMR 4 Nitrate Vulnerable Zones</td>
<td>37.1</td>
<td>45.8</td>
<td>43.3</td>
<td>49.4</td>
</tr>
<tr>
<td>SMR 5 Habitats</td>
<td>25.5</td>
<td>21.9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SMR 6 Animal ID/registration – pigs</td>
<td>27.1</td>
<td>43.4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SMR 7 &amp; 8 Cattle identification</td>
<td>60.1</td>
<td>58.2</td>
<td>65.9</td>
<td>49.9</td>
</tr>
<tr>
<td>SMR 8a Animal ID/reg. – sheep &amp; goats</td>
<td>23.3</td>
<td>30.7</td>
<td>48.5</td>
<td>37.0</td>
</tr>
<tr>
<td>GAEC 1-4 Soils</td>
<td>-</td>
<td>70.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 1 Soil protection review</td>
<td>-</td>
<td>see above</td>
<td>86.7</td>
<td>81.6</td>
</tr>
<tr>
<td>GAEC 2 Post-harvest land management</td>
<td>-</td>
<td>see above</td>
<td>46.0</td>
<td>45.1</td>
</tr>
<tr>
<td>GAEC 3 Waterlogged soil</td>
<td>-</td>
<td>see above</td>
<td>39.5</td>
<td>45.6</td>
</tr>
<tr>
<td>GAEC 4 Burning of crop residues</td>
<td>-</td>
<td>see above</td>
<td>11.6</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 5 Environmental Impact Assessment</td>
<td>-</td>
<td>30.8</td>
<td>50.0</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 6 Sites of Special Scientific Interest</td>
<td>11.9</td>
<td>12.3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 7 Scheduled Monuments</td>
<td>9.1</td>
<td>9.7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 8 Public rights of way</td>
<td>67.6</td>
<td>71.1</td>
<td>77.4</td>
<td>69.5</td>
</tr>
<tr>
<td>GAEC 10 Heather &amp; grass burning</td>
<td>1.8</td>
<td>1.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 12 Eligible land not in production</td>
<td>24.9</td>
<td>13.5</td>
<td>22.7</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 13 Stone walls</td>
<td>20.8</td>
<td>15.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 14 Protection hedges/watercourses</td>
<td>see below</td>
<td>-</td>
<td>89.0</td>
<td>90.9</td>
</tr>
<tr>
<td>GAEC 14 Protection watercourses only</td>
<td>67.9</td>
<td>72.4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 15 Tree preservation orders</td>
<td>see below</td>
<td>-</td>
<td>83.8</td>
<td>91.9</td>
</tr>
<tr>
<td>GAEC 14 &amp; 15 Hedgerows</td>
<td>88.2</td>
<td>92.3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 16 Felling of trees</td>
<td>-</td>
<td>15.3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 17 Tree preservation orders</td>
<td>-</td>
<td>10.0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*A requirement not covered in a survey is indicated by -.*

Concerns about implementation of requirements

The baseline survey carried out in April 2005 included a question asking which of certain requirements caused most concern. The results are reproduced in Table 3, but need to be interpreted in relation to the number of respondents who commented. Animal identification for pigs and cattle caused the highest levels of concern, and protection of SSSIs the lowest, of those requirements included in the question.
Table 3: Levels of concern (%) amongst respondents to the April 2005 survey about implementing SMR and GAEC requirements

<table>
<thead>
<tr>
<th>SMR/GAEC</th>
<th>No. responding (out of 1167)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 6 Animal ID/registration – pigs</td>
<td>55</td>
<td>45.5</td>
</tr>
<tr>
<td>SMR 7 &amp; 8 Cattle identification</td>
<td>90</td>
<td>44.4</td>
</tr>
<tr>
<td>GAEC 10 Heather &amp; grass burning</td>
<td>5</td>
<td>40.0</td>
</tr>
<tr>
<td>GAEC 13 Stone walls</td>
<td>41</td>
<td>36.6</td>
</tr>
<tr>
<td>GAEC 7 Scheduled Monuments</td>
<td>22</td>
<td>36.4</td>
</tr>
<tr>
<td>SMR 4 Nitrate Vulnerable Zones</td>
<td>74</td>
<td>35.1</td>
</tr>
<tr>
<td>GAEC 8 Public rights of way</td>
<td>133</td>
<td>34.6</td>
</tr>
<tr>
<td>GAEC 14 &amp; 15 Hedgerows</td>
<td>196</td>
<td>32.7</td>
</tr>
<tr>
<td>SMR 3 Sewage sludge</td>
<td>34</td>
<td>32.4</td>
</tr>
<tr>
<td>SMR 8a Animal ID/reg. – sheep &amp; goats</td>
<td>41</td>
<td>31.7</td>
</tr>
<tr>
<td>GAEC 14 Protection watercourses only</td>
<td>145</td>
<td>29.7</td>
</tr>
<tr>
<td>GAEC 12 Eligible land not in production</td>
<td>65</td>
<td>29.2</td>
</tr>
<tr>
<td>SMR 2 Groundwater protection</td>
<td>96</td>
<td>28.1</td>
</tr>
<tr>
<td>SMR 5 Habitats</td>
<td>76</td>
<td>27.6</td>
</tr>
<tr>
<td>SMR 1 Wild birds SPAs</td>
<td>66</td>
<td>27.3</td>
</tr>
<tr>
<td>GAEC 6 Sites of Special Scientific Interest</td>
<td>28</td>
<td>17.9</td>
</tr>
</tbody>
</table>

Awareness of rules for individual requirements

Respondents who attended a Momenta/AEA technical event in 2005 were asked some questions to test their knowledge of the detail of individual requirements. While over 90% correctly reported the detailed conditions for some standards e.g. hedge cutting dates (GAEC 15), less than half of those questioned in were able to correctly identify the date from which the Soil Protection Review (SPR) had to be implemented (January 2007). In 2007, farmers were asked how often the SPR should be reviewed; 85.3% knew that it should be reviewed at least annually.

In 2007, some additional questions were asked about animal identification SMRs. Eighty percent of pig farmers knew that they should send their movement records to the Local Authority and 91.1% of dairy farmers correctly identified that dairy calves should be tagged with their first ear tag within 36 hours.

Indoor poultry farmers were asked about ventilation systems and how often they are required to be checked. Only 15% got the answer correct (7 days); however, 70% were checking it every day, thus exceeding the regulatory requirements.

Levels of compliance and changes required

In 2007, farmers were asked whether they were fully compliant with certain requirements, and whether they had had to make changes to achieve full compliance. Results are presented in Table 4. The requirement for which the greatest level of change was reported was GAEC 14 (protection of hedgerows and watercourses), for which nearly a third of responses indicated that change was required. Others for which nearly 30% of respondents made changes were SMR 4 (NVZs), GAEC 1 (SPRs) and GAEC 15 (Hedgerows, presumably cutting date).
Changes in management related to GAEC 14 and 15 were also the most frequently identified in an earlier question though the percentages were different, presumably as a result of the precise wording of the question. Unfortunately this was not clear from the report.

Table 4: Levels of compliance with selected requirements, and changes needed to comply.

<table>
<thead>
<tr>
<th>SMR/GAEC</th>
<th>Fully compliant</th>
<th>No changes required</th>
<th>Changes made</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 4 Nitrate Vulnerable Zones</td>
<td>94.4</td>
<td>65.6</td>
<td>28.8</td>
</tr>
<tr>
<td>SMR 7 &amp; 8 Cattle identification</td>
<td>97.6</td>
<td>88.7</td>
<td>8.9</td>
</tr>
<tr>
<td>SMR 8a Animal ID/reg. – sheep &amp; goats</td>
<td>94.5</td>
<td>81.5</td>
<td>13.0</td>
</tr>
<tr>
<td>GAEC 1 Soil protection review</td>
<td>95.8</td>
<td>67.4</td>
<td>28.4</td>
</tr>
<tr>
<td>GAEC 2 Post-harvest land management</td>
<td>96.6</td>
<td>79.5</td>
<td>17.1</td>
</tr>
<tr>
<td>GAEC 3 Waterlogged soil</td>
<td>90.2</td>
<td>68.4</td>
<td>21.8</td>
</tr>
<tr>
<td>GAEC 8 Public rights of way</td>
<td>97.8</td>
<td>87.4</td>
<td>10.4</td>
</tr>
<tr>
<td>GAEC 14 Protection hedges/watercourses</td>
<td>98.1</td>
<td>65.5</td>
<td>32.6</td>
</tr>
<tr>
<td>GAEC 15 Hedgerows</td>
<td>97.8</td>
<td>69.6</td>
<td>28.2</td>
</tr>
</tbody>
</table>

2.1.3 Media Survey

A review of the farming press since 2004 was carried out to help assess farmers’ attitudes to cross compliance. Of the 500 articles identified which referred to cross compliance, 60 related specifically to farmers’ attitudes to the policy. Most of the articles examined were from Farmers Weekly, but others included Farmers Guardian, trade press and press releases from farmers’ organisations.

Attitudes to whole scheme

Of the farming press articles examined between 2004 and 2008, 64% occurred during 2004 and 2005 when the policy measure was first introduced. The articles suggest that initially there were many farmers with a negative attitude towards cross compliance. This was in part due to uncertainty and confusion about the measures. This view is supported by Jones (2006) who also reviewed initial media coverage of cross compliance. In addition, he suggests that the initial negative reaction to the proposed measures concentrated on the potential cost of impact (Allen, 2004). Some farmers were assuming that the requirements would impose a major change to their management operations.

Since 2005 there have been fewer articles detailing concerns about Cross Compliance and a few positive articles (FW, 2006a) emphasising the overlap with existing legislative requirements. However, there were still concerns raised about inspections. Concerns related to the rigour of the inspections which it was felt allowed little margin for error and several articles expressed the need for a lighter touch (FW, 2005a). The efficiency of the inspection process was also brought to question with the view that there was duplication of inspections by different agencies (FW, 2007a). Several articles expressed concerns about the increased bureaucracy and increase in red tape brought about by the new standards (FG, 2008a). This was not helped by the introduction of several new policy measures at the same time, (Single Farm Payments, Environmental Stewardship), which meant that farmers felt
deluged with new information (FW, 2005b). Similar views were also reported by Dwyer et al. (2007a), who found that farmers felt overburdened and concerned about cross compliance and the inspection process.

As well as the large amount of information that farmers received at the start of cross compliance, Farmer et al. (2007) suggested that a further influence on attitudes to cross compliance was the delay in the distribution of the Single Farm Payment. The delays may have negatively affected farmers’ opinions of the Single Payment Scheme, and thereby cross compliance. This is believed to have especially been the case on hill farms, where the single payment makes up a large share of total household income.

There also appeared to be particular initial concerns from the pig industry. In the early days it appears that some landowners were reluctant to let land for outdoor pig production, fearing that it might fail to comply with cross compliance (FW, 2005c). This issue was later clarified by Defra with an agreement approved across the industry (British Pig Executive, 2005).

The 2007 Farmers Voice™ Survey (ADAS, 2007) of 1650 farmers suggests that negative attitudes to the principle of cross compliance still exist. Around a third of the farmers surveyed disagreed or strongly disagreed with the following statement “I believe that farmers should only be eligible to claim the Single Payment if their farms meet the required standards for cross compliance”. There was a similar distribution amongst farm types, with the exception of the horticultural farmers, of whom only 16% fell into this category. The significance of farmers’ views lies in their willingness to comply with the standards and the extent to which this becomes embedded in practice.

One factor that affects farmers’ attitudes to new policy is the impact on costs. Whilst cross compliance requirements do not necessarily directly increase costs, they can reduce income by increasing management costs (Davies & Hodge, 2006). However, cross compliance can also be viewed as a source of income associated with receipt of the Single Payment. The press articles often emphasised the link between complying with cross compliance conditions and receiving the Single Payment. This supports the suggestion by Davies & Hodge (2006) that the requirements are perceived as regulation with an economic incentive. If this is the case then Farmer et al (2007) suggest that different ways to safeguard the environmental benefits delivered by cross compliance may need to be found if the Single Payment, and therefore the leverage offered by cross compliance, is reduced in the future.

There is evidence of an increase in the awareness of cross compliance requirements since 2005. A survey of 573 farmers undertaken by Momenta in 2007 found that 98% understood some, most or all of the requirements, an increase of 11% since 2005. What is less clear is whether there has been any corresponding change in farmers’ attitudes to the cross compliance requirements. This is important not just for compliance but also for ensuring that there is a sustained change in behaviour. The Alliance Environment report (2007) which evaluated the application of cross compliance across Europe suggests that cross compliance has “improved farmers’ awareness of their obligations but has been less successful in developing farmers’ understanding of those obligations, and of sustainable agriculture more generally”.

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Attitude to Individual Requirements

Buffer strips (GAEC 14)

The Defra consultation on the introduction of cross compliance revealed that GAEC 14 caused the most unease. This condition also received the most media coverage in 2004. It was generally felt at the time that buffer strips went beyond the remit of cross compliance, which should be about protecting landscape features, rather than creating them (FW, 2004a). The view was that buffer strips should be paid for by agri-environment schemes (FW, 2004b) rather than added as a cross compliance requirement. It was also felt that that small fields would be penalised (FW, 2004c) and that there would be increased costs (FW, 2004d). Arable farmers, in particular, were concerned about weed issues on buffer strips. More recently, media coverage on buffer strips relates to the set-aside mitigation proposals and concerns that one of the options presented by Sir Don Curry’s High Level Group is to introduce 6 m margins (FG, 2008b).

Dwyer et al. (2007a) also identified negative attitudes to buffer strips. Interviews with farmers and farmer representatives and advisors revealed that this condition was mentioned across livestock and arable regions as a particularly strong cause of change on farm, and often the source of widespread grievance.

Soil Protection Review (GAEC 1)

The press coverage also suggests there was general unease about the Soil Protection Review (SPR) before its introduction (FW, 2004e; FW, 2004f). The feeling was that SPRs went beyond the legislative requirements by including environmental enhancements which have added costs for the farmers. There were also concerns that SPR for grassland farmers would reduce flexibility (FW, 2004e). Dwyer et al. (2007a) found that the SPR was widely considered to have been an exercise with limited practical value that many farmers had yet to complete.

Ear tags (SMR, 7, 8 and 8a)

There was general concern in the media about compliance with ear tagging and the fear that a lost ear-tag may risk a financial penalty upon inspection (FW, 2006b). This corresponds with a similar view expressed by livestock farmers interviewed by Dwyer et al. (2007a). More recently the media search reveals concerns about the introduction of double tagging for sheep under SMR 9. This measure is considered inappropriate for the UK sheep industry (FG, 2007) and ineffective as it will not have the same benefits as with cows (FG, 2008c).

Supplementary feeding (GAEC 9)

Finally, the media search revealed initial concerns about the use of ring feeders during winter. There was confusion as to whether they were allowed to use them and the appropriateness of the use of hardcore in their place (FW, 2004g). Dwyer et al. (2007a) also identified confusion over the supplementary feeding rules.

2.1.4 Report on assessing the impact of Cross Compliance in England

A study was carried out in 2007 by Dwyer et al. (2007a) with the following objectives:

• to provide recommendations as to how to monitor and evaluate the impact of Cross Compliance in England; and
• to build on existing data collection arrangements, and identify areas where new baselines or monitoring programmes are essential or desirable.

Thus, the project was essentially a scoping study for the current work, though the project also aimed to provide an early indication of the costs and benefits arising from Cross Compliance, and assess the cost-effectiveness of the measures. Data on the impact of Cross Compliance conditions were therefore collected along with ideas for monitoring, during interviews with key experts and a practitioner and expert workshop. A small survey of farmers and advisers was also undertaken. The information collected provides a useful source of information on which to build in the present project, and is cited where relevant throughout this report.

The survey of farmers and advisers indicated that animal identification SMRs and GAEC 14 caused most concern among farmers. Some were dubious about the benefits of the Soil Protection Review (SPR). GAEC 9 also caused some confusion and difficulties, and there were concerns about monitoring and the amount of paperwork involved.

Many thought Cross Compliance had had only limited impact. When asked about changes in management, 16 out of 26 farming industry interviewees referred to the establishment of 2m buffer strips (GAEC 14). Other changes mentioned were double tagging (SMR 7/8) (5 respondents), increased awareness of hedge management/cutting dates (GAEC 15), the Soil Protection Review (GAEC 1) (3 in each case) and concerns over supplementary feeding (GAEC 9, two respondents), plus a range of additional individual responses.

Expert opinions were gathered through a series of interviews, which enabled a picture to be constructed of the impact of each of the different GAEC and SMR requirements. Those for which few or no compliance problems were envisaged included: GAEC 2, 3, 7, 10, 13, 16 and 17, and SMRs 3, 6, 9, 10, 12, 13, 14. In the case of SMR 11 (Food and feed law), it was felt that there was too little information on which to comment, and in any case it would be difficult to assess the impacts of Cross Compliance. For those requirements where potential or existing issues were identified, further details are given under the individual requirements in Appendix 4.

2.2 RPA Inspection data

The procedure for selecting farms for inspection is described in Appendix 2. Briefly, there are three elements: random, scored risk and targeted risk. The random component comprises between 20% and 25% of the number of cross compliance inspections selected. Separate samples are drawn for recipients of Environmental stewardship and English Woodland Grant Scheme payments. The scored risk element is based on risk data from a variety of sources, while the farms identified as targeted risks are referrals of suspected non-compliances from sources such as bodies with enforcement responsibility for the underlying legislation (e.g. Local Authorities), other organisations involved in the cross compliance inspection programme referring issues that fall outside their Competent Control Authority responsibility, public associations and members of the public.

Two sources of data were available. The first comprised summary data for 2006 and 2007. The second included all years 2005-2008 and was linked to farm type and size data from the June Survey of Agriculture and Horticulture; information was also available in this dataset on reasons for inspection failures. However, the two datasets are not precisely comparable, as the second dataset has a small number of
missing data points; nevertheless it is sufficiently complete to provide a basis for a more detailed analysis of the inspection failures. Unfortunately, the second dataset did not include total numbers of inspections carried out, so it is not possible to express data as percentages of the total. There were 20 refused inspections in the second dataset.

The summary data are complete for the years they cover, but only provide limited information. 2006 and 2007 are the two most representative years; in 2005 inspection targets were not achieved and 2008 data are not complete at the time of writing. Data are included on the reductions applied to claims, or other action taken. For breaches that were the result of the farmer’s negligence, these may be a warning letter (WL) for minor infringements, or a percentage reduction of 1, 3 or 5% per individual breach. Reductions of 2 or 4% would only arise in the event of multiple negligent breaches on the same farm. Reductions of more than 5% would generally only be applied when the farmer had been found to have breached the same requirement within a 3 year period (a repeated non-compliance), or when the farmer had breached the requirement intentionally, in which case reductions would range from 15% to 100%.

Whilst inspection data provide a useful source of evidence, they do not provide a reliable measure of impact on their own. For example, low failure rates could indicate that farmers were already complying with a standard prior to the introduction of Cross Compliance, and would continue to do so in its absence, or alternatively that Cross Compliance provides a strong incentive to comply with the standards that otherwise might not be adhered to. This is particularly an issue for those standards that reinforce existing regulations.

### Figure 1: Rate of non-compliance for GAECs

![Rate of non-compliance for random inspections - GAECs](https://statistics.defra.gov.uk/esg/ace/crosscompliance/inspection.htm)

Source: Defra Observatory Programme

Source: Rural Payments Agency

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10
It should be noted that:

- The data for 2005 are the results for 234 businesses subject to random inspections. The data for 2006 are for 1543 businesses including 292 that were selected for 2005, but inspected in 2006 according to the 2006 inspection criteria. Not all GAECs are relevant to each business.

- Set-aside inspection data (recorded under GAEC management in 2006) were included with GAEC 12 inspection data in 2005.

- Non-compliance includes cases where warning letters were issued or monetary reductions imposed.

### 2.2.1 Statutory Management Requirements

The outcomes of inspections between 2005 and 2007 highlight that, by farm the highest proportion of failures with respect to SMRs was in relation to SMR 7&8 (cattle identification). Nearly a quarter of inspections where this standard was applicable failed. Failures in relation to other SMRs were all less than 10%, the highest being for SMR 8a (animal identification and registration – sheep and goats) and SMR 4 (NVZs). Most penalties were warning letters or 1% penalties, but there were some at 3% and a few at 5% or higher (SMRs 7, 8 and 8a only).

In 2007, failure rates increased for SMRs 6 (animal identification and registration – pigs) and 8a, and substantial levels of failures were also recorded for the newly

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16 The last column in Figure 1 refers to inspections of set-aside before it was abolished (compliance with set-aside rules was a cross-compliance condition).
introduced SMRs 16, 17 and 18 (welfare of calves, pigs and farmed animals respectively). The most commonly awarded penalty was 1%, but once again a number of penalties at 3% were given for SMRs 7, 8 and 8a, and a few at 5%. SMR 18 (Welfare of Farmed Animals) was the exception in this regard, with around a quarter of the penalties at the 5% level.

An analysis of SMR inspection failures by farm type\textsuperscript{11} shows that a greater number of livestock farmers keeping cattle (including dairy and beef/sheep farms), are subject to penalties than other farm types, largely because of the large number of SMR 7/8 breaches, but also because they are more likely to breach SMRs 4 (especially dairy farms), 8a and 18 ((especially lowland grazing livestock farms). Even for farm types that were crop-dominated, breaches of livestock-related SMRs were the most commonly occurring. Livestock farms seemed to be as likely as arable farms to fail SMR 9, perhaps because of lower familiarity with the regulations governing pesticide use.

An analysis by farm size\textsuperscript{12} indicates that the largest numbers of breaches for animal identification SMRs were in the small and very small categories (Figure 3). They were also the worst offenders for SMR 11 (Food 7 feed law). SMRs 2 (groundwater) and 4 (NVZs were equally likely to be breached by small, medium or large farms. The largest number of inspection failures for SMR 8 (restriction on use of plant protection products) was on medium sized farms. Small, very small and medium sized holdings were most likely to have problems with SMR 18 (animal welfare).

Figure 3: SMR inspection failures by farm size

\textsuperscript{11} these are farm types as defined by Defra for classifying survey results. All holdings are allocated a holding type which is based on predominant activity (this is measured using the Standard Gross Margin of the holding). See: http://www.defra.gov.uk/esg/work.htm/publications/cs/farmstats_web/1_ABOUT_THE_SURVEY/FAQs_ABOUT_THE_DATA_AND_SURVEY/Introduction.htm#holdingtypeclassification

\textsuperscript{12} Farm sizes are defined by the economic activity of the farm, as determined by standard Labour requirements (SLRs), rather than the size in area. For further detail, see: http://www.defra.gov.uk/esg/work.htm/publications/cs/farmstats_web/1_ABOUT_THE_SURVEY/FAQs_ABOUT_THE_DATA_AND_SURVEY/Introduction.htm#holdingtypeclassification
Reasons for breaches

Data were provided by the RPA on reasons why breaches had occurred for each inspection failure. Many failures related to inadequate record keeping. Problems relating to animal welfare included:

- Medicine records not kept
- Mortality records not kept
- Sharp edges or protrusions in accommodation or fittings likely to cause injury
- Sick animals that have not been cared for properly

With respect to NVZs, the following causes of failure were found:

- Problems with the quantity of organic manure and artificial fertiliser used within designated NVZs
- The level of organic manure is over the field limit
- The level of fertiliser N used is in excess of crop requirements, with no agronomic justification

SMR 9 difficulties included:

- Not complying with the principles of good plant protection practice, as explained in Defra’s Code of Practice for Using Plant Protection Products
- An approved product has been used, but not in compliance with the conditions and requirements for its approval, e.g. sprayers/operators did not hold the necessary qualification/certificate of competence

Problems with SMR 11 (Food and feed law) were generally a lack of records, or inadequate records kept, whilst SMR 2 (groundwater) failures related to unauthorised disposal of List 1 and List 2 substances such as waste sheep dip or pesticide washings, or failure to comply with the conditions of a groundwater authorisation.

Major problems with respect to animal identification SMRs included

- Failure to report the movement of an animal
- Failure to tag or re-tag animals within 28 days
- Cattle present with no passport, or passports with no cattle
- Cattle movement details not recorded or incorrectly recorded on Cattle Tracing Scheme or in farm records

Problems reported by the RPA for SMRs 6 and 8a included:

- Failure to make an annual inventory (on December 1) of sheep/goats kept on a farm;
- Failure to keep records of movements of pigs on and off the holding and no annual record of maximum pigs on holding
- Sheep and/or goat records not maintained as required

2.2.2 Good Agricultural and Environmental Condition

Inspection failures for GAEC requirements were generally low in both 2006 and 2007. Where failures occurred they were generally around 1% or less except for GAEC 1 (Soil protection review) in 2007 (3.6%), GAEC 14 (2m margins; 3.5% in 2006 and 2.3% in 2007), and GAEC management (5.5% in 2006; 3.6% in 2007). Around two thirds of penalties were warning letters, with the remaining third almost entirely at the 1% level.
Reasons for breaches

Breaches of GAEC 1 were generally a result of failure to complete the Soil Protection Review. Breaches of GAEC 11 related to a failure to prevent spread of a range of weed species, including the non-native invasive species Japanese knotweed and Himalayan balsam. Overall, the most frequently breached GAEC condition was GAEC 14. Nearly half of these breaches were a result of cultivating within the prescribed distance of the boundary feature. A significant proportion had no uncultivated strip at all, and in a number of cases there was evidence of damage from pesticides, fertiliser or manure.

The other area where substantial breaches were seen related to GAEC 8. Around two thirds of these related to a failure to re-establish a public right of way sufficiently quickly after cultivation, but nearly a quarter were a result of the right of way becoming obstructed.

Breakdown by farm type

Unlike the inspection failures recorded for SMRs, crop-dominated farm types were more likely to fail the inspection, especially in relation to GAEC 14, GAEC 12 and set-aside. However, the largest numbers of failures for GAEC 1 were by Lowland livestock farmers and ‘other’ types (mainly small livestock farms), rather than arable farms, despite the fact that it is probably considerably easier for livestock farmers to complete.

Breakdown by farm size

Breaches of GAEC conditions are classified by farm size in Figure 4.

![Figure 4: GAEC inspection failures by farm size]
Small and very small farms were the most likely to fail an inspection for GAEC 1. There were very few breaches of this condition by medium, large or very large farms but they were more likely to breach GAEC 8 probably because they were more likely to have a Public Rights of Way (PROW) crossing the farm. Inspection failures related to GAEC 14 were evenly distributed across farm sizes, with the exception of very small holdings. It is likely that many of these very small holdings were largely or entirely composed of field sizes less than 2ha, and were therefore exempt. They were however more likely to have problems with GAEC 11, with nearly half the failures related to prevention of weed spread attributed to very small farms.

2.2.3 Requests for derogations

The greatest number of individual derogations requested and granted by the RPA relates to GAEC 14, but the number has declined considerably to 2008. This reflects the fact that applicants are required to take measures to negate the need for derogation in future years. Numbers of requests for most other requirements were low, but there were around 40 for GAEC 15 in 2006 and 2007. The number of requests for derogations relating to GAEC 12 appears to be increasing year on year but higher applications in 2008 largely relate to nesting habitat on land that would formerly have been classed as set-aside.

Of the large number of derogations from GAEC 14 that were granted in 2006, just under a quarter were related to the establishment or improvement of the margin, usually involving cultivation and sowing. As would be expected, this reason was less apparent in subsequent years. However, the major reason for granting derogations was to allow spraying beneath an electric fence.

In 2007 and 2008, national derogations from GAEC 3 were granted in response to requests by the farming industry representatives, to allow harvesting of crops from waterlogged soil, as a result of the unusually wet weather at harvest time in both years.13

2.3 Evidence gaps

It is clear from the review of literature and monitoring data that more information is needed about changes in management arising from the introduction of Cross Compliance, and the attendant costs involved. Although some idea of the impact of Cross Compliance can be deduced from the data and literature analysed in this report, for many requirements it is difficult to separate the influence of Cross Compliance itself from other drivers of change in farmers’ awareness, attitudes and practices. The best way to obtain information on the impact of Cross Compliance on these attributes in the absence of baseline data, as recommended by Dwyer et al. (2007a) is to consult farmers and advisers, though farmer assertions as to changes in management do not always accord with results of field surveys, and so have to be treated with some circumspection.

Whilst farmers are best placed to indicate the management changes they have carried out, and the influence of Cross Compliance as opposed to other factors in bringing this about, they may have difficulty in giving unbiased estimates of costs. Furthermore, they may not be prepared to admit less than total compliance with statutory obligations prior to the advent of Cross Compliance, for obvious reasons;

hence an underestimate of the degree of change stimulated by the new policy might be gained if farmers themselves were the sole source of information. For this reason, workshops will be conducted with industry representatives, including consultants and advisers, who deal with many farmers during the course of their work and so will be able to form an overview of the impact of Cross Compliance which, furthermore, will be free from any vested interest.

With respect to the individual requirements highlighted as priorities for the evaluation, key issues are as follows:

**GAEC 1-3 (soils):**
- Clarify any problems with completing the SPR or managing soils to comply with the conditions
- Is the guidance booklet useful and could it be improved?
- The inspection data indicate that small farmers in particular have problems with the SPR. Why is this, do they need specialist advice and if so, is such advice readily available?

**GAEC 9 (overgrazing and supplementary feeding):**
- Given that many farms were already subject to this condition prior to 2005, how large and widespread are the impacts of SPS-linked Cross Compliance?
- What measures are farmers taking in order to comply?

**GAEC 12 (land not in agricultural production)**
The environmental impacts (positive and/or negative) will depend upon how farmers choose to manage land taken out of production. Some information is available from the Farm Practices survey, but more detail would be useful on the following:

- How much will be managed on a rotational basis, what management will farmers undertake to bring it back into cropping and when?
- Have farmers grasped the differences between set-aside and GAEC 12 rules? In particular, how are they interpreting the rules on herbicide use?
- What proportion of farmers are managing GAEC 12 as bare fallow and what management are they carrying out on it?
- When and how are farmers establishing a green cover?
- When and how often is long-term uncropped land being cut?
- What proportion is being grazed, when, for how long, and with what type of livestock?

**GAEC 13 (Stone walls)**
- How effective is this measure in preventing stone wall destruction, i.e. how widespread was stone removal before Cross Compliance?

**GAEC 14 (Protection of hedgerows & watercourses)**
- Has farmer concern over this measure abated with time and experience?
- Are farmers still concerned about costs in relation to GAEC 14?
- Do farmers understand the potential benefits and if not, would the provision of information and advice help to change attitudes?
GAEC 15 (hedge cutting)

Evidence suggests a number of farmers had to change their management.

- What change was involved? What was the previous time of cutting and when do they cut now?

SMR 4 (NVZs)

- How are farmers coping with the extension of the NVZ area and the revised regulations?

SMR 6-8a

- What are the problems with compliance and can any solutions be suggested? Is there any way of helping farmers to achieve higher levels of compliance?

SMR 16-18

- What are the main problems with compliance and how can they be tackled? Is there a need for better advice and guidance (e.g. as provided for soils and habitats)?

It is suggested that these questions should be pursued in the next, primary data collection, stage of the project.

2.4 Grouping of individual requirements and rationale for prioritisation

For the purpose of the evidence review and data gathering during this project, the cross compliance requirements have been grouped according to themes as follows, with priority requirements identified using an asterisk (*). The basis for prioritisation is described below.

1. Soil management & protection/water quality

GAEC 1: General requirements for soil management and protection*
GAEC 2: Post-harvest management of land*
GAEC 3: Waterlogged soil*
GAEC 4: Burning of crop residues*
SMR 2: Ground water
SMR 3: Sewage sludge
SMR 4: NVZs*

2. Historic and Landscape features

GAEC 7: Scheduled monuments
GAEC 8: Public Rights of Way
GAEC 13: Stone walls*
GAEC 15: Hedgerows*
GAEC 16: Felling of trees
GAEC 17: Tree Preservation Orders

3. Habitats and wildlife

GAEC 5: Environmental impact assessment
GAEC 6: SSSIs
GAEC 9: Overgrazing and unsuitable supplementary feeding*
GAEC 10: Heather and grass burning
GAEC 11: Control of weeds (non-natives)*
GAEC 12: Eligible land not in agricultural production*
GAEC 14: Protection of hedgerows and watercourses*  
SMR 1: Wild birds
SMR 5: Habitats

4. Animal identification
SMR 6: Animal identification and registration – pigs*
SMR 8: Cattle identification*
SMR 8a: Animal identification and registration – sheep and goats*

5. Control of chemicals, food and feedstuffs
SMR 9: Restrictions on the use of plant protection products
SMR 10: Restrictions on the use of substances having hormonal or thyrostatic action and beta-agonists
SMR 11: Food and feed law

6. Control of Animal diseases
SMR 12: Prevention and control of Transmissible Spongiform Encephalopathies (TSEs)
SMR 13: Control of Foot and Mouth Disease
SMR 14: Control of certain animal diseases
SMR 15: Control of bluetongue

7. Animal Welfare
SMR 16: Welfare of calves*
SMR 17: Welfare of pigs*
SMR 18: Welfare of farmed animals*

Where SMRs and GAECs reinforce existing regulations, farmers should already be complying with the requirements and hence in many cases there will be little additional impact of Cross Compliance. This was recognised in the Defra Regulatory Impact Assessment, which anticipated little or no additional economic or environmental impact for most farms. However, in some cases a significant proportion of farmers may not have been complying with regulations pre-cross compliance, for example as a result of insufficient awareness of their obligations, or because of perceived difficulties. In such cases, the additional publicity and advice linked to Cross Compliance should raise awareness and understanding, whilst the potential loss of a proportion of the Single Farm Payment will provide an added incentive to comply fully.

* Also relevant to soils and water
For those GAEC conditions that go beyond the reinforcement of existing regulations, there is clearly a direct impact of Cross Compliance. Dwyer et al. (2007a) suggested that Cross Compliance standards might be divided into three categories in terms of their expected levels of impact. These were:

**Category 1** – SMRs and GAEC conditions which reinforce pre-existing regulations and in respect of which it is felt very unlikely that Cross Compliance will have an impact on the level of compliance with these regulations.

**Category 2** – SMRs and GAEC conditions which reinforce pre-existing EU or domestic regulations, but in respect of which there have been compliance issues prior to 2005, and for which it is felt likely that their inclusion in Cross Compliance conditions should add impetus for farmers to raise their levels of compliance.

**Category 3** – GAEC conditions which introduce new management requirements at farm level, at least for some groups of SPS claimants.

Category 2 includes those for which significant levels of non-compliance are most likely, and thus where the additional incentive provided by Cross Compliance may increase their impact. Group 3 should have the highest level of impact, as additional management is required over and above that which is mandatory under the regulatory framework. Dwyer et al. (2007a) suggested that this classification should be used to determine the appropriate level of monitoring for the different standards, and it has also been used to guide our approach in terms of level of input into the evidence review and data collection elements of the current project, in order to optimise use of resources. For the current purposes, the suggested category groupings have been formulated as follows (similar to, but not identical to, those identified by Dwyer et al.).

**Category 1:** GAEC 4, 5, 6, 7, 8, 10, 16, 17; SMRs 1, 2, 3, 5, 9, 10, 11, 12, 13, 14, 15.

**Category 2:** SMRs 4, 6, 7, 8a, 16, 17, 18.

**Category 3:** GAEC 1, 2, 3, 9, 11 (Control of non-natives), 12, 13, 14, 15 (cutting date element only).

Priority will be given to Categories 2 and 3, plus GAEC 4, which was flagged as of interest in relation to the soil review. Other requirements will be covered at a lower level of detail.
2.5 Farmer Behaviour

As recognised by a few studies (Farmer and Swales, 2007; Silcock and Swales, 2007; ), the added value of Cross Compliance largely lies in its role in encouraging behavioural change on farm which facilitates better delivery of desired environmental outcomes. More generally, the farmer’s behavioural change is one of the key determinants on the effectiveness of agri-environmental policies. As far as Cross Compliance is concerned, the effectiveness of the policy is dependent on the change of farmer behaviour to move away from farm management practices that damage the environment.

Farmer behaviour and farm management decisions are influenced by a wide range of factors. In addition to economic and financial motivations recognised by earlier studies (Newby et al., 1997), other motives, values and attitudes are also at play to influence farmers’ decision-making in relation to environmental practices (Potter and Gasson, 1988; Gasson and Hill, 1990; Brotherton, 1991). Further studies suggests that the decision-making process should not be viewed as a static situation determined by one or several influencing factors, but rather as a process marked by interaction (Siebert et al. 2006). It is increasingly clear that farmer decision making is not based on rational financial analysis alone. In fact, in some circumstances, economically irrational behaviour may arise where actions may not always be in a person’s best interest, but be influenced by habit, cognition or status quo preferences (Social Market Foundation, 2008). This suggests that in order to understand farmers’ behaviour there is a need to consider the different contexts in which farmers operate, the local conditions in which farmers make their decisions, and to understand the role of farming culture, focusing beyond the individual (Ward et al., 1995; Young et al., 1995; Dwyer et al., 2007b). Cultural factors (Bourdieu, 1990), prospect of gaining social (self-esteem, respects from peers) as well as financial reward (Slee et al., 2006; Dwyer et al., 2007b, Mills et al., 2008) will motive farmers to adopt certain practices.

This wider framework to include other factors than economic/financial motivations is of particular important in understanding farmers’ changing behaviour as a result of Cross Compliance, which is currently linked to Single Payment Schemes; especially, in the context of CAP reform and its policy shift from the state-assisted to the multifunctional paradigm with a greater emphasis on the production of public goods for public money (Garzon, 2006), which requires a wider paradigm shift within the agricultural industry to ensure the future effectiveness of Cross Compliance.

Based on behavioural change theories, Tony Pike at Defra ACEO (2008) has produced a useful discussion paper exploring behaviour in a farming context. The paper proposes a framework in which to identify factors that influence farmers’ behaviour towards new policy. Three factors: external; internal; and social; are highlighted as important in contributing to an individual’s behaviour, an approach which is based upon three recent studies in particular (Garforth et al, 2006; Social Market Foundation, 2008; Dwyer et al 2007b). Pike (2008) suggested that the ‘farmer decision-making typologies based on ‘market segmentation’ model (presented in Figure 5), developed by Continental Research (2008) from the research by Garforth et al (2006), can be used widely to understand the underlying characteristics of a farm business.
A full review of key studies that identify factors influencing farmer behaviour and the development of farmer decision-making typologies, particularly in relation to the adoption of environmental practices, is detailed in Appendix 4.

This segmentation model is adopted in the farmer survey in this evaluation to help understand farmers’ attitudes towards cross compliance.

The key to understanding farmers’ attitude to cross compliance is to consider the external and internal factors that influence their behaviour and how this impacts on their engagement and capacity and willingness to change, which are the three main factors that influence farmer behaviour suggested by Dwyer et. al. (2007). The inter-relationships of these three factors are complex and iterative and are best represented as in Figure 6.
Figure 6: Factors influencing farmer behaviour (from Dwyer et al, 2007).

One approach to the evaluation could be to identify the mix of external and internal factors that cross compliance appears to have changed. These could be summarised in a table of attitudinal impacts with engaging, capacity and willingness to change as 3 categories on one axis, and positive impacts and negative impacts on the other (see Table 5).

An understanding of farmers’ attitudes to cross compliance can also help in improving the programme’s effectiveness in relation to a number of issues. Understanding both the negative and positive attitudinal impact of cross compliance can help shape the design of the policy so that it is acceptable to farmers and still meets policy objectives. Segmentation of farmers by attitude could also help in identifying the characteristics of those who are not (or are) complying and the underlying reasons for non-compliance. This knowledge would help in predicting those at risk of non-compliance, allowing for more efficient targeting of inspections. It would also be possible to increase the efficiency of the scheme by understanding the characteristics of those not complying and the factors that are reducing their capacity and willingness to comply, so enabling appropriate targeting of relevant advice and support.
### Table 5: Potential framework for evaluating the attitudinal impact of Cross Compliance

<table>
<thead>
<tr>
<th>Key area of impact</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engaging</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capacity to change</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social capital</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Willingness to change</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social norms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beliefs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Societal expectations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3 Primary Research

The second phase of the research project is focused on gathering primary evidence to help inform the evaluation of Cross Compliance. This report presents the evidence from this data collection exercise based on the responses from farmers and their advisors in relation to Cross Compliance. The approach to this phase was guided by the limited timescale and a steer to minimise any farmer surveys. It involved three different research methods. The use of this triangulation approach to data collection enabled synthesis of data from different groups of people thereby strengthening interpretation of the data and reducing the impact of potential biases. The three sources of information were:

- Targeted telephone survey of 300 farmers;
- Two practitioner workshops; and
- Interviews with 3 members of Technical Advisory Panel (TAP)

The issues explored in these three approaches were in part informed by the priorities and gaps identified in Phase 1 of the research. Table 6 identifies the main issues that were explored and the evidence source for each.

The farmer survey enabled an understanding of the extent of farm management changes, associated costs and benefits and difficulties encountered since the introduction of Cross Compliance, from a discrete sample of 300 farmers. The practitioner workshops and TAP interviews provided a more generic overview along with an in-depth understanding of key issues which could not have been derived from a large-scale survey-based enquiry. The practitioner workshops and TAP interviews focused on the conditions that the Phase 1 report identified as having had most impact on farm management, whilst also seeking agreement on those that had been identified as having minimal impact.
Table 6: List of issues relating to Cross Compliance for evaluation.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Workshops</th>
<th>TAP</th>
<th>Farmer Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer awareness of Cross Compliance requirements</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Farmer attitudes to Cross Compliance as a whole</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Farmer understanding of individual requirements</td>
<td>**</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Attitudes to individual requirements</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Farm practice/Implementation of requirements before introduction of Cross Compliance</td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>Changes in management as a result of Cross Compliance</td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>Any requirements not fully implemented</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Reasons for lack of implementation</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Observance of GAEC 14 2ha exception</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Nature of management (where flexibility exists e.g. GAEC 12, 14)</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Specific difficulties with requirements</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Side effects of requirements</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of guidance/advice/support</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Level and quality of guidance/advice/support</td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>Farmer Costs (savings) from Cross Compliance</td>
<td>*</td>
<td>*</td>
<td>**</td>
</tr>
<tr>
<td>Benefits of Cross Compliance: qualitative</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits of Cross Compliance: quantitative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact of set-aside mitigation proposals</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

* = evidence source; ** = key source

3.1 Farmer Survey
The aim of the farmer survey was to help fill data gaps as identified during Stage 1 of the project. Specifically the survey aimed to establish:

- The scale of changes made as a result of Cross Compliance within each of the broad requirement groups;
- The specific changes made within broad requirement groups;
• The costs and/or savings associated with making changes in order to comply with Cross Compliance;
• Aspects of Cross Compliance farmers had the greatest difficulty in meeting;
• Support and advice used to help meet Cross Compliance requirements;
• Opinion of the support available; and
• Additional support or advice required to help farmers meet the requirements of Cross Compliance.

3.1.1 Methodology and Sample
The survey was conducted by telephone interview amongst 300 farmers.

The sample was drawn from a database of ADAS Farmers’ VoiceTM respondents who were willing to take part in further surveys. Access to this sample meant that ADAS had to hand a sample that was willing to take part and, could be contacted quickly. Thus the burden on the farming population was minimised by firstly targeting those willing to take part and secondly eliminating the need to collect detailed information to establish farm type and size, thus minimising the questionnaire length. The survey questionnaire was designed by ADAS in association with the CSL and CCRI with guidance from Defra ACEO staff.

The telephone interviews were conducted by the Hill Taylor Partnership a specialist interviewing agency with whom ADAS have a long term trusted relationship. All interviews were conducted in line with the Market Research Society code of conduct. Each interview took on average 10 minutes to complete.

Quotas were placed on the interview sample to ensure it was broadly representative of the farming population within England. Horticultural and Other farm types were not included due to low representation in the ADAS Farmers’ Voice™ sample and / or low relevance of Cross Compliance to the sector16. The resultant survey data was, however, weighted to reflect the farm type profile of farms which receive SPS and are greater than or equal to 0.5 SLR17.

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15 ADAS Farmers’ VoiceTM is an annual survey of farmers across England and Wales designed to collect information on attitudes and behaviour with respect to topical industry issues.
16 Only 24% of Horticulture holdings and 43% of Other holdings claim SPS and are subject to Cross Compliance
17 The Standard Labour Requirement (SLR) for a farm business represents the labour requirement (in full-time equivalents); holdings whose standard labour requirement (SLR) is less than 0.5 or equivalent to up to 950 hours of labour input per year are defined as Spare Time farms.
Table 7: Sample distribution by Farm Type

<table>
<thead>
<tr>
<th>Farm Type</th>
<th>Achieved Sample (Unweighted)*</th>
<th>Profile of Farms Receiving SPS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
<td>23%</td>
<td>33%</td>
</tr>
<tr>
<td>General Cropping</td>
<td>10%</td>
<td>13%</td>
</tr>
<tr>
<td>Specialist Pigs and Poultry</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td>Dairy</td>
<td>11%</td>
<td>17%</td>
</tr>
<tr>
<td>Grazing livestock LFA</td>
<td>17%</td>
<td>10%</td>
</tr>
<tr>
<td>Grazing Livestock lowland</td>
<td>19%</td>
<td>16%</td>
</tr>
<tr>
<td>Mixed</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

*The sample does not include Horticulture or “Other” categories

Although quotas were not set for region, the following tables provide comparisons of the achieved sample with the farming population within England based on data for all farm sizes from the 2007 June Survey of Agriculture and Horticulture.

Table 8: Sample distribution by Region

<table>
<thead>
<tr>
<th>Farm Type</th>
<th>Achieved Sample (weighted % in brackets)</th>
<th>Actual England Farming Population18</th>
</tr>
</thead>
<tbody>
<tr>
<td>North East</td>
<td>7% (6%)</td>
<td>4%</td>
</tr>
<tr>
<td>North West</td>
<td>14% (12%)</td>
<td>12%</td>
</tr>
<tr>
<td>Yorkshire</td>
<td>13% (13%)</td>
<td>11%</td>
</tr>
<tr>
<td>East Midlands</td>
<td>8% (9%)</td>
<td>11%</td>
</tr>
<tr>
<td>West Midlands</td>
<td>11% (11%)</td>
<td>13%</td>
</tr>
<tr>
<td>East</td>
<td>11% (12%)</td>
<td>11%</td>
</tr>
<tr>
<td>South East</td>
<td>11% (11%)</td>
<td>13%</td>
</tr>
<tr>
<td>South West</td>
<td>26% (26%)</td>
<td>26%</td>
</tr>
</tbody>
</table>

The regional distribution within the sample is broadly in line with that for the total farming population within England.

3.1.2 Interview Strike Rate and Reasons for not taking Part

In order to achieve the 300 interviews, 364 contacts were made. 11 farmers (3.7%) refused to take part. A detailed breakdown of the 364 contacts is as follows:

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18 Based on Agriculture in the UK report – Size of agricultural holdings by farm type 2006 (all farm sizes)
Table 9: Sample Contact Analysis

<table>
<thead>
<tr>
<th>Contact Detail</th>
<th>Number of Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful interview</td>
<td>300</td>
</tr>
<tr>
<td>Failed quota screen</td>
<td>11</td>
</tr>
<tr>
<td>Aborted interview</td>
<td>2</td>
</tr>
<tr>
<td>Does not claim under SPS</td>
<td>5</td>
</tr>
<tr>
<td>Unsuitable for interview (e.g. not the farmer)</td>
<td>10</td>
</tr>
<tr>
<td>Farmer declined to take part at initial contact</td>
<td>2</td>
</tr>
<tr>
<td>Farmer too busy</td>
<td>4</td>
</tr>
<tr>
<td>Unwilling to supply information</td>
<td>5</td>
</tr>
<tr>
<td>Other reason for not taking part</td>
<td>8</td>
</tr>
<tr>
<td>Appointments to call back (but not needed)</td>
<td>17</td>
</tr>
</tbody>
</table>

3.1.3 Farmer Segmentation

To provide greater insight into the data, questions were included within the survey questionnaire to enable the respondents to be assigned to one of 5 farmer segments. These segments were defined by Continental Research within a Farmer Segmentation study and reported on in May 2008. Data from this survey has been cross analysed by the segments to explore any potential differences by segment with respect to Cross Compliance. The five segments are as follows:

Table 10: Farmer Sample Segments

<table>
<thead>
<tr>
<th>Segment</th>
<th>Characteristics¹⁹</th>
<th>% in Farming Population²⁰</th>
<th>% in Survey Sample (weighted data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custodians</td>
<td>Farming is a way of life. Pride in farming heritage and environment.</td>
<td>23%</td>
<td>16%</td>
</tr>
<tr>
<td>Lifestyle Choice</td>
<td>Not main source of income. Tradition and a pleasure.</td>
<td>6%</td>
<td>13%</td>
</tr>
<tr>
<td>Pragmatist</td>
<td>Balanced approach. Emotional connection with farming but recognise need to focus on business.</td>
<td>22%</td>
<td>19%</td>
</tr>
<tr>
<td>Modern Family Business</td>
<td>Family success and income. Financial planning important.</td>
<td>41%</td>
<td>44%</td>
</tr>
<tr>
<td>Challenged Enterprise</td>
<td>Farming is a burden and a struggle. Isolated and pessimistic for the future.</td>
<td>7%</td>
<td>8%</td>
</tr>
</tbody>
</table>

¹⁹ Descriptions taken from Farmer Segmentation study 2008, Continental Research
²⁰ % as identified by Continental Research
The above table shows a very close match with the distribution of the segments within the wider farming population and the survey sample for Pragmatists, Modern family Businesses and Challenged Enterprises. The survey sample, however, contains slightly more Lifestyle Choice farmers and fewer Custodians than the wider farming population. This may reflect the fact that the sample is drawn from larger commercial farms with an absence of very small farms.

3.1.4 Summary of Findings

The responses to each question have been cross analysed by farm type, region, farm size and farmer segment. Where base sizes are sufficient for robust analysis and significant differences identified these cross analyses have been reported on within this section of the report. To ensure the survey questionnaire covered the range of Cross Compliance requirements but remained manageable within a ten minute telephone interview, the requirements were arranged into eight groups, based on the purpose of the condition. Questions were asked about the groups rather than each individual requirement.

Changes Made as a Result of Cross Compliance

Respondents were asked whether they had made no changes, minor changes or major changes to their farm practices since 2005 as a direct result of the need to meet Cross Compliance requirements.

For all requirement groups, the majority of farmers had not made any changes to their farming practices since 2005, as a direct result of the need to be compliant (see Figure 7).

![Figure 7: Changes Made as a Result of Cross Compliance](image)

*Bases for all other groups = 300.

Changes were least likely to be made to comply with Animal Health and Welfare requirements (92% no changes), followed by requirements associated with Historic and Landscape features (86% no changes). Conversely, the greatest proportion of
farmers had made changes in order to comply with Habitats and Wildlife (72% no changes), Control of Animal Diseases (73% no changes) and Soil Management and Protection (67% no changes) requirements. Where changes had been made these were more likely to be minor than major.

Compared to the total sample, grazing livestock farmers (both LFA + Lowland) were less likely to have made changes to comply with the soil management and protection, water quality, habitats and wildlife and animal welfare requirements. Dairy farms were, however, more likely than the total sample to have made changes with regard to animal welfare (21% minor changes, 79% no changes) (Significant at the 99% confidence level).

Table 11: Changes Made By Grazing Livestock Farms Compared To Total Sample

<table>
<thead>
<tr>
<th>Requirement group</th>
<th>No changes</th>
<th>Minor changes</th>
<th>Major changes</th>
<th>Don't know</th>
<th>Weighted Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil management and protection</td>
<td>79% (67%)**</td>
<td>15% (26%)**</td>
<td>4% (6%)</td>
<td>2% (1%)</td>
<td>77 (300)</td>
</tr>
<tr>
<td>Water quality</td>
<td>87% (78%)*</td>
<td>7% (17%)**</td>
<td>6% (4%)</td>
<td>0% (1%)</td>
<td>77 (300)</td>
</tr>
<tr>
<td>Habitats and wildlife</td>
<td>82% (72%)*</td>
<td>16% (24%)*</td>
<td>3% (5%)</td>
<td>0% (0%)</td>
<td>77 (300)</td>
</tr>
<tr>
<td>Animal welfare</td>
<td>97% (92%)*</td>
<td>1% (6%)**</td>
<td>1% (1%)</td>
<td>1% (1%)</td>
<td>77 (300)</td>
</tr>
</tbody>
</table>

*Difference at the 95% level ** Difference at the 99% level

Total sample figures in ( )

The smaller farms were also less likely than the total sample to have made any changes in relation to soil management and protection (78% no changes, 19% minor changes, 3% major changes). Although the larger farms were as likely not to have made any changes with respect to control of animal diseases, those who did make changes were more likely to have made major rather than minor changes compared to the total sample (at the 95% confidence level) (12% major changes, 20% minor changes).

No significant differences were recorded between the results for each of the farmer segments and the total sample, with the exception of the Lifestyle Choice farmers, who were less likely to have made changes to comply with animal welfare requirements than the overall sample (No changes 100%, vs. 92% no changes of total sample at 95% confidence level) and the control of animal diseases requirements (85% no changes vs. 73% no changes of total sample at 95% confidence level).

3.1.5 Details of Changes Made

Where changes had been made as a result of the need to meet Cross Compliance standards, respondents were asked to identify without prompting what these changes were. Within the questionnaire a list of possible changes were listed for each requirement group, whilst an “others” code captured all other changes. On completion of the interview ADAS reviewed the “other” responses and attributed them to appropriate GAECs or SMRs.
In order to keep the interview to a 10 minute maximum, each respondent was only asked about changes for up to three of the requirement groups. Priority was given to asking about groups where major changes had taken place. Thus the base sizes for each requirement group will not always be equal to the number of respondents who indicated they made changes to their farm practices.

For this question base sizes were too small to enable detailed analysis by farm type, region, farm size or farmer segment.

**Soil Management and Protection**

The highest proportion of farmers (50%) who made changes associated with soil management and protection made changes in relation to GAEC 1, whilst 20% to 25% of the sub sample made changes associated with GAEC 2 and GAEC 3.

**Table 12: Soil Management and Protection**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Changes Made (as listed within the questionnaire)</th>
<th>% of Weighted total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAEC 1: General requirements for soil management</td>
<td>Now complete/update a “Soil Protection Review”</td>
<td>50%</td>
</tr>
<tr>
<td>GAEC 2: Post-harvest management of land</td>
<td>Now sow a cover crop on bare land (after harvest)</td>
<td>20%</td>
</tr>
<tr>
<td>GAEC 3: Waterlogged soil</td>
<td>No longer travel on or work with waterlogged soil</td>
<td>26%</td>
</tr>
<tr>
<td>GAEC 4: Burning of crop residues</td>
<td>No longer burn crop residues</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>8%</td>
</tr>
</tbody>
</table>

*Weighted base =86*

**Water Quality**

The changes made with regard to water quality were in the majority of cases either associated with SMR 2: ground water or SMR 4: NVZs. Only 14% had made changes associated with SMR4: Sewage sludge. (Please note the base includes arable as well as livestock farmers.)

**Table 13: Water Quality**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Changes Made (as listed within the questionnaire)</th>
<th>% of Weighted total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 2: Ground water</td>
<td>No longer dispose of sheep dip, pesticides etc. in a way that risks contaminating ground water</td>
<td>44%</td>
</tr>
<tr>
<td>SMR 3: Sewage sludge</td>
<td>No longer apply sewage sludge without allowing for nutrients, soil conditions etc.</td>
<td>14%</td>
</tr>
<tr>
<td>SMR 4: NVZs</td>
<td>Have reduced organic manure application (over the whole farmed area) to within the NVZ limits of 250kg nitrogen (grassland) and/or 170kg nitrogen (arable land)</td>
<td>47%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>6%</td>
</tr>
</tbody>
</table>

*Weighted base =46*
Historic and Landscape Features
Over half (59%) of those who had made changes related to historic and landscape features, made changes regarding GAEC 15 and had stopped removing hedgerows or had stopped cutting hedgerows between 1 March and 31 July.

Table 14: Historic and Landscape Features

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Changes Made (as listed within the questionnaire)</th>
<th>% of Weighted total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAEC 7: Scheduled monuments</td>
<td><strong>Now consult</strong> with English Heritage before any operations which might damage scheduled monuments</td>
<td>7%</td>
</tr>
<tr>
<td>GAEC 8: Public rights of way</td>
<td><strong>Have removed</strong> obstructions to a Public Rights of Way or <strong>taken action</strong> to maintain the path</td>
<td>15%</td>
</tr>
<tr>
<td>GAEC 13: Stone walls</td>
<td><strong>Now stopped</strong> removal of stone walls</td>
<td>5%</td>
</tr>
<tr>
<td>GAEC 15: Hedgerows</td>
<td><strong>Now stopped</strong> removal of hedgerows without consent from the Local Authority and/or</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td><strong>No longer</strong> cut hedgerows between 1 March and 31 July</td>
<td>18%</td>
</tr>
<tr>
<td>GAEC 16: Felling of trees</td>
<td><strong>No longer</strong> fell trees without a licence (where required)</td>
<td>12%</td>
</tr>
<tr>
<td>GAEC 17: Tree order</td>
<td><strong>No longer</strong> cut down, damage or destroy trees protected by a Tree Preservation Order (TPO)</td>
<td>16%</td>
</tr>
<tr>
<td>preservations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Weighted base</td>
<td></td>
<td>28</td>
</tr>
</tbody>
</table>

Habitats and Wildlife
The largest proportion of changes made within the habitats and wildlife grouping were associated with GAEC 14: Protection of Hedgerows and Watercourses (70%). Just over 20% had, however, made changes under SMR1 to ensure nesting birds were no longer disturbed.
### Table 15: Habitats and Wildlife

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Changes Made (as listed within the questionnaire)</th>
<th>% of Weighted total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAEC 5: Environmental impact assessment</td>
<td><strong>No longer</strong> undertake improvement or works to uncultivated land without permission from Natural England or the Forestry Commission</td>
<td>1%</td>
</tr>
<tr>
<td>GAEC 6: SSSIs</td>
<td><strong>Now comply</strong> with all the requirements to maintain or restore SSSIs and obtain consent before starting works that might affect them</td>
<td>2%</td>
</tr>
<tr>
<td>GAEC 9: Overgrazing and unsuitable supplementary feeding</td>
<td><strong>No longer</strong> allow overgrazing of natural and semi-natural vegetation or carry out unsuitable supplementary feeding</td>
<td>9%</td>
</tr>
<tr>
<td>GAEC 10: Heather and grass burning</td>
<td><strong>No longer</strong> burn heather, rough grass, bracken, gorse or bilberry outside the burning season without consent</td>
<td>7%</td>
</tr>
<tr>
<td>GAEC 11: Control of weeds</td>
<td><strong>Now</strong> take active steps to prevent the spread of injurious weeds and invasive weeds to adjoining land</td>
<td>16%</td>
</tr>
<tr>
<td>GAEC 12: Eligible land not in agriculture</td>
<td><strong>Now</strong> establish a cover crop on or after 1 March on eligible land not in agricultural production and <strong>No longer</strong> apply fertilisers or store/spread manures or cut this land between 1 March and 31 July</td>
<td>8%</td>
</tr>
<tr>
<td>GAEC 14: Protection of hedgerows and watercourses</td>
<td><strong>Now</strong> provide buffer strips to avoid cultivation or application of fertilisers or pesticides with 2 metres of the centre of a hedgerow or 1 metre of the top of the bank of a watercourse</td>
<td>70%</td>
</tr>
<tr>
<td>SMR 1: Wild birds</td>
<td><strong>No longer</strong> disturb nesting birds</td>
<td>21%</td>
</tr>
<tr>
<td>SMR 5: Habitats and species</td>
<td><strong>No longer</strong> harvest, destroy or trade wild plants of a ‘European protected species’ and/or Kill by prohibited means or release wild animals</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>4%</td>
</tr>
</tbody>
</table>

*Weighted base = 71*

### Animal Identification

Just over half of those who had made changes associated with animal identification (n = 24) had made changes to identify and record movements of cattle, and also sheep and goats. Only a very small proportion had made changes associated with the identification of pigs. However this result is more of a reflection of the proportion of different farm types than anything else.
Control of Chemicals, Food and Feedstuffs

Approximately half of those farmers who had made changes associated with the control of chemicals, food and feedstuffs had made changes related to SMR 9, restrictions on the use of plant protection products. A substantial proportion (28%) had also made changes linked to SMR 10 i.e. controlling the use of substances having hormonal or thyrostatic action and beta-antagonists.

Table 16: Control of Chemicals, Food and Feedstuffs

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Changes Made (as listed within the questionnaire)</th>
<th>% of weighted total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 9: Restrictions on the use of plant protection products</td>
<td>No longer use plant protection products which are not approved or for off-label use</td>
<td>51%</td>
</tr>
<tr>
<td>SMR 10: Restrictions on the use of substances having hormonal or thyrostatic action and beta-antagonists</td>
<td>No longer give hormones to livestock or sell stock or meat products before the relevant withdrawal period and Now keep up-to-date veterinary medicinal records</td>
<td>28%</td>
</tr>
<tr>
<td>SMR 11: Food and feed law</td>
<td>No longer feed unsafe feed to animals or sell unsafe food/feed</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>7%</td>
</tr>
</tbody>
</table>

*Weighted base = 43*

Control of Animal Diseases

Very few respondents had made changes relating to the prevention and control of Transmissible Spongiform Encephalopathies (TSEs) (SMR 12), however the majority (91%) of those who had made changes associated with animal diseases had done so in relation to controlling foot and mouth disease, blue tongue and certain other animal diseases (SMRs 13, 14 and 15). Among those who made changes relating to SMR 13, 14 and 15, most of the responses (40 out of 44) referred to bluetongue vaccination representing 83% of the total number of responses claiming to have made changes. However, a different response would probably have been observed if there was no current disease alert.

Table 17: Control of Animal Diseases

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Changes Made (as listed within the questionnaire)</th>
<th>% of weighted total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 12: Prevention and control of TSEs</td>
<td>No longer feed animal protein to ruminants (except milk/eggs)</td>
<td>2%</td>
</tr>
<tr>
<td>SMR 13, 14, 15: Control of Foot and Mouth Disease, blue tongue and certain animal diseases</td>
<td>Now notify the local Animal Health Divisional Office if suspicious of Foot and Mouth Disease, bluetongue or certain other animal diseases</td>
<td>91%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>6%</td>
</tr>
</tbody>
</table>

*Weighted base = 48*
Animal Welfare

There are no reliable conclusions can be made on Animal Welfare standards (SMR 16-18) due to insufficient sample size.

3.1.6 Cost of Compliance to the Farmer

Table 18: Extra Hours Invested Over the Last 12 Months to Make the Changes

<table>
<thead>
<tr>
<th>Requirement group</th>
<th>Base</th>
<th>No time</th>
<th>1-10hrs</th>
<th>11-25hrs</th>
<th>26-50hrs</th>
<th>51 and over</th>
<th>Median Hrs</th>
<th>Median Hrs for those who have time input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil management and protection</td>
<td>86</td>
<td>14%</td>
<td>39%</td>
<td>17%</td>
<td>18%</td>
<td>11%</td>
<td>1-10</td>
<td>11-25</td>
</tr>
<tr>
<td>Water quality</td>
<td>46</td>
<td>24%</td>
<td>27%</td>
<td>24%</td>
<td>7%</td>
<td>18%</td>
<td>1-10</td>
<td>11-25</td>
</tr>
<tr>
<td>Historic and landscape features</td>
<td>28</td>
<td>63%</td>
<td>14%</td>
<td>7%</td>
<td>9%</td>
<td>5%</td>
<td>0</td>
<td>11-25</td>
</tr>
<tr>
<td>Habitats and wildlife</td>
<td>71</td>
<td>46%</td>
<td>14%</td>
<td>17%</td>
<td>14%</td>
<td>10%</td>
<td>1-10</td>
<td>26-50</td>
</tr>
<tr>
<td>Animal identification</td>
<td>24</td>
<td>17%</td>
<td>45%</td>
<td>27%</td>
<td>3%</td>
<td>8%</td>
<td>1-10</td>
<td>1-10</td>
</tr>
<tr>
<td>Control of chemicals, food and feedstuffs</td>
<td>43</td>
<td>27%</td>
<td>30%</td>
<td>19%</td>
<td>8%</td>
<td>16%</td>
<td>1-10</td>
<td>11-25</td>
</tr>
<tr>
<td>Control of animal diseases</td>
<td>48</td>
<td>11%</td>
<td>43%</td>
<td>18%</td>
<td>12%</td>
<td>16%</td>
<td>1-10</td>
<td>11-25</td>
</tr>
</tbody>
</table>

Bases only include those who made changes under each requirement group; for animal welfare requirements, there are no reliable figures due to insufficient sample size.

The median values show that most farmers had invested between 1 and 10 hours in order to make the changes required under Cross Compliance. The least time investment was made for changes associated with Historic and Landscape Features requirements (0 hrs). For those who claimed to have time input, the median values of extra spent are between 1 to 50 hours.
## Table 19: Amount Spent On Top Of Usual Costs within Last 12 Months to Make Changes

<table>
<thead>
<tr>
<th>Requirement group</th>
<th>Base</th>
<th>No costs</th>
<th>Less than £500</th>
<th>£500-£1,000</th>
<th>More than £1,000</th>
<th>Don't know</th>
<th>Median cost (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil management and protection</td>
<td>86</td>
<td>35%</td>
<td>35%</td>
<td>16%</td>
<td>12%</td>
<td>3%</td>
<td>250</td>
</tr>
<tr>
<td>Water quality</td>
<td>46</td>
<td>33%</td>
<td>32%</td>
<td>12%</td>
<td>17%</td>
<td>3%</td>
<td>250</td>
</tr>
<tr>
<td>Historic and landscape features</td>
<td>28</td>
<td>46%</td>
<td>36%</td>
<td>8%</td>
<td>10%</td>
<td>0%</td>
<td>250</td>
</tr>
<tr>
<td>Habitats and wildlife</td>
<td>71</td>
<td>51%</td>
<td>24%</td>
<td>15%</td>
<td>7%</td>
<td>3%</td>
<td>0</td>
</tr>
<tr>
<td>Animal identification</td>
<td>24</td>
<td>27%</td>
<td>56%</td>
<td>9%</td>
<td>4%</td>
<td>3%</td>
<td>250</td>
</tr>
<tr>
<td>Control of chemicals, food and feedstuffs</td>
<td>43</td>
<td>43%</td>
<td>23%</td>
<td>16%</td>
<td>13%</td>
<td>3%</td>
<td>250</td>
</tr>
<tr>
<td>Control of animal diseases</td>
<td>48</td>
<td>14%</td>
<td>48%</td>
<td>24%</td>
<td>12%</td>
<td>3%</td>
<td>250</td>
</tr>
</tbody>
</table>

Bases only include those who made changes under each requirement group

For animal welfare requirements, there are no reliable figures provided due to insufficient sample size.

The median values show that for most farmers, costs incurred on top of usual costs to make the changes are less than £500. The lowest costs are for changes made to comply with Habitats and Wildlife requirements, where 51% of farmers claimed to have incurred no extra costs to comply.

## Table 20: By How Much Has Your Annual Revenue Reduced?

<table>
<thead>
<tr>
<th>Requirement group</th>
<th>Base</th>
<th>No reduction</th>
<th>Less than £500</th>
<th>£500-£1,000</th>
<th>More than £1,000</th>
<th>Don't know</th>
<th>Median value of reduction (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil management and protection</td>
<td>86</td>
<td>77%</td>
<td>5%</td>
<td>9%</td>
<td>6%</td>
<td>2%</td>
<td>0</td>
</tr>
<tr>
<td>Water quality</td>
<td>46</td>
<td>69%</td>
<td>5%</td>
<td>6%</td>
<td>13%</td>
<td>6%</td>
<td>0</td>
</tr>
<tr>
<td>Historic and landscape features</td>
<td>28</td>
<td>81%</td>
<td>5%</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
<td>0</td>
</tr>
<tr>
<td>Habitats and wildlife</td>
<td>71</td>
<td>68%</td>
<td>7%</td>
<td>10%</td>
<td>11%</td>
<td>6%</td>
<td>0</td>
</tr>
<tr>
<td>Animal identification</td>
<td>24</td>
<td>85%</td>
<td>12%</td>
<td>0%</td>
<td>0%</td>
<td>3%</td>
<td>0</td>
</tr>
<tr>
<td>Control of chemicals, food and feedstuffs</td>
<td>43</td>
<td>87%</td>
<td>3%</td>
<td>1%</td>
<td>9%</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Control of animal diseases</td>
<td>48</td>
<td>84%</td>
<td>4%</td>
<td>4%</td>
<td>6%</td>
<td>1%</td>
<td>0</td>
</tr>
</tbody>
</table>

Bases only include those who made changes under each requirement group

For animal welfare requirements, there are no reliable figures provided due to insufficient sample size.
The majority of respondents (68-87%) did not experience a reduction in revenue as a result of making the changes to comply with Cross Compliance. Those most likely to have experienced a reduction in revenue had made changes associated with water quality (24%) and habitats and wildlife (28%). The median values of the reduction in revenue are £0s across all groups of standards.

The majority of respondents did not make savings as a result of making the changes, particularly those who made changes associated with Historic and Landscape Features (92%), Animal Identification (98%), and Control of Animal Diseases (91%). Farmers are more likely to make savings as a result of making changes related to Control of Chemicals, Food and Feedstuffs (21%), Water Quality (19%) and Soil Management and Protection (19%).

Table 21: How Much Money Have You Saved In The Last 12 Months, By Making The Changes?

<table>
<thead>
<tr>
<th>Requirement group</th>
<th>Base</th>
<th>No savings</th>
<th>Less than £500</th>
<th>£500-£1,000</th>
<th>More than £1,000</th>
<th>Don't know</th>
<th>Median values of savings (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil management and protection</td>
<td>86</td>
<td>72%</td>
<td>15%</td>
<td>2%</td>
<td>2%</td>
<td>9%</td>
<td>0</td>
</tr>
<tr>
<td>Water quality</td>
<td>46</td>
<td>81%</td>
<td>13%</td>
<td>0%</td>
<td>6%</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Historic and landscape features</td>
<td>28</td>
<td>92%</td>
<td>0%</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Habitats and wildlife</td>
<td>71</td>
<td>83%</td>
<td>9%</td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
<td>0</td>
</tr>
<tr>
<td>Animal identification</td>
<td>24</td>
<td>98%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>0</td>
</tr>
<tr>
<td>Control of chemicals, food and feedstuffs</td>
<td>43</td>
<td>77%</td>
<td>16%</td>
<td>5%</td>
<td>0%</td>
<td>3%</td>
<td>0</td>
</tr>
<tr>
<td>Control of animal diseases</td>
<td>48</td>
<td>91%</td>
<td>3%</td>
<td>1%</td>
<td>0%</td>
<td>4%</td>
<td>0</td>
</tr>
</tbody>
</table>

*Bases only include those who made changes under each requirement group

*For animal welfare requirements, there are no reliable figures provided due to insufficient sample size.

3.1.7 Difficulties in Complying

Just less than three quarters (72%) of those interviewed had not experienced any difficulty in meeting any aspect of Cross Compliance. The most frequently recorded difficulties, however, related to soil management and protection. Controlling soil erosion and avoiding damage to soil was an issue for 8%, whilst 3% mentioned problems associated with waterlogging. A number of difficulties were also raised in relation to GAEC 14 i.e. the need to protect hedgerows and watercourses (buffer strips, getting the 2m right (8%) and keeping chemicals away from watercourses (1%)).
Six percent had experienced difficulty in understanding the requirements and what changes they had to make. The additional volume of paperwork came under criticism from 4% of the sample.

As would be expected the buffer strips (16%) were a greater difficulty to the cereal farmers than the total sample (significant at the 99% level), whilst animal tagging (5%) and disposal of manure/muck spreading (4%) were greater problems for grazing livestock farms (significant at the 99% and 95% levels respectively). No clear differences were noted by farmer segment.

Respondents were given the opportunity to record other difficulties that they had encountered in meeting the requirements of Cross Compliance. However, 95% indicated they had experienced no other difficulties. Some issues raised by those 5% who have indicated to have had experience other difficulties include “making contractor drivers obey instructions”, “keeping up to date with changes in Cross Compliance”, “people in charge seem to be more interested in saving wildlife, than the water course”, “not too sure what's been proposed for the next level of NVZs”, “some of the issues overlap the entry level scheme”, “keeping up with recycling, not enough time to concentrate more on recycling”.

Table 22: What Aspect Or Aspects Of Cross Compliance, If Any, Have You Had Difficulty In Meeting?

<table>
<thead>
<tr>
<th>Difficulty</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>72</td>
</tr>
<tr>
<td>Buffer strips, putting them in, getting the 2m right</td>
<td>8</td>
</tr>
<tr>
<td>Controlling soil erosion/avoiding damage to soil</td>
<td>8</td>
</tr>
<tr>
<td>Knowing what you need to know/understanding</td>
<td>6</td>
</tr>
<tr>
<td>Hedge trimming/when to trim</td>
<td>4</td>
</tr>
<tr>
<td>Too much/keeping up with extra paperwork</td>
<td>4</td>
</tr>
<tr>
<td>Waterlogging</td>
<td>3</td>
</tr>
<tr>
<td>Animal tagging/ double tagging/ animals lose tags</td>
<td>2</td>
</tr>
<tr>
<td>Disposal of manure/muck spreading</td>
<td>1</td>
</tr>
<tr>
<td>Watercourse protection/keeping chemicals away from watercourses</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

Weighted base = 300

3.1.8 Support for Cross Compliance

The most commonly mentioned form of support used to help respondents meet the requirements of Cross Compliance was the Defra guidance booklet (64%). The Cross Compliance workshops and commercial land agent/consultant were the next most popular (37% and 31%, respectively). The Cross Compliance workshops were particularly popular amongst the cereal farmers (47%) and larger farms (46%). The use of the workshops by the 2 subgroups differed from the total sample at the 95% level. Sixty-seven percent of farmers in the Yorkshire region made use of the Cross
Compliance workshops, a significantly greater proportion than in the total sample (99% confidence level).

![Bar chart showing support and advice used to help meet Cross Compliance requirements]

**Weighted base: 300**

**Figure 8: What Support Or Advice Have You Used To Help Meet The Cross Compliance Requirements?**

Both the Cross Compliance advice line (7%) and Defra/RPA helpline (15%) were less commonly used overall. The Cross Compliance advice line was, however, mentioned more frequently by cereal farmers than the total sample (11% - significantly different to the total sample at the 95% level).

A number of differences in the type of support used were evident amongst the various farmer segments. The modern family businesses were more likely than the total sample to use the Cross Compliance website (28%, significant difference at the 99% confidence level) and the Cross Compliance newsletter (33%, significant difference at the 95% level). Conversely, the pragmatists and lifestyle choice group were the least likely to use the Cross Compliance website or newsletter (16% and 14%, respectively, differences significant at the 95% level), whilst the pragmatists were the least likely to use the Cross Compliance website (4%, significant at the 95% level).

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21 Agronomist, NFU or Stewardship Scheme was not included as a pre-code within the questionnaire, but has been added as respondents had the opportunity to mention other sources of support and advice.
In some cases percentages do not add up to 100% due to rounding. Mean scores are based on a scale of 1-5, 1 being poor and 5 excellent. Thus the higher the mean score the more positive the response.

Figure 9: How Helpful Was The Advice You Received?

Amongst respondents who had used the various sources of support and advice, perceptions of the help were on balance good to very good. The most positive scores were received for conservation advisor (3.9) and commercial land agent (3.8). Although the Defra guidance booklet was commonly used it received a fairly average rating compared to the other sources (3.2). The Cross Compliance workshops were rated more favourably than the booklet but less positively overall than the advisors and consultants. The consultants and agents seemed to be more positively received than the help lines which may be related to the level of previous knowledge the consultants had about the farm, the level of personal service/face to face contact and possibly the amount of time available to provide advice.

Many of the farmers appeared satisfied with the range and quality of support available, as 75% suggested they did not need additional help to meet the requirements. Requests were, however, made for simpler easier to understand information (7%) and less paperwork (3%).

The grazing livestock farmers were the least likely to need any additional support, when compared to the total sample (85%, significant at the 95% level). The small farms were more likely to mention more advice/more ways to communicate, (8%, significantly different to the total sample at the 99% level).
Table 23: What Additional Help Do You Need To Meet The Cross Compliance Requirements?

<table>
<thead>
<tr>
<th>Type of support and advice</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>75%</td>
</tr>
<tr>
<td>Simplified information / easier to understand</td>
<td>7%</td>
</tr>
<tr>
<td>More advice offered / more ways to communicate</td>
<td>4%</td>
</tr>
<tr>
<td>Easier paperwork / less form filling</td>
<td>3%</td>
</tr>
<tr>
<td>More expert visits to farm</td>
<td>2%</td>
</tr>
<tr>
<td>Local meetings / workshops</td>
<td>2%</td>
</tr>
<tr>
<td>More funding / grants / subsidies</td>
<td>1%</td>
</tr>
<tr>
<td>Less draconian and more understanding</td>
<td>1%</td>
</tr>
<tr>
<td>More advance notice on issues</td>
<td>1%</td>
</tr>
<tr>
<td>Don't know</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Weighted base</strong></td>
<td><strong>300</strong></td>
</tr>
</tbody>
</table>

3.2 Evidence from Consultation

This section provides a summary of the evidence from the farmer survey, workshop and TAP advisors.

3.2.1 Impact of Cross Compliance Standards

Soil management and protection

The evidence gathered suggests that whilst GAEC 1 has raised awareness of soil issues, the approach to the SPR may need to be revised. Findings from both the practitioner workshops and TAP interviews revealed that the SPR form is viewed as having little or no practical value by farmers. Also the general consensus was that GAECs, 2, 3 and 4 have had limited or no impact on farm management and should be combined with GAEC 1.

Water quality

All the evidence collected indicates that Cross Compliance has had a significant impact on compliance with SMR 4 and SMR 2. In the farmer survey 22% of respondents had made changes to comply with the water quality GAECs since the introduction of Cross Compliance. Most of the changes related to SMR 4 (47%) and SMR 2 (44%). This also corresponds with the view from the practitioner workshops and TAP interviews that Cross Compliance had been useful in raising awareness of the requirements in relation to these standards. Concerns were expressed about the difficulties and increased costs some farmers might face complying with the new NVZ requirements but this relates to the underlying regulation rather than Cross Compliance *per se*. It was evident that Cross Compliance and the regulations were referred to interchangeably and care must be taken to distinguish these.
Historic and landscape features

The evidence suggests that three of the Historic and landscape features (GAECs 7, 16 and 17) had minimal impact on land management. Only 13% of respondents in the farmer survey had made changes under this grouping. Of those who had made changes just over half had made changes regarding GAEC 15. This corresponds with the view of two of the TAP advisors that Cross Compliance had stopped some farmers from trimming hedges in July. GAEC 8 was felt to have a significant impact both by TAP advisors and workshop participants, as farmers are concerned about losing their Single Payment and because the public are aware of farmers’ responsibilities in this area and are reporting breaches.

Habitats and wildlife

Of the respondents surveyed, 29% had made changes under the Habitats and wildlife GAECs. Of those who had made changes, 70% had made changes in relation to GAEC 14 (establishment of margins). GAEC 14 was a new condition under Cross Compliance and had received considerable media attention; consequently changes in relation to this GAEC were high and the view from the practitioner workshops and TAP advisors was that GAEC 14 has had a significant impact on land management. However, farmers have had difficulty in achieving a consistent width of margin due to practical operational issues. The farmer survey revealed that 8% of respondents reported difficulty in this respect.

Animal Identification

The TAP advisors considered that these SMRs had had a significant impact in terms of increasing awareness and effort to comply. The survey revealed that 19% of livestock respondents surveyed had made changes under Animal Identification SMRs. The view from the practitioner workshops was that more needed to be done to educate farmers in respect of the cattle SMRs as many farmers are still unaware of the cattle registration and movement requirements and lack understanding of the potential for BCMS links.

Control of chemicals, food and feedstuffs

The evidence suggests that of these SMRs, only SMR 9 has had any significant impact on management practice. Of the respondents surveyed, 18% had made changes under Control of chemicals, food and feedstuffs. Of these, 51% made changes in relation to SMR 9. The findings from the TAP interviews and practitioner workshops also suggested that SMR 9 had improved the observance of correct practice with regard to pesticide application.

Control of animal diseases

In both the practitioner workshops and TAP interviews these SMRs were considered to have no impact on farm management as most would comply in the event of a disease outbreak. The farmer survey showed that the greatest proportion of respondents had made changes in order to comply with these SMRs (34% had changed); of these, 83% had made changes in relation to blue tongue vaccination. However, this high figure relates to the recent blue tongue disease alert and the changes that the farmer survey respondents have made in response to this SMR are likely to have occurred in the absence of Cross Compliance.
**Animal Welfare**

In the farmer survey, changes were least likely to be made to comply with the Animal Health and Welfare requirements (90% no changes). This increased to 97% reporting no change when only grazing livestock farms were considered. The TAP interviews and practitioner workshops suggested that these SMRs had an impact on a small minority of farmers who do not look after their animals. This highlights the limitations of random inspections as the sole approach to dealing with breaches; in practice Animal Health inspectors inspect at a higher rate than the 1% Cross Compliance target (10% and 3% in the cattle and sheep standalone inspection programmes respectively) and also pick up referrals on animal welfare.

### 3.2.2 Effectiveness

The evidence has revealed that Cross Compliance has proved effective in raising farmers’ awareness of their obligations and has led to improvements in compliance with existing environmental legislation, particularly in relation to SMR 4 (NVZs). However, the views from the practitioner workshops and TAP interviews is that whilst awareness has increased there is a limited understanding of the potential environmental and welfare benefits of the conditions and confusion surrounding some standards still exists. This has generated a degree of anxiety amongst some farmers; others view some standards as an unnecessary burden. An approach that employed different mechanisms to emphasise the purpose of the conditions and gave more tailored, supporting advice may have been more effective.

With other conditions, the additional impacts of Cross Compliance were considered relatively minor as many elements of the conditions merely reinforce existing obligations which farmers were complying with prior to Cross Compliance. According to the views from the practitioner workshops and TAP interviews, this was particularly the case for the following conditions:

- **GAEC 3 - Waterlogged soils**
- **GAEC 4 - Crop residue burning**
- **GAEC 7 - Scheduled monuments**
- **GAEC 10 - Heather and grass burning**
- **GAEC 16 - Felling of trees**
- **GAEC 17 - Tree Preservation Orders**
- **SMR 2 - Groundwater protection**
- **SMR 3 - Sewage sludge**
- **SMR 5 - Habitats**
- **SMR 9 - Plant protection products**
- **SMR 10 - Animal growth hormones**
- **SMR 11 - Food & feed law**
- **SMR 12 - Prevention/control of TSEs**
- **SMR 13 - Control of Foot & Mouth**
- **SMR 14 - Control of certain animal diseases**
- **SMR 15 - Control of bluetongue**

These views correspond with the farmer survey, with the exception of SMR 9 and SMRs 13 -15. For these standards, 13% and 27% of livestock farmers, respectively, had made some farm management changes. Very few respondents had made changes in relation to the other GAECs and SMRs listed.

The view from the practitioner workshops and TAP interviews was that some farmers struggle with the level of paperwork that Cross Compliance demands and any
increase, for example the new NVZ regulations would represent an additional burden. However this is at odds with the ADAS farmer survey, where only 4% of farmers in the sample were critical of the additional volume of paperwork.

3.2.3 Inspections

The consensus from the practitioner workshops and TAP interviews was that most farmers are adhering to Cross Compliance conditions but some fear unwitting breaches and the consequent penalties. This causes a degree of anxiety and antagonism towards the programme amongst the farmers concerned. A greater clarity in the guidance on the requirements and inspection procedures would help to ease some of this concern. The point was made that where farmers have honestly tried to comply but are found to be in breach of the rules at inspection, some flexibility should be allowed.

In practice, the RPA has implemented a ‘light touch’ approach and approved a reduction matrix based on issuing warning letters for the majority of first time breaches, particularly for cattle inspections. However recent EU audits have deemed the RPA approach to have been too lenient and the RPA has been advised that disallowance fines (estimated at £30-90m) will be imposed if the regulations are not implemented correctly. Consequently, for all 2009 SPS inspections RPA will be issuing 3% reductions for the majority of cross compliance breaches found.

This leaves the onus on farmers to comply with the standards and will require more support through FAS to improve farmer understanding of what is expected at inspection and how RPA inspectors are required to deal with breaches of the requirements found during inspection.

For the minority who are deliberately non-compliant it was felt that the low risk of inspection and modest level of penalties within the requirements of the EC inspection regime are an insufficient disincentive to non-compliance. This highlights the importance of dealing promptly with referrals so that those who disregard the spirit of Cross Compliance can be dealt with.

A view was expressed by advisers that a negative image of the RPA within the farming community influences expectations of the inspection process. This is evidently a perception issue ‘before the event’ as RPA customer feedback forms from those farmers who have undergone an inspection indicate that 80-90% made positive comments about the inspectors and inspection process. It is of concern however that farm advisers and those closely associated with the FAS do not seem to recognise this explicitly. This is another area where there should be better sharing of information (customer feedback) between the RPA and the farm adviser community (especially FAS).

3.2.4 Support and Advice

FAS, through the Momenta advice contract has helped to raise awareness of the Cross Compliance standards, but a lack of understanding and general confusion surrounding some of these SMRs and GAECs prevails suggesting that clarification is required. The farmer survey revealed that 6% had experienced difficulty in understanding the requirements and what changes they had to make. The farmer survey also found that although the Defra guidance booklet was commonly used it received a fairly average rating (3.2) in terms of helpfulness compared to the other sources. The evidence from all three sources suggests that the provision of Cross Compliance advice through events or on-farm is more effective than booklets. The
view from the workshops was that farmers are becoming increasingly overwhelmed with the quantity of booklets arriving through the post.

Views from the practitioner workshop suggest that whilst the Momenta workshops have been useful in raising awareness, difficulties exist in giving more complex and specific advice on the Cross Compliance conditions and requirements in such settings. One view was that the Catchment Sensitive Farming model might work better than workshops in providing specific advice. With this approach the existing network of farm specialists would work with farmers to deliver advice beyond the current priority catchments. The farmer survey also showed that advice from advisors and consultants was more positively received than other forms of support. The focus for FAS needs to be reviewed in the light of these needs and models.

One suggestion from the practitioner workshop and TAP interviews was that in order to increase compliance, education campaigns should be targeted at those GAECs where misunderstanding and confusion about requirements is high. This particularly applies to the livestock ID SMRs and NVZs, as well as the interpretation of the 2m margin and supplementary feeding rules. A broad education campaign in relation to soils would also help to raise understanding of how the principles underlying the soil GAECs (1-4) can be implemented. One approach to encourage those farmers that have not yet attended any advisory events to do so, would be to make this a criterion for the risk-based element of the sample; thus attendance should reduce their chances of being inspected.

More generally, as education is generally proven to be better than compulsion in ensuring a positive environmental behaviour response, farmers’ interest (and therefore diligence in ensuring compliance) would be increased if more provision was made to explain the benefits of Cross Compliance requirements. If data could be provided to illustrate the benefits of the requirements, this would help to improve the image of the scheme and the perception among farmers that they are generating a positive return for society, from the effort expended in demonstrating that they uphold these conditions.

3.2.5 Value for money

There was general recognition at the practitioner workshops and TAP interviews that the costs of Cross Compliance are not high compared to the scale of the Single Payment. However, the view was that Single Payment will decrease over time as modulation increases and, at some point farmers may opt to forgo the payment rather than comply with the Cross Compliance prescriptions.

This emphasises the importance of embedding standards into practice through persuasion and demonstration of benefits (public and private), rather than relying solely on the leverage of SPS reductions. In practice, current penalty rates of 3% already represent a modest loss on smaller farms.

The practitioner workshops and TAP interviews suggest that additional costs have arisen for both farmers and administrators. There has also been an increase in management time involved in implementing the requirements. The majority of farmers surveyed in this evaluation claimed to spend extra 1-10 hours in order to comply to Cross Compliance standards. Whilst the standard monetary valuation of farmer time indicates that this is significantly less than the value of SP to most farmers, in practice it is often the opportunity cost of time which prevents important tasks from being undertaken at farm level. The comment was made in the context of marginal viability for a significant minority of farm business; in this instance the
monetary and time-related commitments of cross-compliance may be seen as a more significant burden than they represent in reality.

### 3.2.6 Side effects

If the perceived burden of Cross Compliance continues to increase, consultees felt that at some point more farmers opt not to comply and risk being inspected and receiving a penalty. Others, particularly those with modest levels of Single Payment may simply stop claiming and will fall outside the remit of the inspections. In practice, as most standards are backed by legislation, farmers will still be bound by these.

Another possible side effect reported by consultees was a decline in livestock numbers in response to the livestock standards and new NVZ requirements, particularly on dairy farms or farms where livestock are a small component of the business. Again, the impact of the NVZ regulation itself is likely to be more significant than associated Cross Compliance requirements but the distinction has become blurred. In practice, this would probably be in tandem with wider issues of viability but Cross Compliance could be the ‘straw that breaks the camel’s back’. Such impacts are likely to be gradual and difficult to isolate but in the medium to long terms could impact on landscape heterogeneity and character.

Another perceived side effect of Cross Compliance has been the reinforcement of a farming community’s negative image of Government’s attitude to and support for the farming community. Whilst this perception could be seen as overly pessimistic, in view of the many positive aspects of government support for the sector, it perhaps reflects the long-term nature of farming and its dependency on public subsidy and advisory support for more than a generation. Hall and Pretty (2008) have also identified this issue of farmers feeling ‘abandoned’ or misunderstood by policymakers and government officials, which could have a potentially negative knock-on effect upon other aspects of policy (for instance, reducing farmer willingness to adopt ELS or HLS or to work with Defra to achieve biodiversity and climate change mitigation targets).
4 Policy Evaluation

4.1 Evaluation Process

The evaluation process is described below according to the Defra guidance for Economic and Social Research Projects and Evaluations (Defra 2006).

Evaluation is a policy assessment that is carried out ex post either when the policy has been in operation for sufficient time to have had some impact or, in some cases, after the policy has ended. It is a tool to aid evidence-based policy formation and development and, through evaluating its policies and making adjustments where necessary, Defra can ensure that they address their objectives and deliver their intended outcomes. Evaluation draws on the evidence of past policy performance in order to inform policy reviews, to help formulate new policies and to improve and refine existing ones, thereby improving policy performance and service delivery. Evaluation should therefore be regarded as an essential component of the policy cycle .... not as an end in itself, but as a key tool in helping policy makers achieve their aims.

It is clear that the emphasis is on learning (formative evaluation) rather than measuring (summative evaluation). In practice we have to measure impacts / outcomes to some extent in order to gauge effectiveness and inform policy development. For the evaluation of Cross Compliance there are a number of limitations on measuring impacts / outcomes:

- There is no robust baseline from which to measure the impact of the policy, notably the lack of environmental impact indicators;
- It is difficult to measure the differences in environmental impact between compliant and non-compliant cases;
- The environmental benefits that Cross Compliance has delivered are of different types, at different levels and at different scales. The spatial, temporal and technological heterogeneity of agriculture makes it difficult to assess the environmental impacts of Cross Compliance;
- It is difficult to isolate different categories of environment benefits from each other and relate them to individual Cross Compliance standards and to untangle different environmental impacts resulting from systematic changes of farm practices (counterfactual situation);
- Effectiveness of cross compliance relies on the financial leverage of SPS; while these are inextricably linked in the policy, it is difficult to assess to what extent the impacts would be so significant / available in future if the value of Single Payment is reduced or absent.

Nevertheless, an evaluation framework was proposed at the start of the work which linked together the key requirements of the evaluation, components and possible indicators. While we have used this framework, the high level objectives were of limited value\(^2\) in measuring effectiveness and more specific criteria were developed (section 2).

\(^2\) As concluded in a recent evaluation research of Cross Compliance at the EU level [ref. EC (2008) Special Report No. 8 / 2008 – Is Cross Compliance an effective policy. Report by the EC Court of Auditors December 2008].
OBJECTIVES*
• To integrate basic standards for the environment, food safety, animal health and welfare and good agricultural and environmental condition in the common market organisations by linking direct aid to rules relating to agricultural land, agricultural production and activity;
• To avoid the abandonment of agricultural land and ensure that it is maintained in good agricultural and environmental condition;
• To maintain the existing area of permanent pasture on the basis of its environmental importance;
• To promote more sustainable agriculture;
• To provide an incentive for farmers to respect existing legislation.

INPUTS**
Application of SMRs and definition of GAEC
Information to farmers
System of control
Selection of control sample
Inspection regimes

OUTPUTS**
Number of farms inspected
Number of farms complying/not complying
Level of permanent pasture

RESULTS**
Rates of compliance/non-compliance with mandatory standards
Ratio of permanent pasture
Level of reductions in aid due to non-compliance

OUTCOMES/IMPACTS**
Extent to which standards met by farmers
Extent of land abandonment
Condition of agricultural land
Extent of permanent pasture
Costs of GAEC compliance

Effectiveness

Criterion 1: Level of compliance
Indicator 1: Percentage compliance

Criterion 2: Farmers’ behaviour
Indicator 2: Motivation, awareness, knowledge and understanding

Criterion 3: Delivery of desired environmental outcomes
Indicator 3: Logic chain analysis

Criterion 4: Effectiveness of implementation
Indicator 4: Scheme design, advice, control systems and mechanisms

Efficiency/Value for Money

Criteria:
• Least cost to ensure compliance with predefined obligations;
• Efficiency of costs in relation to benefits delivered

Indicators:
• Public costs in relation to benefits
• Private costs

Side effects:
Both positive and negative effects will be considered in the following aspects:
• Competitiveness of farming;
• Farmers’ behaviour
• Compliance with wider standards and regulations
• Contribution to sustainable development

* are based on Silcock and Swales (2007), Cross Compliance - A Policy Options Paper.
** are based on Alliance Environment (2007): Evaluation of the application of cross compliance as foreseen under Regulation 1782/2003

Figure 10: ADAS Evaluation Framework for Cross Compliance

objectives and the scope of cross compliance are not well defined, making it unclear what cross compliance is designed to achieve and therefore it is difficult to measure its effectiveness against the stated objectives of the policy.
In the context of Cross Compliance, this evaluation was required to:

(a) Provide an assessment of the **effectiveness** of cross compliance conditions in England in meeting their objectives;

(b) Evaluate the **behavioural change** of farmers and land managers since the introduction of cross compliance

(c) Identify any unintended consequences and make recommendations for actions to reinforce positive outcomes and counter negative outcomes

(d) Identify the **nature and magnitude of the costs imposed on farmers** and any others in meeting cross compliance conditions;

(e) Assess **value for money** of the measures given the EU Regulatory framework and

(f) Recommend any **areas for improvement**

Secondary evidence was reviewed in Stage 1 and primary evidence collected and reported in Stage 2. This section of the report brings together the evidence from the earlier work to answer the evaluation questions.

### 4.2 Effectiveness of Cross Compliance

Effectiveness measures the extent to which the policy objectives have been achieved. In the context of Cross Compliance this is mainly around the first stated objective of integrating basic environmental, food safety and animal welfare into farming and the last, to promote sustainable farming. These are not well defined objectives and make the task of measuring effectiveness difficult. However, in practice we have used available evidence to make our judgement.

As only the added value of Cross Compliance is considered in this evaluation, the focus of the evaluation is given to those standards with additional benefits i.e. standards in Category 1 and 2 specified in Section 2.4 of this report, while group 1 standards are deemed to have delivered limited additional benefits and therefore no added valued should be attributed to Cross Compliance. A full list of these groupings is shown in Table 24.

The evidence collected at Stage 2 of the evaluation largely supported this classification with exception of GAEC 8 (Public rights of way) in Category 1, which was thought to be an effective Cross Compliance standard at stage 2 consultations. Therefore, GAEC 8 is added to the discussion of effectiveness. GAEC 4 is also added to discussion on the ground that it is of relevance to GAEC1 (Soil protection review).

The effectiveness of Cross Compliance is examined by level of actual changes and impact only for those standards in Category 2 and 3 plus GAEC 8 based on the evidence from Stage 1 and 2 of this evaluation project. However, changes in farmers’ behaviour and attitude towards all the scheme conditions are examined because it is the main source of added value of Cross Compliance as recognised by a range of literature (Silcock & Swales 2007, Dwyer and Boatman et. al. 2007, Herzfeld and Jongeneel 2007).
Table 24: Grouping of Cross Compliance standards.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category 1:</strong> Reinforcing pre-existing regulations, with minimal impact</td>
<td>SMRs: SMR 1 (Wild birds); SMR 2 (Groundwater); SMR 3 (Sewage sludge); SMR 5 (Habitats); SMR 9 (Plant protection products); SMR 10: (Restriction on substances having hormonal or thyrostatic action and beta-agonists); SMR 11 (Food and feed law); SMR 12 (TSEs); SMR 13 (FMD); SMR 14 (Control of animal Disease); SMR 15 (Control of blue tongue)</td>
</tr>
<tr>
<td></td>
<td>GAECs: GAEC 4 (Burning of crop residues); GAEC 5 (EIA); GAEC 6 (SSSIs); GAEC 7 (Scheduled Monuments); GAEC 8 (Public rights of Way); GAEC 10 (Heather and grass burning); GAEC 15 (Hedgerows: regulations element); GAEC 16 (Felling of trees); GAEC 17 (TPOs)</td>
</tr>
<tr>
<td><strong>Category 2:</strong> Reinforcing pre-existing regulations but with additional impact</td>
<td>SMRs: SMR 4 (NVZ); SMR 6 (Pig identification); SMR 7,8 and 8a (Cattle Identification); SMR16-18 (Animal Welfare)</td>
</tr>
<tr>
<td></td>
<td>GAECs: GAEC 1 (SPRs); GAEC 2 (Post-harvest management); GAEC 3 (Waterlogged soil); GAEC 9 (Overgrazing); GAEC 11 (Control of non-natives); GAEC 12 (Land not in agricultural production); GAEC 13 (Stone walls); GAEC 14 (Protection of hedgerows and watercourses); GAEC 15 (Hedgerows: cutting dates element)</td>
</tr>
</tbody>
</table>

4.2.1 Evidence of Change

The overall effectiveness of Cross Compliance standards depends on the performance of the policy against several indicators, which include the change / absolute level of compliance, the level of changes made by farmers in order to comply, the applicability of individual standard and level of actual impact.

The level of compliance is a direct output of Cross Compliance and therefore reflects the effectiveness of the scheme, especially for those standards without existing legislation. However, as all the SMRs and some of the GAEC requirements are based on pre-existing legislation, the effectiveness of these standards can only be reflected by the change in the level of compliance. In addition, it is important to consider whether these changes have made a real impact on the environment. The relationships with the overall effectiveness of these indicators are detailed in Table 25 as well as the key sources of evidence used and the criteria adopted for the evaluation of effectiveness against each indicator.
The effectiveness of standards supported by legislation and new standards are discussed in turn against these indicators according to relevant criteria. The indicators have been graded into high, medium and low bands, as set out in the table and the rationale for scale is as follows:

**Change in Level of compliance:** Cross Compliance largely represents respecting existing regulations and good practice and its impact on absolute compliance is likely to be modest.

**Absolute Level of compliance:** given that the policy has been operational for three years and that many of the standards were pre-existing.

**Applicability:** the scale has simply been divided into thirds.

**Level of changes made:** relates to the extent of change where this occurs and as such is more significant that overall changes in the level of compliance.

**Degree of Impact:** scored by the consultants on a relative scale, based on evidence from the research.

### Table 25: Indicators, evidence and criteria for evaluation of effectiveness

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Relationship with overall effectiveness</th>
<th>Sources of evidence</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in Level of compliance</td>
<td>Positively related</td>
<td>RPA inspection data for year 2005, 2006 and 2007</td>
<td>Significant change: greater than +/-10%; Moderate change: +/-5% to +/-10%; Insignificant: less than +/-5%</td>
</tr>
<tr>
<td>Level of compliance</td>
<td>Not directly related to the overall effectiveness for SMRs and GAECs with pre-existing legislation; However, positively related to the overall effectiveness for GAEC requirements with no pre-existing legislations</td>
<td>RPA inspection data for year 2005, 2006 and 2007</td>
<td>Low: &lt;90%; Medium: 90%-95%; High: &gt;95%</td>
</tr>
<tr>
<td>Applicability</td>
<td>Positively related; defines the scale of impact</td>
<td>Mainly based on RPA inspection data; MOMENTA survey data is used to discover discrepancies</td>
<td>Low: &lt;33%; Medium: 33%-67%; High: &gt;67%</td>
</tr>
<tr>
<td>Level of changes made</td>
<td>Positively related to the overall effectiveness, depending on a strong link between changes made and actual environment outcomes</td>
<td>ADAS survey data; MOMENTA survey data; Stage 2 consultations</td>
<td>Low: &lt;15%; Medium: 15%-30%; High: &gt;30%</td>
</tr>
<tr>
<td>Degree of Impact</td>
<td>Positively related</td>
<td>Stage 1 literature review and Stage 2 consultations</td>
<td>HIGH, MEDIUM or LOW level of impact based on judgement</td>
</tr>
</tbody>
</table>
Standards supported by legislation (Category 2 standards)

This group of standards include SMR 4 (NVZs), SMR 6, 7, 8 and 8a (Animal ID) and SMR 16-18 (Animal Welfare). Unlike for SMR 4, the level of compliance as well as the level of changes made by farmers is relatively low for Animal ID and welfare standards. However, there has been a significant improvement in the level of compliance for SMR 7&8 (Cattle ID). Incorporating the scores on the scale of impact (applicability) and the degree impact, the overall effectiveness of SMR 4 and Animal ID standards are scored as ‘Medium’, higher than animal welfare standards (which scores as ‘low’). Details on the scores against each indicator are listed in Table 26.

Table 26: Effectiveness of SMR 4, 6-8a, 16-18.

<table>
<thead>
<tr>
<th>SMR</th>
<th>Change in Level of Compliance</th>
<th>Level of Compliance</th>
<th>Applicability</th>
<th>Level of Change</th>
<th>Impact</th>
<th>Overall Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>*</td>
<td>M/H</td>
<td>M/H</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>M/L</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M/L</td>
</tr>
<tr>
<td>7&amp;8</td>
<td>++</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>8a</td>
<td>*</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>16</td>
<td>No evidence</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>17</td>
<td>No evidence</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>18</td>
<td>No evidence</td>
<td>L</td>
<td>H</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
</tbody>
</table>

*=Not significant; + = moderate positive impact; ++ = significant positive impact; -= moderate negative impact; H= High; M= Medium; L=Low

The qualitative evidence collected in Stage 2 at workshops and TAP interviews suggests that SMR 4 (NVZs) has a relatively big impact in delivering the environmental benefits. However, there is some scope to improve effectiveness through better adaptation to local conditions and more support to small farms that have difficulties in coping with the amount of information and paperwork required. There may also be some confusion over the impact of the underlying regulation per se and the impact of Cross Compliance in enforcing it.

For animal ID standards (SMR 6, 7, 8 and 8a), qualitative evidence suggests that difficulties with compliance are due to lack of understanding and lack of obvious benefits to the farmers. Although Cross Compliance has improved awareness and understanding, some negative attitudes have been developed by farmers at the same time. However, the potential to increase level of compliance is high as current compliance is low (less than 90%) and improvement can be achieved through simplifying rules and better advice on how to manage movement records.

With regards to animal welfare standards (SMR 16-18), evidence from TAP advisor interviews suggests that Cross Compliance has had an impact on a very small minority of farmers though it has helped with enforcement; while evidence from practitioner workshops suggests that there is a considerable amount of duplication
and cross-over with Quality Assurance scheme inspections. A review of detailed information on breaches show that both before and after the introduction of cross compliance, the main breaches related to poor record-keeping, housing (sharp edges or protrusions that can cause injury) and caring for sick animals. Failure to keep adequate mortality and medicine records is considered to be a breach of low severity, but both housing and caring for sick or injured animals are either of medium or high severity, as they directly impact on animal welfare. However, it is too early to make a full impact assessment of SMR 16-18, since they were only introduced in 2007. In addition there is some difficulty in comparing on-farm welfare inspection results to those following the introduction of SMRs 16-18, due to differences in inspection assessments. Based on a qualitative evaluation of data collected pre and post introduction of cross compliance, no significant effect of the introduction of Cross Compliance on animal welfare has yet been observed.

**New standards (Category III standards)**

This group of standards include GAEC 1-4 (Soil Management standards), GAEC 8 (Public rights of way), GAEC 9 (Overgrazing and supplementary feeding), GAEC 11 (Control of non-native weeds), GAEC 12 (Land not in agricultural production), GAEC 13 (Stone walls), GAEC 14 (Protection of hedgerows and watercourses) and GAEC 15 (Hedgerows, cutting dates element). The details on the effectiveness scores of these standards are presented in Table 27.

**Table 27: Effectiveness of GAEC 1-4, 8, 9, 11, 12, 13, 14 and 15.**

<table>
<thead>
<tr>
<th>GAEC</th>
<th>Level of Compliance</th>
<th>Applicability</th>
<th>Level of Change</th>
<th>Impact</th>
<th>Overall effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>H/some issues</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>2</td>
<td>H</td>
<td>M</td>
<td>M</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>4</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>8</td>
<td>H/some issues</td>
<td>H</td>
<td>L</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>9</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>11</td>
<td>H/some issues</td>
<td>H</td>
<td>L</td>
<td>M</td>
<td>L</td>
</tr>
<tr>
<td>12</td>
<td>H</td>
<td>M/L</td>
<td>M</td>
<td>H</td>
<td>M</td>
</tr>
<tr>
<td>13</td>
<td>H</td>
<td>M</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>14</td>
<td>H/some issues</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>15</td>
<td>H</td>
<td>H</td>
<td>M</td>
<td>H</td>
<td>H</td>
</tr>
</tbody>
</table>

H= High; M= Medium; L=Low

The level of compliance is generally high across all the standards in this group. However, there are some compliance issues in relation to GAEC 1, 8, 11 and 14 according to RPA inspection data which shows that these standards account for the majority of breaches in GAECs (see Table 57 and Table 58 in Appendix 3). The overall effectiveness is low for GAEC 1-4, GAEC 9 and 11. The effectiveness of
GAEC 8 and GAEC 12 are scored as ‘medium’ and the scores of effectiveness are the highest for GAEC 14 and 15.

For soil management standards (GAEC 1-4), the overall effectiveness is relatively low due to the low level of change made by farmers in practical terms on the ground, although this reflects the existing standards of good practice, pre SPR. GAEC 1 (Soil review) can sometimes be thought to be a box-ticking exercise with no practical value. Overall the effectiveness in delivering additional benefits of these standards is limited by deadweight (since farmers have a commercial imperative to protect their soil in order to maximise production in the absence of Cross Compliance). The causal link between the implementation of requirements and the real impacts on the environment may not be obvious to farmers. It seems that they do not always accept that filling out SPRs guides and helps them to protect their soil or change their practices. Further improvement in effectiveness can be achieved through education and knowledge transfer by linking requirements with best practice to help farmers identify gaps in current soil protection practices and make a real change. There is also scope for efficiency gains through grouping standards and simplification of requirements by combining GAECs 2, 3 and 4 with GAEC 1. There is also scope for improved effectiveness by making explicit linkages between standards e.g. there is a strong link between GAEC 9 and GAEC 1.

GAEC 8 is thought to be an effective Cross Compliance measure according to the consultations at Stage 2. Improvement in efficiency can be achieved by cutting inspection costs to adopt the approach based on reported breaches.

GAEC 9 is not an effective measure due to considerable misunderstanding and confusion over the requirement. Improvement in effectiveness can be achieved by clarity of requirements.

GAEC 11 is not effective due to ineffective inspection of breaches and also due to the fact that the biggest overall impact can only be achieved if everybody complies. Better enforcement is therefore required in order to achieve improvement in effectiveness.

The effectiveness of GAEC 12 is limited by the lack of clarity in the requirements which have caused considerable confusions between GAEC 12 and set-aside measures. More clarity of requirements is required for improvement in effectiveness.

GAEC 14 is an effective Cross Compliance measure. However, to allow for some leeway of minor non-compliance (such as varying width of the buffer strips) would improve its effectiveness and efficiency as well as forming positive attitudes of farmers.

GAEC 15 is also thought to be effective. However, there is some degree of confusion between GAEC15 and ELS hedgerow prescriptions. Also, the effects of Cross Compliance are hard to separate from the effects of Environmental Stewardship (ES) schemes. Improvement in effectiveness can be achieved thorough better synergies with ES schemes and more clarity of requirements.

4.3 Behavioural Aspects

The aim of this section is to evaluate the impact of Cross Compliance in changing farmers’ attitudes and behaviour based on the framework proposed in Table 5 at Section 2.5.
The evaluation of Cross Compliance has identified key external and internal factors that have had an impact on farmer behaviour. These are summarised in tables of likely attitudinal impacts with engaging, capacity and willingness to change on one axis, and positive impacts and negative impacts on the other (see Table 30 to 32). Individual standards are scored against these three criteria in Section 4.3.4.

### 4.3.1 Engaging farmers

To change behaviour, farmers need to be fully informed of their obligations and understand the Cross Compliance requirements. Evidence from Section 2 of the report and the workshops and advisor interviews suggest that Cross Compliance has been extremely effective in raising the awareness of farmer’s obligations in respect of specific environmental stewardship and animal welfare standards. It has stimulated many farmers to understand pre-existing legislative and GAEC requirements and there is also some evidence that it has raised awareness of other issues that may have been given relatively little consideration before Cross Compliance, such as soil-related issues on livestock farms.

This has been achieved mainly through the combined influence of Cross Compliance workshops, Defra guidance booklets and support from a variety of Non Governmental Organisations (NGO), commercial and public-funded advisors. The farming media has also helped to raise awareness of some obligations, particularly in relation to 2 m margins.

**Table 28: Impact of Engagement factors on farmer behaviour**

<table>
<thead>
<tr>
<th>Key area of impact</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>Increased awareness of obligations</td>
<td>Lack of understanding of some standards, resulting in considerable anxiety.</td>
</tr>
<tr>
<td></td>
<td>Increased awareness of some environmental issues, particularly in relation to soils</td>
<td>Lack of understanding of environmental or welfare benefits, contributing to a view of standards as an unnecessary burden.</td>
</tr>
<tr>
<td>Understanding</td>
<td>Has stimulated some farms to seek to understand pre-existing legislative and GAEC requirements</td>
<td></td>
</tr>
</tbody>
</table>

Evidence from Section 2 of the report has also identified an increased understanding of farmers pre-existing statutory requirements due to Cross Compliance. However, our research suggests that is there is still a lack of understanding surrounding the requirements for a number of GAECs and SMRs. Some standards are considered too vague, whilst others are too complex. Farmers lack clarity as to when the GAEC or SMR applies to their situation, for example with GAEC 9 and GAEC 5 there is uncertainty concerning how rules will be interpreted by inspectors, which creates anxiety and ultimately antagonism towards the programme.
These issues apply in particular to the following standards:

- SMRs 7-8a - lack of understanding of BCMS links, recording of movements
- GAEC 9 – supplementary feeding requirements
- GAEC 12 – minor differences between GAEC 12 and set-aside rules leading to confusion between these
- GAEC 14 – accuracy of 2m margin measurement.

In addition to this issue, it is also apparent that to fully engage farmers and encourage behaviour change, farmers need to understand the benefits of their actions. This understanding of the particular benefits intended from Cross Compliance conditions appears lacking, for some standards. As a result, they can be viewed as an unnecessary burden or hurdle for which Defra requires compliance mainly in order to authorise payment of SPS. This particularly relates to:

- GAEC 1 – Soil Protection Review
- GAEC 9 – Supplementary feeding/overgrazing
- GAEC 14 – Protection of hedgerows and watercourses
- SMR 4 - NVZs
- SMRs 6-8a - Livestock movements and identification

Even though each individual condition may not be particularly onerous, when considered in combination and in the context of the uncertainties discussed above, they can be viewed by farmers as a significant burden and source of potential concern.

The discussion here focuses on commercial farmers, but in one workshop some non-compliance results were judged by the participants as being likely to have come from non-commercial smallholders in receipt of SPS who have not been ‘in the loop’ in learning about Cross Compliance. These landowners are often not linked into the local farming advisory network and are not always aware of their obligations. This group of non-commercial landowners may require a different advisory approach to commercial farmers involving awareness raising and providing learning opportunities about appropriate site management.

4.3.2 Capacity to change

In some situations farmers may be aware of Cross Compliance measures and be willing to comply in principle, but have limited capacity to comply, in practice. This may depend on factors such as farm size and farm type, the availability of finance, time and labour to undertake any necessary adjustments, and the farmers’ management flexibility to adopt the required measures, in view of other commitments. Evidence from the Stages 1 and 2 reports suggests that smaller
livestock farmers and ‘Other’ farm types\textsuperscript{23} are most likely to struggle to change behaviour due to a lack of capacity to change. Farmers who lack existing support with administration or decision-making capacity, such as family members, farm secretaries or farm advisors have apparently found it harder to change their behaviour. They have found that Cross Compliance has considerably increased their time and management pressures and they have struggled with both the large amount of new information to absorb, and the record-keeping requirements.

Table 29: Impact of Capacity to Change factors on farmer behaviour

<table>
<thead>
<tr>
<th>Key area of impact</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm</td>
<td></td>
<td>Greater impact for smaller farms lacking existing administrative or decision-making support</td>
</tr>
<tr>
<td>Finance</td>
<td>Compliance ensures receipt of Single Payment. Some financial savings, particularly in fertiliser use.</td>
<td>Has affected revenues – reduced cultivable area, requires additional expense for advice or new infrastructure</td>
</tr>
<tr>
<td>Labour</td>
<td>Increased pressure on farm labour on smaller farms</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Increased time/management pressures due to record-keeping requirements. Increased management time must be invested in order to understand the requirements.</td>
<td></td>
</tr>
</tbody>
</table>

The private cost of compliance with the standards has impacted on some farmers’ capacity to change and will continue to do so, notably as a result of the introduction of new NVZ requirements. This will be especially felt by smaller farmers or those under particular financial pressure as a business. Those with appropriate existing infrastructure, such as the required slurry storage facilities, and access to farm advisors or well-informed family or other social support networks will be more able to respond to the regulatory requirements as well as the Cross Compliance measures.

For others, capital expenditure could be high where additional slurry storage is needed, particularly for dairy farms. In some cases costs may be so high relative to income that the business may need to restructure or no longer be viable. It should be noted that these impacts relate to the implementation of the Nitrates Directive rather than Cross Compliance \textit{per se}. For many farmers, however, there could be savings in fertiliser use through good practice in input use; while this should mitigate the cost of compliance and thus increase their capacity to change, the workshop participants felt this would only apply to a minority of farmers.

\textsuperscript{23} Includes EC Types 21 Specialist mushrooms; 22 Specialist set-aside; 23 Specialist grass and forage; 24 Specialist goats; 25 Specialist horses; 26 Non-classifiable holdings: fallow and 27 Non-classifiable holdings. See Defra paper Farm Classification in the United Kingdom \url{https://statistics.defra.gov.uk/esg/asd/fbs/sub/type.htm}
4.3.3 Willingness to Change

The key to ensuring long term farmer behaviour change is to seek to change mindsets in such a way that they agree with the basic rationale for the system; they can see how standards can be put into practice and they are therefore willing to comply. This requires internalisation of the basic values underpinning the Cross Compliance programme. The evidence from Stage 2 of the research identified an increased acceptance within the farming community of the need to justify the Single Payment on environmental grounds. However, for most farmers the full set of Cross Compliance requirements has not yet been accepted as a new standard of ‘responsible stewardship’ or internalised by farmers as a sense of civic duty or ‘doing what is right’. There are exceptions to this general picture, notably GAEC 15 (Hedgerows - cutting date condition), where our research evidence suggests that farmers understand the environmental rationale for action and generally appear to accept that it is the right thing to do.

Table 30: Impact of Willingness to Change Factors on Farmer Behaviour

<table>
<thead>
<tr>
<th>Key area of impact</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social norms</td>
<td>Increased recognition of environmental justification for receipt of Single Payment</td>
<td>Compliance with most standards not yet internalised as a sense of duty</td>
</tr>
<tr>
<td>Beliefs</td>
<td>Lack of reasonableness in enforcement of rules. Deliberate non-compliance not effectively detected and consistently prosecuted. Risk that those who have honestly attempted to comply may still be judged as failing (main issue for 2m margins).</td>
<td></td>
</tr>
<tr>
<td>Societal expectations</td>
<td>Some GAECs symbolise a new standard of ‘responsible stewardship’</td>
<td>Negative perceptions of enforcement process.</td>
</tr>
</tbody>
</table>

Negative perceptions of the enforcement of Cross Compliance reported in the consultations appear to be more reflective of media reporting than the experience of farmers who have actually been inspected. Thus, the majority of farmers who completed customer feedback forms following an inspection were positive about the experience. Nevertheless, there is deemed to be an over-reliance on compulsion rather than positive feelings of civic duty or social motivation, which are known to be more effective in the long term as a motivating stimulus for positive behaviour change. This is in part due to a lack of appropriate education of, and understanding by, farmers of the intended benefits of their actions and the evidence to demonstrate that these benefits are linked directly to their actions.

Also important in ensuring the acceptance of Cross Compliance is a level of trust in the inspection process to the effect that deliberate non-complying farmers will be
effectively detected and consistently penalised. The view of one TAP advisor was that the threat of sanctions was not serious enough to deter non-compliance. This was also raised in the report by the 2008 EC Court of Auditors\textsuperscript{24}. The outcome is that farmers who do comply feel aggrieved that others are getting away with not meeting their obligations, which in turn undermines confidence in the system and motivation to comply.

Finally, the evidence from consultations suggests that the introduction of Cross Compliance alongside in 2005 has clearly increased the level of antipathy towards Government and this may impact on farmers’ willingness to change behaviour, particularly in respect of any environmental management which might go beyond the baseline, or in respect of any future new conditions. This is a negative factor that Defra should seek to address, in the context of promoting enhanced positive environmental and welfare impacts from behaviour change due in future.

4.3.4 Attitudes to Individual Requirements

This section considers the effectiveness of individual Cross Compliance standards on changing farmer behaviour. Also it evaluates the systemic impacts on farmer behaviour, which relate to the process of Cross Compliance application. This evaluation is achieved by rating each standard in terms of their positive or negative impact on farmer engagement (awareness and understanding), capacity to change and willingness to change.

Soil Management and Protection

The research shows that whilst the Soil Protection Review (SPR) has raised awareness and some understanding of soil issues, it is often considered by farmers to be a box-ticking exercise with little value. It was on occasion felt to be an unnecessary burden and some farmers have used advisors to complete the review without really understanding the purpose of the form. As farmers sometimes can place no real value on the SPR this has had a negative impact on their willingness to complete it.

Table 31: Behaviour analysis - Soil Management and Protection

<table>
<thead>
<tr>
<th>GAEC 1: Soil Protection Review</th>
<th>Engagement</th>
<th>Capacity to change</th>
<th>Willingness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Awareness</td>
<td>Understanding</td>
<td></td>
</tr>
<tr>
<td>GAEC 2 Post-harvest land management</td>
<td>++</td>
<td>+</td>
<td>—</td>
</tr>
<tr>
<td>GAEC 3 Waterlogged soil</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 4 Burning of crop residues</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

++ = high positive impact, + = moderate positive impact, — = moderate negative impact, — — = highly negative impact, * = no significant impact

Water Quality

SMR 4 has had the most impact on farmer behaviour under the water quality grouping. Inclusion of NVZs in Cross Compliance has increased farmers’ awareness and understanding of their existing obligations. However, those farmers lacking existing administrative support have struggled with the recording keeping requirements. This pressure is likely to increase with the greater demand for information and recording-keeping required under the new NVZ regulations. The evidence from consultation suggests that farmers view this requirement as an unnecessary burden which therefore has a negative impact on their willingness to change their behaviour.

Table 32: Behaviour analysis - Water quality

<table>
<thead>
<tr>
<th></th>
<th>Engagement</th>
<th>Capacity to change</th>
<th>Willingness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Awareness</td>
<td>Understanding</td>
<td></td>
</tr>
<tr>
<td>SMR 2: Ground water</td>
<td>+</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>SMR 3: Sewage sludge</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>SMR 4: NVZs</td>
<td>++</td>
<td>+</td>
<td>—</td>
</tr>
</tbody>
</table>

++ = high positive impact, + = moderate positive impact, — = moderate negative impact, — — = highly negative impact, * = no significant impact

Historic and Landscape Features

Evidence from the study suggests that none of the standards within the historic and landscape features grouping have had a negative impact on farmer behaviour and most have had no impact. The exceptions are GAEC 8 and GAEC 15 which have positively increased farmers’ awareness and understanding of their obligations. Also because farmers appear to understand the environmental rationale for GAEC 15 and do not have difficulties in complying with the requirements, they appear to be willing to change their behaviour with regards this standard.

Table 33: Behaviour analysis - Historic and Landscape Features

<table>
<thead>
<tr>
<th></th>
<th>Engagement</th>
<th>Capacity to change</th>
<th>Willingness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Awareness</td>
<td>Understanding</td>
<td></td>
</tr>
<tr>
<td>GAEC 7 Scheduled Monuments</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 8 Public rights of way</td>
<td>+</td>
<td>+</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 13 Stone walls</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 15 Hedgerows</td>
<td>+</td>
<td>+</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 16: Felling of trees</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 17: Tree POs</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Habitats and Wildlife

Whilst GAEC 5 has increased farmers’ awareness of the requirements for an EIA, their understanding of the requirement is poor, creating uncertainty as to when it applies. The same is also true of GAEC 9, where farmers are aware of the standard but are unsure which practices represent non-compliance, with some stopping acceptable practices from fear of breaching the condition. Furthermore, there are potentially significant costs associated with this GAEC, such as additional feed, housing and labour, which can have a negative impact on farmers’ capacity to change their behaviour. The confusion surrounding this GAEC and the potentially costs can also impact on farmers’ willingness to change their behaviour.

The consultations suggest that GAEC 12 is widely misunderstood, with considerable confusion over the differences between set-aside and GAEC 12. This confusion may impact on farmers’ willingness to comply with the standard. The impact of GAEC 14 in raising awareness of the requirements has been good, in part due to the media attention that it has received. Most farmers also have a good understanding of the requirements, but, unless they are environmentally aware, a poor understanding of the environmental rationale for 2m margins. This lack of understanding of the environmental benefits has contributed to the view of many farmers that 2m margins are an unnecessary burden. This negative view combined with farmers’ resentment that not all EU countries have this condition has had a negative impact on their willingness to comply with the standard.

Table 34: Behaviour analysis - Habitats and Wildlife

<table>
<thead>
<tr>
<th>GAEC 5 Environmental Impact Assessment</th>
<th>Engagement</th>
<th>Capacity to change</th>
<th>Willingness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+</td>
<td>—</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 6 Sites of Special Scientific Interest</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 9: Overgrazing/supplementary feeding</td>
<td>+</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>GAEC 10 Heather &amp; grass burning</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 11: Control of weeds</td>
<td>+</td>
<td>+</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 12 Eligible land not in production</td>
<td>+</td>
<td>—</td>
<td>*</td>
</tr>
<tr>
<td>GAEC 14 Protection of hedgerows and watercourses</td>
<td>++</td>
<td>—</td>
<td>*</td>
</tr>
<tr>
<td>SMR 1: Wild birds</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>SMR 5: Habitats and species</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Animal Identification

Prior to Cross Compliance farmers’ compliance with these SMRs was low at less than 50%. The evidence suggests that Cross Compliance has not improved these compliance rates, but has significantly increased awareness of the issue, although a lack of understanding still exists in relation to recording cattle movements and BCMS links. The effort required to comply in terms of increased record keeping has had a negative impact on smaller livestock farms that may lack administrative support and were already struggling with the paperwork. The consultations suggest that farmers generally consider these SMRs (and by inference the underlying statutory requirements for animal identification) to be too complex and an unnecessary burden. This may have a negative impact on their willingness to change their behaviour.

Table 35: Behaviour analysis - Animal Identification

<table>
<thead>
<tr>
<th>SMR 6: Animal identification and registration - pigs</th>
<th>Engagement</th>
<th>Capacity to change</th>
<th>Willingness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>++</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>SMR 7-8: Cattle identification</td>
<td>++</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>SMR 8a: Animal identification and registration – sheep and goats</td>
<td>++</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Control of Chemicals, Food and Feedstuffs

The SMRs covering the Control of chemicals, food and feedstuffs grouping have had very little impact, either positive or negative on farmer behaviour, although some evidence suggests that SMR 9 may have increased awareness of farmers’ obligations in respect of plant protection products.
Table 36: Behaviour analysis - Control of Chemicals, Food and Feedstuffs

<table>
<thead>
<tr>
<th>SMR 9: Plant protection products</th>
<th>SMR 10: Restrictions on the use of substances having hormonal or thyrostatic action and beta-antagonists</th>
<th>SMR 11: Food and feed law</th>
<th>SMR 12: TSEs</th>
<th>SMR 13, 14, and 15: Control of animal diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement</td>
<td>Capacity to change</td>
<td>Willingness to change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness</td>
<td>Understanding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Animal Welfare**

The animal welfare SMRs were only introduced in 2007 so the impact on farmer behaviour is still unclear. For the small minority of farmers who were non-compliant before 2007 there appears to have been an increase in the awareness and understanding of the requirements. However, the view of consultees was that too many penalties were being applied for minor breaches, such as record keeping, when the focus should be on those breaches with significant effects on animal welfare. This betrays a lack of understanding of the limited scope for interpretation of the rules and the risk of disallowance by the EC if protocols are not observed.

Consultees also reported a considerable amount of duplication and cross-over with Quality Assurance Scheme inspections, which has antagonised some farmers. The combination of these factors has created some negative attitudes towards the animal welfare SMRs which has impacted on willingness to change their behaviour.

Table 37: Behaviour analysis - Animal Welfare

<table>
<thead>
<tr>
<th>SMR 16, 17 and 18: Animal welfare</th>
<th>Engagement</th>
<th>Capacity to change</th>
<th>Willingness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Awareness</td>
<td>Understanding</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>+</td>
<td>*</td>
<td>—</td>
</tr>
</tbody>
</table>

**Systemic factors relate to effects that result from the Cross Compliance application, rather than a result of the specific standards. These are considered in Table 38.**
Table 38: Behaviour analysis - Systemic factors

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Capacity to change</th>
<th>Willingness to change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>Understanding</td>
<td></td>
</tr>
<tr>
<td>Inspection procedures</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Enforcement style</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Defra publicity / information</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Momenta workshops</td>
<td>++</td>
<td>+</td>
</tr>
</tbody>
</table>

++ = high positive impact, + = moderate positive impact, — = moderate negative impact, — — = highly negative impact, * = no significant impact

The risk of inspection has acted as a spur to farmers seeking to understand pre-existing legislative and GAEC requirements. However, negative views about the inspection procedures portrayed in the media (and from this research, also held by advisers) have had a negative impact on farmers’ attitudes towards the programme and their willingness to change their behaviour.

There is evidence that whilst the Defra booklets have helped to create awareness of farmers’ obligations, they have not always clarified the details of the requirements. Also the quantity of new information farmers have had to absorb during the period since 1 January 2005 has meant that some are currently feeling overwhelmed by the number of booklets they have to read. Farmers have had to invest a considerable amount of time in understanding the requirements and this has been particularly difficult for those smaller farms that are already struggling with paperwork and lack existing advisory support. This has contributed to negative views of the programme and impacted on some farmers’ willingness to change their behaviour. In contrast, the Momenta workshops have been effective in raising general awareness and understanding of the requirements and have generally been positively received by the farming community, but it is often difficult for farmers to gain more site-specific and/or complex individual advice in such settings.

It is clear that there is no perception that the support available through FAS, including Momenta workshops, is part of the same Cross Compliance policy instrument as inspection; it is seen as distinct and concerned only with technical issues. This is a fundamental flaw in the implementation of Cross Compliance. While it is important that advice and inspection are separate, and seen to be so (EC 2008), they should operate in tandem to deliver the desired outcomes.

The overall impacts on farmer behaviour will be cumulative and will vary between farms and contexts. For example, the process impacts (concerning how inspections and enforcement are perceived and prepared for) will be influenced by the perceived impacts in respect of particular conditions, which will be dependent upon natural/biophysical factors and socio-cultural conditions, such as the effectiveness of farmers’ social networks for learning. Thus it would be inappropriate to use the tables above showing the anticipated impact of individual standards on farmer behaviour as a way of evaluating the case for retaining or removing particular standards from the Cross Compliance package.
4.3.5 Non-Compliers Consultation

The analysis in this evaluation is based on a farmer sample drawn from the ADAS Farmers Voice™ survey, using a sub-set of respondents who agreed to be contacted again. While we are content that the sample is representative in terms of farm size and type, there may be some bias in terms of under-representation of ‘non-engaged’ farmers i.e. those who do not respond positively to surveys and may also be less likely to attend workshops and ultimately be non-compliant in terms of Cross Compliance.

If such non-compliant farmers are indeed a ‘hard to reach’ group, it may require a different approach in terms of changing behaviour. As the structured telephone survey did not provide the opportunity to fully explore and probe reasons for non-compliance, we propose that a further qualitative stage is conducted in the form of in-depth interviews amongst a targeted sample of non-compliers to provide greater insight. This might consider why they have not been ‘won over’ and what action, communication or changes are needed to alter their thinking and their behaviour so that they become compliant in future.

A list of non-compliant farmers was not available to the consultants for this work, either from the wider farmer survey or from the RPA25. We suggest that this exercise is completed as a follow-up to the evaluation to help direct the FAS input and improve targeting of inspections. There are clearly problems with identifying a sample as those who have been penalised following inspection may not be receptive to giving their time for interview and there are issues of data protection. However, this is a necessary exercise and we can envisage ways in which respondents might be recruited on a voluntary basis.

4.4 Side Effects

The objectives of Cross Compliance are that farmers respect a set of baseline conditions, mainly backed by legislation or relating to good agricultural and environmental practice, in return for receiving subsidy payments under SPS. The Commission’s communication on “Preparing for the Health Check of the CAP Reform” stated that cross compliance is, and will remain an essential element of the CAP with two stated objectives:

- to contribute to the development of sustainable agriculture;
- to make the CAP more compatible with the expectations of society at large (i.e. that agricultural payments should no longer be granted to farmers who fail to comply with basic rules in certain important areas of public policy).

In addition at a recent CAP Health Check Working Group the Commission set out criteria to define the scope of cross-compliance along the following lines:

- Measures should have a direct link to agricultural activity and relate directly to the farmer;
- Measures should be enforceable;
- The costs should be commensurate with the benefits.

25 RPA was unable to give out names, contact details and breach information for non-complaint farmers because it would breach their data protection obligations.
However, in implementing Cross Compliance, there might be a range of unintended side effects, both positive and negative. Table 39 sets out a number of side effects across the range of standards where some evidence is available; this analysis is unlikely to be comprehensive but should capture key effects.

**Table 39: Positive Side effects of Cross Compliance**

<table>
<thead>
<tr>
<th>Positive effects</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional engagement with advisers through workshops and support for cross compliance will improve access to knowledge and potentially engagement with Environmental Stewardship</td>
<td>Over half of the farm survey respondents use advisers or agents for Cross Compliance</td>
</tr>
<tr>
<td>The inclusion of SMRs in the standards has increased awareness (and understanding) of legislative requirements and will have a marginal impact on compliance</td>
<td>Workshops</td>
</tr>
<tr>
<td>Local Authorities and other agencies with responsibility for enforcing legislation are able to reduce public spend on prosecuting some breaches as Cross Compliance is a more cost effective approach.</td>
<td>Policy heads workshop</td>
</tr>
</tbody>
</table>

**Table 40: Negative Side effects of Cross Compliance**

<table>
<thead>
<tr>
<th>Negative effects</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross compliance has a significant fixed cost component in terms of the time taken to understand the necessary requirements, maintain records etc. This will be similar for all farms, regardless of size and hence might be expected to have a disproportionate impact on smaller farms.</td>
<td>RPA data indicates very small farms were the most likely to fail an inspection? Workshops</td>
</tr>
<tr>
<td>Lack of understanding of the standards is leading to some unnecessary spend, notably GAEC 9 which will impact on viability of individual businesses and may also cause other problems e.g. breaches of SMR4 or SMR18 due to extended housing period.</td>
<td>Workshops</td>
</tr>
<tr>
<td>While some degree of concern provides leverage for those farms that know that they are in breach of conditions, lack of clarity about the rules, the inspection process and actual or perceived risk of penalties is causing undue anxiety for a minority of farming households.</td>
<td>Workshops Farmer survey (around three quarters of farmers have no problems complying with standards)</td>
</tr>
<tr>
<td>The lack of a joined-up approach between farmer support through FAS and inspection leads to a lack of clarity over what is required to meet standards and the inspection process. Positive RPA customer feedback highlights the schism between perception and reality.</td>
<td>Workshops Media analysis</td>
</tr>
<tr>
<td>Increasing the cross compliance burden may be counter-productive as more farmers will gamble on not being inspected or risk the penalty, rather than incur additional costs</td>
<td>Workshops TAP consultations</td>
</tr>
</tbody>
</table>
5 Costs and Benefits of Cross Compliance

5.1 Farmers’ Costs

The net cost of Cross Compliance to farmers is the combination of additional expenditure (e.g. for record keeping or investment in additional inputs), revenue forgone (e.g. from land in buffer strips) and costs saved (e.g. from reduced inputs). In 2006 and 2007, respondents to the Momenta survey were asked whether there had been any costs or savings arising from Cross Compliance. The results are reported in Table 41. Although a majority of farmers questioned thought that Cross Compliance had resulted only in additional costs, the proportion believing that they had made some savings increased from 8% to 13% between 2006 and 2007.

Table 41: Additional costs or savings arising from Cross Compliance

<table>
<thead>
<tr>
<th>Response</th>
<th>2006 (%)</th>
<th>2007 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra costs only</td>
<td>62.4</td>
<td>54.5</td>
</tr>
<tr>
<td>Savings in some areas but extra costs in others</td>
<td>5.7</td>
<td>8.9</td>
</tr>
<tr>
<td>Savings only</td>
<td>2.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Neither</td>
<td>26.8</td>
<td>25.8</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

*Source: Momenta*

In this evaluation, we used the ADAS Farmers Survey to collect evidence of the private costs and benefits associated with all cross compliance standards (see Section 4 in the report). This forms the basis for the analysis in this section.

5.1.1 Additional costs

This section looks at farm costs of compliance. However, only the additional costs of meeting Cross Compliance standards are relevant, relative to a 'no policy' counterfactual scenario. While care was taken to ask this question specifically in the survey, there is likely to be some element of subjective response where costs may be underestimated or overstated. Where this applies, a minority of responses may be of sufficient scale, relative to the majority, that the distribution of responses is severely skewed. In such cases, the median value is a more representative measure of the average than the mean.

The main possibilities:

1. **No additional costs**: This might include farmers who already complied with the mandatory standards (SMRs and GAECs backed by legislation) before Cross Compliance was introduced; in this case there would be no extra costs but time input would be needed to understand the requirements for new standards (not covered by existing legislations). For standards with no pre-existing legislations, costs may be offset through participation in other schemes e.g. Environmental Stewardship, or embedded into existing farm practice e.g. record-keeping or LERAPS buffer strips; as such there are no additional costs associated with Cross Compliance.

2. **Additional costs**: For farmers who have not complied before, there are two types of costs they will incur (Farmer M. 2007); farmers who have not complied with
pre-existing legislations would incur a cost in order to comply or a penalty if their non-compliance is detected by inspection authorities. However, this type of cost (Type I: compliance costs/penalties) incurred should not be attributed to Cross Compliance. For those requirements without pre-existing legislations, there would be a new and additional cost (Type II) which is attributable. For all the SMRs and some GAEC standards which are based on pre-existing legislation, there are no extra costs related to cross compliance per se, but some costs may arise in relation to record keeping and administration. For most of the GAEC requirements which were introduced with cross compliance, there are additional costs that should be attributed to Cross Compliance. An illustration of these two types of farm costs and where the SMR and GAEC standards fit in are shown in Figure 11.

<table>
<thead>
<tr>
<th>PRE-EXISTING LEGISLATION</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO COSTS</td>
</tr>
<tr>
<td></td>
<td>(although possibly some costs in relation to the time spent on understanding cross compliance requirements)</td>
</tr>
<tr>
<td></td>
<td>GAEC 1-3, GAEC 9, GAEC 11 (control of no-native weeds), GAEC 12, 13, 14, 15 (cutting dates element).</td>
</tr>
<tr>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>NO COSTS</td>
<td>TYPE I: COST OF MEETING EXISTING LEGISLATIONS</td>
</tr>
<tr>
<td>All SMRs except SMR 7, 8 &amp; 8a; SMR 16-18; GAEC 4, 5, 6, 7, 10, 15 (Hedgerow regulation element), 16, 17.</td>
<td>that pre-exist Cross Compliance</td>
</tr>
<tr>
<td>SMR 7, 8 and 8a; SMR 16-18</td>
<td></td>
</tr>
</tbody>
</table>

Additional COMPLIANCE requirement

**Figure 11: Farm costs associated with Cross Compliance**

### 5.1.2 Cost categories

With regard to the additional farm costs associated with cross compliance, several cost categories were suggested by a study on possible impacts of Cross Compliance on Farm Costs and Competitiveness (Farmer, M. 2007): administrative costs, investment costs and production costs. These cost categories are described in Table 42.
Table 42: Possible types of costs associated with meeting Cross Compliance

<table>
<thead>
<tr>
<th>Administration costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The time needed to become familiar with the SMRs and GAEC standards, perhaps as described in cross compliance guidance material produced by national administrations.</td>
</tr>
<tr>
<td>• The time needed to complete any related documentation, for example a management plan, or to apply for a licence.</td>
</tr>
<tr>
<td>• The time involved in record keeping.</td>
</tr>
<tr>
<td>• The time taken up with facilitating cross compliance inspections.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Investment costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Costs associated with the need to purchase new equipment or improve facilities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Production costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Costs arising from a necessary change in production practices that may result in a reduced yield.</td>
</tr>
</tbody>
</table>


5.1.3 Empirical Evidence

In the ADAS farmers’ survey on Cross Compliance, farmers were asked to give an indication of extra costs incurred to make a change as a result of Cross Compliance in the past 12 months. The cost elements based on the above mentioned cost categories include extra time spent (administrative costs), extra costs (investment costs) incurred and reduction in revenues (production costs). The farm time element (in hours) was translated into costs based on a farm labour rate at £16.23 per hour (used by Defra for Impact Assessment work). A small proportion of farmers claimed to incur a very high cost, which skews the average cost and overstates actual position on most farms; the median numbers were considered a better indicator and were as the basis for farm costs estimates in the evaluation. The time spent for most of the groups of standards is in the range of 1-10 hrs and the extra costs are below £500, while the median values show that there is no reduction in revenue as a result of Cross Compliance.

The results (expressed in midpoint values of medians) are shown in Table 43. The farm costs for each group of Cross Compliance standard are in the range from £80 to £331 per farm. However, these cost figures are only for those farms that made changes in order to comply, which represent from 7% to 32% of the total population of the sample, varying between different groups of Cross Compliance standards. If we use these percentages to extrapolate the costs for each group of standards and aggregate the costs for all groups, the estimate of total farm cost of Cross Compliance is £434 per farm per year.
Table 43: Total annual farm costs (estimated from ADAS survey 2008)

<table>
<thead>
<tr>
<th>Standards</th>
<th>Time (£/farm)*</th>
<th>Extra cost (£/farm)**</th>
<th>Loss in revenue (£/farm)</th>
<th>Total of farms reporting change (£/farm)</th>
<th>% of those incurring cost</th>
<th>Total for all farms (£/farm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil management and protection (GAEC 1-4)</td>
<td>81.15</td>
<td>250</td>
<td>0</td>
<td>331</td>
<td>32%</td>
<td>106</td>
</tr>
<tr>
<td>Water Quality (SMR2,3, 4)</td>
<td>81.15</td>
<td>250</td>
<td>0</td>
<td>331</td>
<td>21%</td>
<td>70</td>
</tr>
<tr>
<td>Historical and Landscape features (GAEC 7, 8, 13, 15-17)</td>
<td>0</td>
<td>250</td>
<td>0</td>
<td>250</td>
<td>13%</td>
<td>33</td>
</tr>
<tr>
<td>Habitats and Wildlife (GAEC 5, 6, 9, 10,11,12,14; SMR 1, 5)</td>
<td>81.15</td>
<td>0</td>
<td>0</td>
<td>81</td>
<td>29%</td>
<td>24</td>
</tr>
<tr>
<td>Animal Identification (SMR 6, 7,8 and 8a)</td>
<td>81.15</td>
<td>250</td>
<td>0</td>
<td>331</td>
<td>17%</td>
<td>56</td>
</tr>
<tr>
<td>Control of chemicals, food and feedstuffs (SMR 9,10,11)</td>
<td>81.15</td>
<td>250</td>
<td>0</td>
<td>331</td>
<td>18%</td>
<td>60</td>
</tr>
<tr>
<td>Control of animal diseases (SMR 12-15)</td>
<td>81.15</td>
<td>250</td>
<td>0</td>
<td>331</td>
<td>26%</td>
<td>86</td>
</tr>
<tr>
<td>Animal Welfare (SMR (16-18)***</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7%</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>1987</td>
<td>44%</td>
<td>434</td>
</tr>
</tbody>
</table>

* The associated cost is based on the range mid-point (0-10 hrs) and multiplied by the hourly rate of £16.23
** The associated cost is based on the range mid-point e.g. £250 for £0-500
*** There is no reliable figure given for Animal Welfare standards due to insufficient number of respondents.

However, as discussed in the previous section, not all these costs should be attributed to Cross Compliance. Only additional costs associated with Cross Compliance should be accounted for on the basis that Cross Compliance standards have delivered additional benefits. A list of such standards is shown in Table 44 with estimated farm costs for relevant groups of standards as indicated in the farmers' survey. The additional farmer costs are estimated to be between £163 per farm per year (excluding the costs in relation to SMR 4, 6, 7, 8 and 8a) to £289 per farm per year (if including the costs of SMR 4, 6-8a).

This estimate is a little lower than the total farm costs estimated at the Regulatory Impact Assessment (RIA) of Cross Compliance in July 2004 for GAEC conditions, which indicating that farm costs are in the range of £350 to £730 per farm (Table 45) for medium sized farms across all farm types for all GAEC standards. The possible reason for why our estimate is lower than the RIA estimate is that we only include those standards with additional benefits that can attributed to Cross Compliance while the RIA assessment includes all GAEC standards.
Table 44: Additional farm costs (estimated from ADAS survey 2008)

<table>
<thead>
<tr>
<th>Standards</th>
<th>Type of farm costs</th>
<th>Evidence on costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 4</td>
<td>compliance/penalties</td>
<td>(£70)</td>
</tr>
<tr>
<td>SMR 6, 7, 8 &amp; 8a</td>
<td>compliance/penalties</td>
<td>(£56)</td>
</tr>
<tr>
<td>SMR 16</td>
<td>compliance/penalties</td>
<td>-</td>
</tr>
<tr>
<td>SMR 17</td>
<td>compliance/penalties</td>
<td>-</td>
</tr>
<tr>
<td>SMR 18</td>
<td>compliance/penalties</td>
<td>-</td>
</tr>
<tr>
<td>GAEC 1, 2 &amp; 3</td>
<td>Additional</td>
<td>£106 (for all soil management standards)</td>
</tr>
<tr>
<td>GAEC 9, 11, 12 &amp; 14</td>
<td>Additional</td>
<td>£24 (for all Habitats and Biodiversity standards)</td>
</tr>
<tr>
<td>GAEC 13 &amp; 15</td>
<td>Additional</td>
<td>£33 (for all Historical and Landscape Features standards)</td>
</tr>
</tbody>
</table>

Table 45: Illustrative per farm cross compliance costs (medium farm size)

<table>
<thead>
<tr>
<th>Farm type</th>
<th>Farm Size</th>
<th>Cross Compliance £ per farm</th>
<th>Cross Compliance as % Single Farm Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
<td>Medium</td>
<td>730</td>
<td>2%</td>
</tr>
<tr>
<td>General cropping</td>
<td>Medium</td>
<td>480</td>
<td>2%</td>
</tr>
<tr>
<td>Dairy</td>
<td>Medium</td>
<td>350</td>
<td>2%</td>
</tr>
<tr>
<td>Lowland cattle and sheep</td>
<td>Medium</td>
<td>520</td>
<td>2%</td>
</tr>
<tr>
<td>LFA cattle and sheep</td>
<td>Medium</td>
<td>550</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: Defra (2004)

5.1.4 Aggregation to England level

In order to aggregate the cost of Cross Compliance per farm (£163 to £289) to the England level, it is necessary to consider the total number of farms required to meet the standards and the extent to which the ‘per farm’ estimates apply. Statistical data on farms required to meet Cross Compliance is not available but SPS farms, for which data is available, represent a good proxy. The other issue is farm size; while 64% of holdings are spare time farms (SLR <0.5 SLR), less than half of these (47%) claim Single Payment. Further, Figure 12 shows that less than 10% of land is farmed by this group.

---

Holdings in SPS
Land in SPS

![Bar chart showing distribution of farms by size (SLR) and Single Payment Scheme](chart.png)

Figure 12: Distribution of farms by size (SLR) and Single Payment Scheme

For the purposes of this evaluation, we have presented the England level estimates of farm costs associated with Cross Compliance for full time farmers only and for the whole population claiming SPS. While the latter may overstate the impacts due to the limited land area, administration costs e.g. record keeping will be borne by all holdings. The farm-level cost data is based on the farmer survey which was weighted to reflect the farm type profile of farms which receive SPS and are greater than or equal to 0.5 SL. To this extent the aggregate data for all farms is likely to overstate the cost at England level.

Table 46: Total farmers’ cost of Cross Compliance in England

<table>
<thead>
<tr>
<th></th>
<th>Full time farms claiming SPS (excluding farms with &lt; 0.5 SLR)</th>
<th>All farms claiming SPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of farms subject to Cross Compliance</td>
<td>53,492</td>
<td>108,924</td>
</tr>
<tr>
<td>Land covered by Cross Compliance</td>
<td>7.7 m ha</td>
<td>8.5 m ha</td>
</tr>
<tr>
<td>GAEC only</td>
<td>£163</td>
<td>£163</td>
</tr>
<tr>
<td>GAEC and SMRs</td>
<td>£289</td>
<td>£289</td>
</tr>
<tr>
<td>Per farm costs</td>
<td>£8.7 m</td>
<td>£15.5 m</td>
</tr>
<tr>
<td>Aggregated farm costs</td>
<td>£8.7 m</td>
<td>£17.8 m</td>
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<tr>
<td></td>
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<td>£31.5 m</td>
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</tbody>
</table>
The context for these costs is the total budget for Single Payments which in 2007 was £1.45 billion. Cost estimates therefore range from 0.6% to 2.2%. While these costs are relatively low, the evidence from the evaluation is that they do not fall proportionately and estimated averages must be treated with extreme care. This is further reinforced by the evidence from the follow-up survey of farmers reporting very high costs, although much of the costs may be associated with meeting legislative standards rather than additional costs associated with the implementation of Cross Compliance.

5.2 Public Value of Cross Compliance

In this section we consider the environmental impacts of cross compliance measures and how they relate to societal welfare. The scale of this project does not allow primary valuation studies. As such this section will draw the links from the identified environmental benefits to their impact on economic value and consider if there are existing valuation estimates appropriate to be transferred to assess Cross Compliance impacts. To be able to transfer such benefit values from existing literature not only do we need appropriate existing valuation studies but also an accurate assessment of the impacts themselves.

The analysis at sections 2 and 3 of this report describes the costs and benefits of measures and the impact of Cross Compliance on uptake management. It illustrates the complexities of assessing additionality in environmental improvements due to cross compliance measures as well as the large amount of variation in the potential for such improvement.

The environmental valuation literature is large and growing. However, those relating to the UK are not particularly widespread. Most primary studies tend to focus on specific issues or locations but many policy questions relate to much greater scales. To provide initial estimates of the value the positive environmental impacts of cross compliance (without conducting primary research) we need to:

- Identify the additional impacts of cross compliance- assess which measures provide benefits and define what those benefits are e.g. water, soil, green house gases etc.;
- Link these impacts with outcomes; and
- Value the outcomes - link the cross compliance benefits to valuation data

Identified beneficial policy impacts can be valued using a variety of techniques depending on the nature of the benefit. However, specific primary valuation studies are expensive, time consuming and unrealistic within the scope of this project. The technique of benefits transfer is viewed as a reasonable alternative to such primary studies and has been used widely when larger scale estimates are required. Benefits transfer is the process whereby value estimates in an existing study are applied to a new context with similar characteristics. The Defra guidance on valuing ecosystem services (Defra 2007) suggests that “the use of such transfers is seen as being essential to the more practical use of environmental values in policy-making”.

5.2.1 Identifying additional impacts

Section 2 of this report describes all the measures and assesses their impacts. The following measures were viewed as having a positive additional impact:
Soil management and protection/water quality

GAEC 1, 2, 3 (general requirements for soil management & protection, post harvest management (cover crops), waterlogged soil)
SMR 4 (NVZ)

Historic and Landscape Features

GAEC 8 (public rights of way)
GAEC 13 (Stone walls)
GAEC 14 (Protection of hedgerows and watercourses)
GAEC 15: Hedgerows

Habitats and wildlife

GAEC 9: Overgrazing and unsuitable supplementary feeding
GAEC 11: Control of weeds (non-natives)
GAEC 12: Eligible land not in agricultural production

In addition, SMR 6-8a inclusive are viewed are providing benefits in terms of animal welfare.

5.2.2 Linking Impacts to Outcomes

From the Stage 1 evidence, the following table shows the initial linkages drawn from the measures to specific environmental goods and services. The categories of environmental goods and services are derived from those in the Environmental Accounts for Agriculture (Defra, 2008b). In addition Stage 1 identified three additional impacts not categorised in the accounts. These are pest control, animal welfare, and recreation and these are shown in the last three rows.

Table 47: Positive environmental outcomes from cross compliance measures

<table>
<thead>
<tr>
<th>Annual impacts on society</th>
<th>SMR 4</th>
<th>SMR 6</th>
<th>SMR 7</th>
<th>SMR 8</th>
<th>SMR 8a</th>
<th>GAEC 1</th>
<th>GAEC 2</th>
<th>GAEC 3</th>
<th>GAEC 8</th>
<th>GAEC 9</th>
<th>GAEC 12</th>
<th>GAEC 13</th>
<th>GAEC 14</th>
<th>GAEC 15</th>
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<tr>
<td>Landscape &amp; habitats</td>
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<td>Linear features</td>
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<td>Annual impacts on other sectors</td>
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<td>Present value of air emissions costs</td>
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<tr>
<td>Other impacts not in accounts</td>
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<td>Pest control</td>
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<td>Animal welfare</td>
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<td>Recreation</td>
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</table>
To move from this point quantifying the value provided by these additional impacts on environmental goods and services the scale of the additional impact needs to be assessed before applying them to appropriate valuations. For each of the highlighted cells, an assessment was made as to whether the specific measure provided additional benefits of the order of:

- Negligible change
- Less than 1% change
- 1% change
- More than 1% change

These relatively small additional benefits were considered appropriate for Cross Compliance. The results of this assessment are shown in table 48. It should be noted that there is considerable uncertainty in many of these estimates.

The estimates of impact in the tables are detailed below including the references to estimates of change in Table 48:

**Landscape and habitats:**

Outside agri-environment schemes, GAEC 9 is the only means of protecting against overgrazing (or undergrazing), which can have major effects especially in the uplands. Dwarf shrub heath is a habitat that is particularly affected. Change in this habitat between 1990 and 1998 was 20,000ha, equivalent to 13% of stock or 1.65% per annum. Much, though not all, of this decrease is likely to be a result of overgrazing. (Howard et al. 2003)

**Linear Features:**

2. It is assumed that less than 1% of stone walls would be removed each year in the absence of Cross Compliance. There is little evidence on which to base this, but only 3 derogations from GAEC 13 were requested over the period 2006-8. The environmental accounts do not include stone walls in the valuation but are included here for simplicity.

3. The impact of GAEC 14 is negligible; the environmental accounts valuation refers to length of hedge which will not be affected by adding an herbaceous strip. However, it will enhance the quality; if this were accounted for impact will probably be >1%.

4. GAEC 15 protects the hedge stock against removal. The 1998 hedge stock was 468,000 km and removal over the previous 8 years equated to 15,000 km or 1875 km/yr on average (0.4% of stock). This was balanced by planting, but CS planting grants no longer available (Petit et al., 2003).

The aggregate impact has been estimated at 1%.

**Biodiversity**

5. GAEC 9 protects against loss of biodiversity through overgrazing and as already stated it provides useful protection outside agri-environment schemes. Correct grazing practice can benefit biodiversity e.g. black grouse numbers and breeding success increased where grazing pressure was reduced. (Calladine et al., 2002). The impact has been evaluated at >1%.
Table 48: Estimates of the scale of the additional impacts of cross compliance

<table>
<thead>
<tr>
<th>Annual impacts on society</th>
<th>SMR</th>
<th>GAEC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Landscape &amp; habitats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodiversity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivers</td>
<td>&lt;1%</td>
<td>- &gt;1%</td>
</tr>
<tr>
<td>Lakes</td>
<td>&lt;1%</td>
<td>- &gt;1%</td>
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<tr>
<td>Bathing waters</td>
<td>&lt;1%</td>
<td>- &gt;1%</td>
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<tr>
<td>Estuaries</td>
<td>&lt;1%</td>
<td>- &gt;1%</td>
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<tr>
<td>Abstraction</td>
<td>&lt;1%</td>
<td>- &gt;1%</td>
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<tr>
<td>Provision of waste sink</td>
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<td>Agricultural waste</td>
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<table>
<thead>
<tr>
<th>Annual impacts on other sectors</th>
<th>SMR</th>
<th>GAEC</th>
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</thead>
<tbody>
<tr>
<td>Drinking water</td>
<td>&lt;1%</td>
<td>1%</td>
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<tr>
<td>Pollution incidents</td>
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<td>1%</td>
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<td>Flooding</td>
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<td>Soil erosion</td>
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<tr>
<td>Climate change</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td>1%</td>
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<td>Pest control</td>
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<tr>
<td>Animal welfare</td>
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<tr>
<td>Recreation</td>
<td>&gt;1%</td>
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</table>

* Negative impact due to disturbance especially where dogs are walked - has major impact on ground nesting birds.
6. Although the herbaceous strip provided by buffer strips in GAEC 14 can provide a valuable habitat and food source, the narrow nature of these strips means that actual impacts on populations are likely to be small. Using farmland birds as the measure (as in the Jacobs report), it is estimated that the impact would be less than 1% change in population per annum because of the narrowness of the strips (in practice probably a metre or less once the growth of the hedge is accounted for). However, for other forms of wildlife the impact may be greater than 1%. The impact has been estimated at >1%.

Rivers, lakes and estuaries

7. Although nitrate leaching is also dependent on soil type, this is accounted for in the requirements of SMR 4. The impact of SMR 4 (i.e. the presence of NVZ compared to the absence of NVZ - cf an increase in total NVZ area) is likely to range from < 1% (for e.g. cereal farms) to > 1% for farms handling organic manures.

8. The impact of GAEC 1-3 is likely to be positive, but the scale of the impact is highly dependent on soil type and crop and the extent of substantive change in practice beyond maintaining the SPR. The impact could vary from <1% to >1% on vulnerable land (arable, general cropping, outdoor pigs and dairy farms with maize where either soils are vulnerable, slopes are steep, or watercourses are apparent).

9. The impact of GAEC 9 on water and soil quality is in the order of 1%. Measures necessary to prevent overgrazing will differ depending on the vulnerability of the soil / location and vegetation type. The default ‘absence’ of this GAEC is therefore overgrazing, thus its prevention should have notable benefits. These benefits may not be as great as SMR 1, 2, and 3, hence the value of >1% has not been assigned to this GAEC.

10. The impact of GAEC 14 on water quality will vary with pollutant and initial risk, from negligible (e.g. nitrates can bypass buffers on under-drained land) to 1% (e.g. reduction in pesticide drift). The buffers created under GAEC 14 are generally narrower than those used in primary research, hence it may be inappropriate to propose a benefit of >1%, although there may be some situations where this could occur.

The aggregate impact is estimated at 4% for rivers, lakes and estuaries.

Drinking water

11. Additional compliance with SMR 4 together with meeting the GAEC standards 1-3, 9 and 14 will contribute to improved water quality and in principle reduce the cost of treatment to remove the additional pollution in the river. The aggregate impact is estimated at 3%.

Climate Change

12. There may be some small positive effects from SMR 4 and GAEC 1-3 especially on N₂O but the size of the effect is not known. The aggregate impact is estimated at 1%.

Animal welfare

13. No effect from SMR 6-8 most of the time but major effect in the event of a disease outbreak. On the basis that such outbreaks occur more than once in 100 years, the impact has been evaluated at >1%.
5.2.3 Valuing Outcomes

Given the scale of this element of the project, primary environmental valuations could not be undertaken. The environmental valuation literature is expanding rapidly and there is a desire for such information to be used at a policy level. Two large projects have been completed recently that apply many of the primary studies to find appropriate estimates that can be scaled up to:

- estimate national values for ecosystem services (Defra NR0108, April 2008)
- provide environmental accounts for agriculture (Defra SFS0601, April 2008)

Both projects utilise benefits transfer and represent the most thorough recent literature review of primary studies that are applicable to the impacts of cross compliance in England. The Defra report NR0108 on Valuing England’s Terrestrial Ecosystem Services presented a comprehensive overview of the issues involved in valuing the environment as well as providing estimates for a number of the services. However, many services were not valued. For example, in terms of ecosystem services, soil formation and functioning is viewed as a supporting service (along with pollination, nutrient cycling etc) and was not included in the valuation work of NR0108. The reason for their exclusion was as follows:

... *supporting services can be defined as the services that are necessary for the production of all other ecosystem services. It can therefore be argued that the value of supporting services is infinite as without them there would be no other services or final benefits*

On the other hand, SFS0601 provides a comprehensive range of valuation estimates covering almost all of the impacts identified in Step 1.

**Environmental accounts**

The environmental accounts provide a framework for measuring and valuing the positive and negative impacts of agriculture on the environment. Physical data used was the most recent available and Appendix 4 of the report; the spreadsheet is detailed at Appendix 10, tables 72-74 and referenced below\(^\text{27}\). It provides an audit trail of the calculations.

The detail in the sheets contains the original valuation reference and the amount of environmental asset to which the value is applied. Below are the comments on the uncertainty with respect to the scale (and in particular if they are viewed as underestimates) of the figures used in the accounts. The figures in the tables are the positive and negative environmental flows from agriculture. The data is shown as reported by the accounts with figures for England and Wales often reported together. The "Total" column is for the UK. The arrows in the uncertainty column show the degree and scale of uncertainty, so three upward pointing arrows infers great uncertainty with the expectation that the figures in the accounts are in reality much greater.

The values for air emissions are not strictly compatible with the timescales for the measurement of annual income as they represent the present value of the whole lifetime of damages from units of pollutant emitted in the accounting year.

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\(^{27}\) Spreadsheets of these accounts can be downloaded from [https://statistics.defra.gov.uk/esg/reports/envacc/SFS0601App4_FINAL_rev4.xls](https://statistics.defra.gov.uk/esg/reports/envacc/SFS0601App4_FINAL_rev4.xls)
Other benefits
A number of potential impacts identified are not included in the Environmental Accounts for Agriculture. These include pest control, animal welfare and recreation.

a) Pest control
Pimentel et al (2001) used the following methods to estimate the economic losses to the UK due to different groups of invasive species. To include indigenous pests we exclude the adjustment Pimentel makes for invasives and exclude vertebrate pests.

Weeds: In agriculture, weeds cause a reduction of about 10% in crop yields (Oerke et al., 1994) but this can be as high as 32%. This equates to around £1.95 billion (converted at $1.64) in lost crop production and given that alien weeds account for 43% of all weeds, it is estimated that £850 million of losses are due to invasive weeds.

Insect and mite pests: Pimental et al (2001) state that there are around 1,500 species of arthropods in the UK of which around 30% are alien. Combining the estimate of 10% crop losses from arthropods (Oerke et al., 1994) and the proportion of species that are alien produces an estimated loss of £585 million due to alien arthropods.

Plant pathogens: It is estimated that 74% of UK plant pathogens are introduced species, mostly brought in with seeds and other crop parts. Oerke et al (1994) estimate that pathogens cause losses of 8.3% of potential production, which equated to around £1.65 billion. If 74% of these losses are due to alien species, then around £1.22 billion of damages are associated with alien plant pathogens.

These estimates are all for impacts on the value of crop output and might therefore be argued not to be environmental impacts. However, sources of pests can act assist spread at a larger scale and so become a public issue to some extent.

b) Animal Welfare
Animal ID measures have the potential to reduce the risk of disease outbreaks. Events such as Foot and Mouth Disease (FMD) outbreaks are very difficult risks to assess as they occur infrequently but create very large economic costs (not strictly environmental but given the presence of compensation the costs are public). There have been three serious FMD outbreaks in the UK since the Second World War – 1952, 1967, and 2001 which represents approximately a 1 in 20 year risk of an outbreak with large scale economic consequences. To calculate an expected annual cost we need estimates of the costs of prior outbreaks

Thompson et al (2002) present estimates of the economic costs to agriculture and industries affected by tourism of the outbreak of foot and mouth disease (FMD) in the United Kingdom (UK) in 2001. The losses to agriculture and the food chain were estimated at £3.1 billion with the majority of the costs to agriculture met by the Government through compensation for slaughter and disposal/clean-up costs. Nonetheless, agricultural producers will have suffered losses, estimated at £355 million, which represents about 20% of the estimated total income from farming in 2001. They further estimated that businesses directly affected by tourist expenditure lost a similar total amount (between £2.7 and £3.2 billion) as a result of reduced numbers of people visiting the countryside. The industries which supply agriculture, the food industries, and tourist-related businesses also
suffered losses but these losses were not estimated. The value of environmental damages due to the disposal options was also not estimated. However, given that much of the expenditure by tourists was not lost, but merely displaced to other sectors of the economy, and so will not be included in subsequent estimates of the benefits of cross compliance.

The 1967 outbreak was estimated as causing £370 million of economic losses at 2001 prices (Auditor General, 2002). We could find no estimates for the 1952 outbreak. However, large losses prior to the Second World War were not uncommon with an outbreak in 1865-66 reported thus:

The losses from only two exotic bovine maladies (‘contagious pleuropneumonia’ and the so-called ‘foot and mouth disease’) have been estimated to amount to 5,549,780 head, roughly valued at £83,616,854. (Reynolds & Tansey, 2001). Assuming a 3% deflator for this period equates to £4 billion in 2001. A £2 billion impact every 20 years equates to £100 million per annum. Therefore, a risk reduction of 1% for FMD suggests an annual £1m of public value.

Other applicable diseases such as blue tongue are also relevant where public costs are incurred and should be included in the assessment. A comprehensive review of public costs associated with animal diseases is outside the scope of this evaluation.

c) Recreation
We consider this separately given that GAEC 8 has evidence of some additional benefits and that there are no obvious valuations in the Environmental Accounts that might be applied. NR0108 however does consider recreational benefits as part of cultural services. Within this are included estimates for the services provided by hill walking and casual walking / rambling. The total economic value estimated for each is approximately £1.75 billion and £1.4 billion each respectively. The hill walking figure is derived by combining an expenditure survey combined with trip data and a contingent value (CV) survey. The casual walking estimate was derived from expenditure and trip data alone. We estimate that around 90% of the over 200,000 km of rights of way and long distance paths are on land covered by cross compliance.

We did consider the benefits provided in terms of the costs that could be present in the absence of cross compliance. This might be the amount that local authorities would have to spend to keep pathways open. Most rights of way issues relate to diversions, extinguishments, obstructions, and new paths (on old rights of way). The Ramblers Association very rarely take landowners to court, instead focussing upon the highway authority. They estimate that only a dozen or so cases get to the courts per year taking up to 2-3 days with highly variable levels of cost depending upon the individual case. A solicitor from the East of England we contacted suggested that, whilst varying greatly, their fees amount to around £2,500 plus VAT per case (at £140 per hour).

We also contacted the rights of way officers at Oxfordshire and Wiltshire County Councils to discuss the matter. Neither officer could recall taking landowners to court and stated that almost all disputes come to a negotiated settlement.

Given this feedback we have not provided an estimate of costs of maintaining rights of way in the absence of cross compliance.
5.2.4 Applying Values to Outcomes

Given the nature of uncertainty in both the estimated additional impacts of cross compliance and the valuation data described above, Table 49 below simply shows the value of 1% of the environmental good or service as defined above and the range of impact estimates for each measure added vertically. We assume impacts in the range 0-2% so that the median value for estimates scored as <1% impacts are 0.5% and those scored as >1% are 1.5%.

Many of the environmental accounts figures are viewed as being significant underestimates but in general the estimates they lead to here are significantly below that for the estimates derived from other sources and this is worth commenting upon.

The benefits for pest control relate to preventing annual crop losses and the large estimates result from the estimate of production lost due to different types of pest. The 1% estimate relates to reduced weed, arthropod and pathogen related crop losses and this assumption may need to be revised. It might also be considered that such benefits are private benefits and should not be included in the final table.

The other benefits are not presented in the table given the high degree of uncertainty. In addition, there may be benefits not considered here such as public health. The values documented above for pest control, animal welfare, and recreation are much larger than the figures in the environmental accounts. Any estimate of the benefits due to cross compliance is potentially large but subject to high levels of uncertainty.

For example, the value estimates for recreation are large simply because it is a large component of UK activity and so any small increment will itself be a large figure. Whether cross compliance actually produces benefits of the order of 1% of the value of recreation as an ecosystem service may be questioned. However, it is undoubtedly true that the benefits of recreation are large and that cross compliance does contribute to this.

Excluding these other benefits, the sub-totals in Table 49 show that the estimates for the beneficial impacts of Cross Compliance on society amount to some £12.2m per annum and the beneficial impacts on other sectors of society amount to £3.0m per annum. The present value of beneficial impacts on air quality amounts to £8.4m.
### Table 49: Valuing aggregate public benefits from cross compliance

<table>
<thead>
<tr>
<th>Annual impacts on society</th>
<th>Value of 1% impact (£000's)</th>
<th>Aggregated impact range</th>
<th>Mid point estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape &amp; habitats</td>
<td>£3,189</td>
<td>1.5%</td>
<td>£4,784</td>
</tr>
<tr>
<td>Linear features</td>
<td>£13</td>
<td>1.0%</td>
<td>£13</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>£1,537</td>
<td>3.0%</td>
<td>£4,612</td>
</tr>
<tr>
<td>Rivers</td>
<td>£446</td>
<td>3.0% 4.0% 5.0%</td>
<td>£1,783</td>
</tr>
<tr>
<td>Lakes</td>
<td>£199</td>
<td>3.0% 4.0% 5.0%</td>
<td>£797</td>
</tr>
<tr>
<td>Bathing waters</td>
<td>£79</td>
<td>0.0%</td>
<td>£0</td>
</tr>
<tr>
<td>Estuaries</td>
<td>£25</td>
<td>3.0% 4.0% 5.0%</td>
<td>£101</td>
</tr>
<tr>
<td>Abstraction</td>
<td>£275</td>
<td>0.5%</td>
<td>£138</td>
</tr>
<tr>
<td>Provision of waste sink</td>
<td>£253</td>
<td>0.0%</td>
<td>£0</td>
</tr>
<tr>
<td>Agricultural waste</td>
<td>£41</td>
<td>0.0%</td>
<td>£0</td>
</tr>
<tr>
<td>Sub total</td>
<td></td>
<td></td>
<td>£12,226</td>
</tr>
<tr>
<td>Annual impacts on other sectors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking water</td>
<td>£968</td>
<td>3.0%</td>
<td>£2,903</td>
</tr>
<tr>
<td>Pollution incidents</td>
<td>£2</td>
<td>0.0%</td>
<td>£0</td>
</tr>
<tr>
<td>Flooding</td>
<td>£1,169</td>
<td>0.0%</td>
<td>£0</td>
</tr>
<tr>
<td>Soil erosion</td>
<td>£47</td>
<td>1.5% 3.0% 4.5%</td>
<td>£141</td>
</tr>
<tr>
<td>Sub total</td>
<td></td>
<td></td>
<td>£3,044</td>
</tr>
<tr>
<td>Present value of air emissions costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate change</td>
<td>£8,387</td>
<td>1.0%</td>
<td>£8,387</td>
</tr>
<tr>
<td>Air quality</td>
<td>£4,342</td>
<td>0.0%</td>
<td>£0</td>
</tr>
<tr>
<td>Sub total</td>
<td></td>
<td></td>
<td>£8,387</td>
</tr>
</tbody>
</table>

**Footnote: Adjustment for UK and England Wales estimate to England estimates:** Some of the estimates in the Environmental Accounts are for the UK and some for England & Wales combined. Initially we have just taken a single figure to adjust for UK to England (50%) and for England & Wales to England (75%). The impacts that have been estimated in the accounts are:

- For the UK
  - Biodiversity
- For England and Wales:
  - Lakes
  - Abstraction
  - Drinking water
  - Linear features

### 5.3 Public Cost of Cross Compliance

There are three quantifiable components of public costs associated with Cross Compliance.

**Policy cost**

This relates to the cost of dedicated personnel associated with design, management and development of policy at Defra. For Defra policy staff a rough estimation based on standard costs per grade and an estimate of effort indicates an annual cost of £225,000 (2008/9 prices).

**Support cost**

This relates to costs associated with the provision of information and support to farmers so that they are aware of their obligations and understand them sufficiently to implement them. This includes the cost of the Momenta Advice contract as well as the website, guidance booklet, helpline etc. The cost used here is based on the budget for 2008-09 for all elements including direct delivery in regions (face to face) website, helpline, admin, press articles, newsletters and attendance at shows of £550,000.
**Inspection cost**

This includes the cost of the RPA Cross Compliance Management Unit, report processing and inspection costs for each of the Competent Control Authorities (CCA) and costs of the stand alone inspection programmes for Cattle Identification (CII) and Sheep and Goat Identification (SAG).

Data for inspection costs has been provided by RPA but includes the additional costs for all inspection bodies which are directly related to Cross Compliance. The CCAs are: Animal Health (AH), the Environment Agency (EA), RPA, and the Veterinary Medicines Directorate (VMD). All livestock ID inspection work is carried out by RPA, whereas AH look solely at the disease and welfare SMRs.

The data is summarised in Figure 13.

![Figure 13: Inspection costs by category](image)

**Figure 13: Inspection costs by category**

The detailed breakdown of the 2007 costs is shown in Table 50. The total inspection cost is £7.5 million per anum.
Table 50: Inspection costs for Cross Compliance (2007)

<table>
<thead>
<tr>
<th></th>
<th>Annual cost £’000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RPA</td>
</tr>
<tr>
<td>RPA Management Unit</td>
<td>466.6</td>
</tr>
<tr>
<td>RPA Processing</td>
<td>441.3</td>
</tr>
<tr>
<td>Inspection costs</td>
<td>576.7</td>
</tr>
<tr>
<td>Administration</td>
<td>61.2</td>
</tr>
<tr>
<td>Total</td>
<td>1545.9</td>
</tr>
<tr>
<td></td>
<td>EA, VMD &amp; AH</td>
</tr>
<tr>
<td></td>
<td>253.7</td>
</tr>
<tr>
<td></td>
<td>560.0</td>
</tr>
<tr>
<td></td>
<td>813.7</td>
</tr>
<tr>
<td>Total</td>
<td>5,097.9</td>
</tr>
<tr>
<td></td>
<td>CII &amp; SAG</td>
</tr>
<tr>
<td></td>
<td>3,645.8</td>
</tr>
<tr>
<td></td>
<td>1,452.1</td>
</tr>
<tr>
<td></td>
<td>5,097.9</td>
</tr>
</tbody>
</table>

The number of livestock inspections (and associated cost) is significantly higher than for the other categories. This relates to a requirement to inspect 1 in 10 farms for these standards rather than the 1% inspection rate for other standards.

The CII and SAG standalone inspection programmes exist independently of Cross Compliance and, from 2008, the RPA no longer carry out cattle or sheep ID checks as part of a 1% Cross Compliance inspection. Instead the requirement to inspect at least 1% cattle and sheep keeping claimants for compliance with SMRs 7 & 8 and 8a is met through the existing 10% and 3% CII and SAG standalone inspection programmes respectively. Cattle and sheep ID inspections are very closely linked with Cross Compliance; all breaches identified during the ID inspections are taken into account for Cross Compliance purposes. Thus if there are a significant number of non-compliances of SMRs 7 & 8 and/or SMR 8a in a given year through the standalone programmes, Cross Compliance rules (not cattle and sheep ID rules) would require an increase in the number of those inspections carried out during the following control period.

Aggregating the policy, support and inspection costs, the public cost of implementing the Cross Compliance policy is estimated at £8.3 million.

A further potential public cost is that of disallowance or fines from the EU. Recent EU audits have deemed RPA to have been too lenient in their approach to inspection and the agency has been advised that disallowance fines will be imposed if it does not implement the regulations correctly. While this has not been included in the calculation of Value for Money, it is important to recognise that sufficient resources need to be committed to implementation in order to avoid this cost.

5.4 Value for Money (VfM)

Value for money (VfM) is a concept relating to public programmes which aims to consider the public costs of a policy in the context of the public benefits delivered. In this instance, public costs of £8.3 million are associated with an estimated gross public benefit of £15.3 million in terms of society and a further £8.4 million from impacts on air quality. The potential other benefits in terms of animal welfare and recreation could amount to some £17.3 million but are much less reliable and need further investigation.
6 Conclusions & Recommendations

6.1 Conclusions

Cross Compliance requires farmers benefiting from Pillar I support (SPS) and some Pillar II schemes to respect existing environmental and livestock legislation (largely SMRs but also some GAECs) and additional standards related to good agricultural and environmental practice (remaining GAECs). This evaluation has researched the secondary evidence from literature, Momenta surveys and RPA inspection data together with primary evidence from a farmer survey (changes made and costs incurred) and consultation with advisers to inform the following conclusions.

Effectiveness

The research evidence and monitoring data highlighted generally high levels of compliance but some considerable variation across the measures. Generally, standards relating to legislation that has been in existence for sometime are well observed, but where there are ongoing issues of breaches, Cross Compliance has delivered increased awareness and in some cases action, associated with the threat of penalty. For other standards (those GAECs with no supporting legislation), Cross Compliance represents the main means to afford environmental protection and impacts are greater. However, there are issues of lack of clarity in terms of what is required for some standards and some resistance to comply from farmers.

While the leverage provided by SPS has ensured that Cross Compliance is very effective insofar as farmers are willing to comply, it has relied too much on this at the expense of genuine engagement with farmers on the rationale for sustainable farming. This has created problems of genuine willingness to comply.

Cost to farmers

In terms of the cost to farmers of meeting Cross Compliance requirements, the main evidence came from the farmers’ survey. Farmers were asked if they had made changes in response to the policy. Those that did were further questioned to provide estimates of direct cost, time input, any income forgone and any costs saved. The data was gathered for groups of standards across eight key themes and was aggregated to give an overall net cost per farm. Two estimates were calculated relating to GAEC only and to GAEC and SMRs, where compliance with the latter had substantively changed as a result of cross compliance.

The estimates of cost were in line with the Regulatory Impact Assessment at £163 and £289 per farm for GAEC and GAEC plus SMR 4 and 6-8, respectively. These estimates were then scaled up to England level on the basis of the number of farmers who need to comply, using Single Payment Scheme claimants as a proxy. The aggregate cost at England level is estimated to range from £8.7 to 15.5 million for full-time farmers but increases to £17.8-31.5 million if all farmers (including part-time) are counted.

Value for Money

The context for this policy intervention is payment of CAP subsidy to farmers under the SPS and the requirement to respect key elements of legislation and good practice as a condition. While the value of SPS is very significant (£1.45 bn in England in 2007), value for money relates only to the public benefits resulting from the policy and the direct costs of implementing it.
The valuation of the public benefits delivered by Cross Compliance is a very broad brush estimate due to limitations of quantifying benefits relating to the scheme (rather than other factors) and the ambitious use of benefits transfer values for these benefits. The estimated value of benefits ranges from £24 million to over £40 million annually. This compares with policy costs of £8.3 million.

While there is always scope for efficiencies, it would be difficult to reduce the public cost of implementing Cross Compliance significantly as it is driven by EC requirements and therefore the main scope to improve value for money lies with improving scheme impact.

Unintended consequences

The main impacts of Cross Compliance have been:

- additional engagement of farmers with advisers
- increased awareness of existing legislative requirements
- SPS provides significant leverage to make farmers comply
- disproportionate impact on small farms (fixed cost component)
- farmers incurring unnecessary costs where they are over-reacting to standards e.g. GAEC 9 (Overgrazing and supplementary feeding)
- unnecessary anxiety on the part of some farmers in terms of the risk of penalty
- negative attitudes to Cross Compliance may cause some to risk being caught rather than comply, notably where high capital cost is needed to comply with NVZs

Farmer behaviour

The key behavioural issue is the negative attitudes to Cross Compliance by farmers as evidenced by a review of media articles and feedback from industry advisers in this research. While many farmers have incurred some additional costs as a result of Cross Compliance, these are generally low in relation the scale of SPS payments; where high costs were reported, they related largely to compliance with the underlying regulations, rather than Cross Compliance per se, indicating a lack of understanding of the distinction. This misconception was reinforced by the farm advisers who referred, for example, to the need for capital spend under SMR 4 (NVZs). This highlights a need for much more attention to the principles of Cross Compliance in the provision of support (via FAS) and better links with the inspection agencies to ensure a more balanced view of the policy and its implementation.

Despite using a typology of farmer behaviour, there was no clear correlation between farmer type and attitudes to Cross Compliance or the level of breaches. This perhaps reflects some degree of sample bias (the sample was entirely drawn from willing respondents to the annual ADAS Farmers Voice™ Survey and was comprised of full-time farmers).

6.2 Recommendations

While most compliance rates are high (>95%), much environmental benefit is derived from effectively linking farm practice to desired outcomes and this may go beyond the letter of the standard. This is not a case for increasing the scope of the standards but for developing a more positive and open relationship with farmers to engage
them more fully with scheme objectives, rules and benefits. The Farm Advisory System is in place to make this happen but there are a number of issues around policy scope, individual requirements and policy implementation. These are considered in the following sections and detailed recommendations made for delivering improved public benefits at existing cost.

6.3 Policy scope

A major problem for the Cross Compliance policy relates to farmers not being convinced of the benefits of the standards with consequent partial or reluctant compliance. As such, there are two clear messages that need to be made more effectively; firstly compliance is a prerequisite for receipt of Single Payment and secondly that there are actually good reasons for the rules e.g. public goods such as water quality and access to the countryside or ‘weakest-link’ public goods such as preventing animal disease or weed spread. While the link to SPS is stated in the first paragraph of the General Information section of the Cross Compliance Guide, there is considerable scope for improving effectiveness through clarification of the rationale for a number of the standards, both SMRs and GAECs.

**Recommendation 1:** Place greater emphasis on presenting the case for Cross Compliance standards, even where they are supported by legislation. This should be across all communications with the industry but particularly at face-to-face events such as FAS workshops, where the rationale can be presented interactively.

The evaluation has found that Cross Compliance has been effective in increasing awareness and delivering compliance in most situations but there is considerable scope for improving effectiveness through clarification of the rationale (GAEC 1: Soil Protection Review; GAEC2: Post harvest management of soils; GAEC 3: Waterlogged soil; GAEC 9: Overgrazing and supplementary feeding; GAEC12: Land not in agricultural production & GAEC 14: Protection of hedgerows and watercourses) and / or the rules (GAEC 9: Overgrazing and supplementary feeding & GAEC12: Land not in agricultural production). Where there are issues of practicality, it may be necessary to consult with the industry to find more practical means of delivering the legislation.

**Recommendation 2:** Continue to review the implementation standards where there are problems of observance, particularly relating to record keeping, to make it easier for farmers to comply without comprising delivery of intended environmental impacts.

Some standards have potential overlap with agri-environmental schemes and it is important to distinguish clearly between Cross Compliance, which sets the baseline for the Environmental Stewardship schemes in England and the schemes themselves. This applies to GAEC 15 (Hedgerows - cutting date element) and also to GAEC 14 (Protection of hedgerows and watercourses). Where possible, clear principles should separate the two policy approaches, including the proposed new Environmental Management condition.

**Recommendation 3:** Define clearly where the cross compliance baseline stops and that for incentive-based management starts. Review the case for existing and new standards to ensure a consistent adherence to this principle.
6.4 Individual standards

The case for changes to individual standards cuts across the design and implementation of the programme. However, it is perhaps best to make the case for change at standard level. Below, we have set out the eight groups of standards and presented the conclusions and recommendations for change relating to each.

**Soil management & protection**

Compliance levels are high; this group of standards has raised awareness of soil management but there are some issues with records (GAEC 1). The Soil Protection Review form and process is viewed as having little or no practical value by farmers. Failure to comply with GAEC 1 is attributed to:

- farmers not persuaded that the SPR has any purpose;
- high investment in time; and
- problems in carrying out the review and identifying soil types

There are few issues with GAEC 2-4. In practice erosion and loss of soil organic matter is not an issue for all farmers.

- GAEC 2 (Post harvest management of soils) & GAEC 3 (Waterlogged soil): There are few compliance issues but the scope for impact relies on farmers recognising the need for action. There is a private incentive to manage soil well but farmers need more information and advice on best practice e.g. through knowledge transfer (KT) activities to highlight scope for change. Linking to the GAEC 1 (Soil protection review) process would provide a basis for recording decisions and actions and increase the relevance of GAEC 1 (Soil protection review).

- GAEC 4 (Burning of crop residues): This standard is well embedded in existing practice and there is no additional impact of Cross Compliance.

These findings indicate that more training and/or advice may be beneficial to enhance the acceptance / effectiveness of the SPR.

**Recommendation 4:** Review GAEC 1 (Soil protection review) form and process to make it a more useful decision-tool for farmers.

**Recommendation 5:** Bundle GAEC 1 (Soil protection review) together with GAEC 2 (Post harvest management of soils), GAEC 3 (Waterlogged soil) and GAEC 4 (Burning of crop residues) to make a single soil protection and management standard.

**Recommendation 6:** Initiate a soil management educational programme under FAS. Link where possible to other relevant initiatives such as the Environment Agency (EA) ‘Think Soils’ programme.

**Water Quality**

Compliance levels are high but inclusion in Cross Compliance has had a significant impact on awareness of SMR 4 (NVZs) and SMR 2 (Ground water). Twenty two percent of respondents in the farmer survey had made changes to comply with the
water quality SMRs since the introduction of Cross Compliance. Most of the changes related to SMR 4 (47%) and SMR 2 (44%).

This was reinforced by the practitioner workshops and TAP interviews. However, concerns were expressed about the difficulties of completing records and the complying with the underlying regulation, notably SMR4 (NVZs). Given the need for capital investment, some farmers may opt not to comply with the wider Nitrates Regulation and risk suffering a penalty if inspected.

Cross-compliance raises awareness of and provides a financial incentive to adhere to legislation on water quality. Farmers need more help with the paperwork, notably from SMR4 (NVZs) which is a new requirement for many farms following extension of NVZs from 2009.

**Recommendation 7:** Ensure a good level of support is available through FAS to farmers on compliance with SMR4 (NVZs), in particular record keeping.

**Historic and Landscape features**

- **GAEC 8 (Public rights of way):** It appears that, in spite of being a regulatory reinforcement measure, the inclusion of public rights of way as a cross-compliance requirement has had an impact on a minority of farmers who were not fully observing the regulations but were not being prosecuted by Local Authorities. However, it is difficult to respond to all referrals in a timely manner through the 1% compliance audit.

- **GAEC 13 (Stone walls):** This is the only form of protection for stone walls and is likely to have prevented the removal of stone in some cases; it is difficult to ascertain the extent to which this applies.

- **GAEC 15 (Hedgerows):** It is difficult to determine the precise impact of cross-compliance, because of the application of similar rules to the large proportion of ELS agreement holders who have undertaken hedgerow management options. Nevertheless, evidence indicates that a substantial proportion of farmers have amended their practice on cutting dates with just over half of the farmers in the survey making changes relating to GAEC 15.

- **There is little evidence of compliance issues for GAEC 16 (Felling of trees) and GAEC 17 (Tree Preservation Orders).**

Standards relating to historic and landscape features could be grouped together to improve presentation and acceptance. The element of GAEC 15 (Hedgerows, cutting dates element) which relates to the timing of hedge cutting is in effect a biodiversity action and would sit more comfortably in the ‘Habitats and Wildlife’ group in terms of presentation. It is not backed by legislation but has been effective in changing practice. GAEC 13 (Stone walls) is not backed by legislation and while evidence of impact is limited, it is appropriate to include it in Cross Compliance to protect stone walls against removal.

**Recommendation 8:** Group GAEC 7 (Scheduled monuments), GAEC 8 (Public rights of way), GAEC 13 (Stone walls), GAEC 15 (Hedgerows) part, GAEC 16 (Felling of trees) and GAEC 17 (Tree Preservation Orders) under a ‘protection of historic and landscape features’ banner to help present the rationale for these standards.
**Recommendation 9:** Subject to the decision of the European Court of Justice, GAEC 8 (Public rights of way) should be retained in Cross Compliance but a separate inspection process established to deal with referrals (also for other breaches where referrals are significant). This would allow more timely response to breaches and focus on this rather than being a full Cross Compliance inspection.

**Habitats and wildlife**

Most of the GAEC and SMR standards in this category have a high level of compliance but there are some issues of effectiveness:

- **GAEC 9 (Overgrazing and supplementary feeding):** there is considerable confusion over the requirement of this standard, notably ‘unsuitable supplementary feeding’. In practice, issues of overgrazing may be less relevant going forward due to the decoupling of subsidy and falling livestock numbers but in the absence of Cross Compliance, there is no other provision for protection at present.

- **GAEC 11 (Control of weeds):** compliance issues are limited but relate disproportionately to small farms. Enforcement is difficult as the regulation relates to preventing spread of weeds rather than their presence. Lack of effective enforcement by Local Authorities causes resentment from neighbouring farms.

- **GAEC 12 (Eligible land not in agricultural production):** rules are badly written and there is considerable confusion over the requirement of this standard, with some farmers using set aside rules.

- **GAEC 14 (Protection of hedgerows and watercourses):** Awareness of requirements is good, in part due to the media attention that it has received but there is limited understanding of environmental benefits and some resistance to the value of 2 m strips. In practice, little management is required and crop yields and quality from the outer metre or so of the field are poor, thus little income is likely to be foregone. However, this is not necessarily the perception of farmers, and greater provision of information and advice about the rationale for and benefits of the measure may foster more positive attitudes.

For many of the other standards in this category, there are low levels of non-compliance although it is likely that the introduction of Cross Compliance has raised farmers’ awareness of legislation, notably Environmental Impact Assessment Regulations (GAEC 5).

There is a need to:

- clarify the rules (GAEC 9 and 12);
- respond directly to breaches (GAEC 11);
- promote the private and public benefits to farmers; and
- link with ELS options to extend buffer width (GAEC 14).

**Recommendation 10:** Clarify the rules for GAEC 5, 9 and 12 through development of case studies and FAS activities.


**Recommendation 11:** Improve effectiveness of GAEC 11 by responding directly to reported breaches, outside the 1% audit if feasible.

**Recommendation 12:** Revise GAEC management rules in line with set aside rules where this is appropriate and promote to the industry through FAS.

**Recommendation 13:** Make more explicit links to ELS field margin options through FAS to improve the environmental effectiveness of GAEC 14.

**Recommendation 14:** Add GAEC 15 (cutting date element) to this group of standards.

**Recommendation 15:** Group GAEC 5 (EIA), GAEC 6 (SSSIs), GAEC 9 (Overgrazing and supplementary feeding), GAEC 10 (Heather and grass burning), GAEC 11, GAEC 12 and GAEC 14 together with SMR 1 (Wild birds) and SMR 5 (Habitats) under a single ‘habitat and wildlife protection’ banner to help present the rationale for these standards.

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**Animal identification**

Animal identification SMRs represent the main area of non-compliance across all standards; the percentage of animals failing inspection ranged from 8.7% to 9.8% between 2005 and 2007 with an overall failure rate for inspections of around 50%. This is of concern given the timescale over which the legislation has been in place and the inability of Cross Compliance to impact on the extent of breaches. It is in part at least due to the fact that while farmers understand the broad principles of traceability and managing disease spread, they do not give sufficient priority to day-to-day actions to meet the requirements of the SMR. Many do not realise the potential for BCMS links while there is also an issue with record keeping. There is a need to reinforce the purpose of and public good argument for SMR 7 and 8, to ensure the process is as clear and simple as possible and to change behaviour. The latter might involve, for example, more FAS workshops on record keeping or referring those who fail inspections to the FAS programme.

**Recommendation 16:** The RPA Inspectorate needs to analyse and highlight the key issues which relate to common breaches and work effectively with FAS advisers to identify actions which will help all farmers to comply with SMR 7&8 (Cattle ID).

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**Control of chemicals, food and feedstuffs**

SMR 9-11 (SMR 9: Plant protection products; SMR 10: Restriction on substances having hormonal or thyrostatic action and beta-agonists; SMR11: Food and feed law) relate to observation of legislation through good practice and evidencing this through record keeping. Compliance levels are high but inclusion on the list helps to avoid breaches amongst occasional users of pesticides, for example livestock farmers using products such as sheep dips and herbicides and who may be less aware of the pertinent rules and regulations.

Cross compliance has improved the observance of correct practice, notably with regard to pesticide application (SMR 9).
**Recommendation 17:** Group the SMRs relating to chemicals, food and feedstuffs under a single ‘control of chemical substances’ banner to help present the rationale for these standards.

**Animal Welfare**

SMRs 16-18 relate to existing welfare legislation and while non-compliance is significant, this often relates to minor breaches such as failing to record deaths of lambs or piglets. However, the inspection agencies have to work within the EU requirements and farmers need to recognise the rules and implement change where this is relevant. As with animal ID, this is in part an issue of awareness and support and again there is a significant role for FAS in promoting the principles as well as the rules. Consultees raised an issue of overlap with Quality Assurance Schemes (QAS) which is seen as unhelpful; as with environmental measures, Cross Compliance requirements should set the baseline with additional welfare demands being rewarded by the market. As such it should be possible to have consistency between QAS and Cross Compliance records and inspections.

It is too early to make a full impact assessment of SMR 16 (Welfare of calves), SMR 17 (Welfare of pigs) and SMR 18 (Welfare of farmed animals), since they were only introduced in 2007 and there are differences in inspection assessments from previous on-farm welfare inspection. Cross Compliance inspections need to be able to accommodate referrals on welfare issues and there is a case for a separate inspection process outside the 1% audit; in practice Animal Health already selects the maximum feasible proportion of inspections on the basis of risk, and follows-up all referrals it receives by carrying out on-farm checks that do not form part of the 1% inspection target. The fact that additional inspections were triggered in 2008 (from breaches found during the random and scored risk parts of their selection) suggests that additional effort needs to be made in this area.

**Recommendation 18:** RPA and Animal Health need to continue to work closely with increased support from FAS to ensure farmers are aware of the SMR baseline for animal welfare and that breaches are reduced. Referrals for breaches need to continue to be followed up outside the 1% audit as part of this effort.

**Recommendation 19:** Treat membership of Quality Assurance Schemes as evidence of reduced risk when selecting claimants for inspection; both are based on EU animal welfare legislation, with Cross Compliance representing the baseline standard for QAS.

### 6.5 Policy Implementation

The FAS is specifically tasked with supporting farmers to meet Cross Compliance standards and it is clear that much remains to be done. While this is partly about policy design, there is a need for increased emphasis on education and knowledge transfer, linking requirements with best farming practices to help farmers understand how best to meet requirements and to recognise when and why legislation is relevant to them e.g. GAEC 1-4 (Soil management) and GAEC 12 (Land not in agricultural production).

**Recommendation 20:** Focus FAS activity on those standards and industry segments where there is most uncertainty and use knowledge transfer to link requirements with best farming practice.
In terms of farmer behaviour, a key issue is that of negative attitudes associated with Cross Compliance, both in concept and application. Fundamentally this relates to the risk of penalties and additional costs but it signifies some failure of communication of the rationale and the detail of the standards. It is also linked to the perception that public subsidy through SPS is ‘of right’ rather than a payment for public goods. Contrary to some media comment and feedback from some consultees, most feedback on the inspection process itself is positive. It would therefore be helpful to have better links between policy support (through FAS) and the inspection process so that this issue is addressed explicitly.

**Recommendation 21:** Review the extent of partnership working between the FAS and inspection bodies and ensure the rationale for Cross Compliance and the positive feedback on inspections is communicated widely to the industry.

Increased targeting would improve the effectiveness of Cross Compliance based on reported breaches of legislative requirements e.g. GAEC 7 (Monuments), GAEC 8 (PROW), GAEC 13 (Stone walls) and SMRs. While all referrals to RPA and Animal Health are dealt with through the targeted element of inspection, many breaches require a prompt response and are often temporal in nature. A separate process outside the 1% compliance inspections could address the breach specifically, without need for a full inspection and would to allow a more timely response.

**Recommendation 22:** Research the case for a separate inspection process, outside the 1% inspection, for reported breaches of standards.

While we have reported that there is limited scope to reduce the public costs of Cross Compliance, it is clear that a more effective approach to promoting the conditions to farmers and providing well targeted support through FAS would reduce unnecessary farmer costs as a side effect.
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## Appendix 1: List of Cross Compliance Standards

### List of SMRs and GAECs

<table>
<thead>
<tr>
<th>No.</th>
<th>SMR</th>
<th>GAEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wild birds</td>
<td>Soil Protection Review</td>
</tr>
<tr>
<td>2</td>
<td>Ground water</td>
<td>Post harvest management of soils</td>
</tr>
<tr>
<td>3</td>
<td>Sewage sludge</td>
<td>Waterlogged soil</td>
</tr>
<tr>
<td>4</td>
<td>NVZs</td>
<td>Burning of crop residues</td>
</tr>
<tr>
<td>5</td>
<td>Habitats</td>
<td>Environmental Impact assessment</td>
</tr>
<tr>
<td>6</td>
<td>Animal ID - pigs</td>
<td>SSSIs</td>
</tr>
<tr>
<td>7&amp;8</td>
<td>Cattle identification</td>
<td>Scheduled monuments</td>
</tr>
<tr>
<td>8a</td>
<td>Animal ID – sheep and goats</td>
<td>Public Rights of way</td>
</tr>
<tr>
<td>9</td>
<td>Plant protection products</td>
<td>Overgrazing/unsuitable supplementary feeding on natural/semi natural grassland</td>
</tr>
<tr>
<td>10</td>
<td>Restriction on substances having hormonal or thyrostatic action and beta-agonists</td>
<td>Heather and grass burning</td>
</tr>
<tr>
<td>11</td>
<td>Food and feed law</td>
<td>Control of weeds</td>
</tr>
<tr>
<td>12</td>
<td>TSEs</td>
<td>Eligible land not in agricultural production</td>
</tr>
<tr>
<td>13</td>
<td>FMD</td>
<td>Stone Walls</td>
</tr>
<tr>
<td>14</td>
<td>Certain animal diseases</td>
<td>Protection of hedgerows and watercourses</td>
</tr>
<tr>
<td>15</td>
<td>Blue tongue</td>
<td>Hedgerows</td>
</tr>
<tr>
<td>16</td>
<td>Welfare of calves</td>
<td>Felling of trees</td>
</tr>
<tr>
<td>17</td>
<td>Welfare of pigs</td>
<td>Tree Preservation Orders</td>
</tr>
<tr>
<td>18</td>
<td>Welfare of farmed animals</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 2: Selection procedure for inspection

The following information was provided by the Rural Payments Agency (RPA). It sets out the procedure used by RPA to select claimants for a full cross compliance inspection during the 2008 calendar year.

Scope

The procedure covers the SMRs and GAECs that fall within RPA’s Competent Control Authority (CCA) responsibility; i.e. SMRs 1, 5 to 9, 11 and 12 plus all 17 GAECs in place in England. The other CCAs responsible for selecting and carrying out on-farm checks are the Environment Agency (SMRs 2, 3 and 4), Animal Health (SMRs 13 to 18) and the Veterinary Medicines Directorate (VMD) is responsible for SMR 10.

Supporting Legislation


Article 44(1) of the legislation provides for the minimum rate of inspection required, this being 1% of farmers submitting aid applications under Titles III and IV of Council Regulation (EC) No. 1782/2003. In England, this applies to farmers that claim under the Single Payments Scheme (SPS), Area Payments for Nuts, Aid for Energy Crops and Protein Crop Premium.

Article 44(2) provides the requirement to increase the number of inspections in the control period following the one in which a significant level of non-compliance was found. Detailed guidance about the interpretation of this Article is provided in Commission Working Document DS/2006/25-REV 1.

Article 45(1) provides the requirement to select the inspections by risk, although Paragraph 5.2 of Commission Working Document DS/2006/25-REV 1 allows for a random element to be included in the selection.

Article 45(2) and (3) specifies the options for the claimant populations from which the inspections may be selected.

Selection Process

The overall 1% selection will be split into three separate selection elements:

i. The random element – this will make up between 20% and 25% of the overall selection as required by Article 45(1a) of Commission Regulation 796/04.

ii. The scored risk element – this will make up between 63% and 68% of the overall selection.

iii. The targeted risk element – this will make up 12% of the overall selection.

Claimant Population

The population and process from which the three elements of the overall selection will be picked are as follows:
**Random:** This element of the cross compliance selection will be picked from the sample of claimants that were selected by random for an SPS Land Eligibility (LE) inspection in 2008. The SPS LE random selection itself is picked from the total number of farmers that submitted a claim in the previous year, and is selected at a rate of just over 1% of all claimants.

The random selection will be carried out by using a randomiser within Microsoft’s Excel software at a rate of between 20% and 25% of the sample of farmers. The random selection will be carried out in January of the year in which the inspections are to be carried out.

**Scored Risk:** The starting point for scored risk selection is the list of all claimants from the previous year. The use of previous year’s claimant data as the basis for the selection has been approved in a question and answer briefing issued around the time of the Direct Payments Management Committee meeting held on 20 April 2005.

This list is arranged in order of the amount of agricultural land available to the claimant and split into four equal sized Excel spreadsheets (referred to as quartiles). The purpose of this procedure is to ensure the selection includes an equal number of claimants from each of the four size bands.

A range of risk data is obtained from a variety of sources. A matching exercise is then carried out between each piece of risk data and the four spreadsheets. Where a match is found, a weighting is entered against that claimant’s entry on the spreadsheet for the appropriate risk factor. Once all risk data has been matched, the individual scores are added together to arrive at an overall risk score for each claimant.

Each of the four quartiles is then split into six smaller lists on a geographical basis in line with the six zones used by the RPA Inspectorate. The purpose of this procedure is to ensure that claimants selected for inspection are spread evenly throughout the country. The scored risk element of the selection will be completed by April of the year in which the inspections are to be carried out.

**Targeted Risk:** This element of the selection is made from referrals received during the scheme year and that are claimants in the control period in question. RPA receives referrals of suspected non-compliances from a number of sources throughout the year. The sources include bodies with enforcement responsibility for the underlying legislation (e.g. Local Authorities), other bodies involved in the cross compliance inspection programme referring issues that fall outside their Competent Control Authority responsibility (e.g. the Environment Agency), public associations (e.g. the Ramblers Association) and members of the public.

All referrals will be assessed to ensure that, as far as possible, an even spread of referrals across the range of SMRs and GAECs are used to trigger a full inspection. The targeted risk inspections will be selected each month between April and October of the year in which the inspections are to be carried out.

**Recipients of Pillar 2 Funding**

As of the 1st January 2007, Cross Compliance also applies to recipients of Hill Farm Allowance (HFA), Environmental Stewardship (ES) and English Woodland Grants Scheme (EWGS).
The majority of HFA claimants also claim SPS and a separate sub selection is therefore not required to meet the 1% requirement. To ensure the requirement is met for ES and EWGS claimants a separate selection is made based on the entire claimant population.
Appendix 3: RPA Inspection Data

Two sources of data were available: The first comprised summary data for 2006 and 2007, the second included all years 2005-2008. Information was available in the latter on reasons for inspection failures and this was also linked to farm type and size data from the June Survey of Agriculture and Horticulture. However, the two datasets are not precisely comparable, as the second has a small number of missing data points; nevertheless it is sufficiently complete to provide a basis for a more detailed analysis of the inspection failures. Unfortunately, the second dataset did not include total numbers of inspections carried out, so it is not possible to express data as percentages of the total. There were 20 refused inspections in the second dataset.

The summary data are complete for the years they cover, but only provide limited information. 2006 and 2007 are the two most representative years; in 2005 inspection targets were not achieved and 2008 data are not complete at the time of writing. Data are included on the reductions applied to claims, or other action taken. For breaches that were the result of the farmer’s negligence, these may be a warning letter (WL) for minor infringements, or a percentage reduction of 1, 3 or 5% per individual breach. Reductions of 2 or 4% would only arise in the event of multiple negligent breaches on the same farm. Reductions of more than 5% would generally only be applied when the farmer had been found to have breached the same requirement within a 3 year period (a repeated non-compliance), or when the farmer had breached the requirement intentionally, in which case reductions would range from 15% to 100%.

Statutory Management Requirements

The outcomes of inspections in 2006 and 2007 are summarised in Tables 51 and 52.

Table 51: Summary of inspection data for SMRs in 2006 (NB no data for SMRs 13-18)

<table>
<thead>
<tr>
<th>SMR</th>
<th>No where Standard is Applicable</th>
<th>Number Failed</th>
<th>Failed %</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WL 1% 2% 3% 4% 5% Over 5%</td>
</tr>
<tr>
<td>SMR 1</td>
<td>1463</td>
<td>0</td>
<td>0</td>
<td>0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>SMR 2</td>
<td>1237</td>
<td>5</td>
<td>0.4</td>
<td>0 4 0 0 0 0 1</td>
</tr>
<tr>
<td>SMR 3</td>
<td>52</td>
<td>0</td>
<td>0</td>
<td>0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>SMR 4</td>
<td>790</td>
<td>50</td>
<td>6.3</td>
<td>4 27 0 19 0 0 0</td>
</tr>
<tr>
<td>SMR 5</td>
<td>1461</td>
<td>0</td>
<td>0</td>
<td>0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>SMR 6</td>
<td>186</td>
<td>7</td>
<td>3.8</td>
<td>0 6 0 1 0 0 0</td>
</tr>
<tr>
<td>SMR 7 &amp; 8</td>
<td>953</td>
<td>236</td>
<td>24.8</td>
<td>72 115 1 40 1 3 4</td>
</tr>
<tr>
<td>SMR 8a</td>
<td>790</td>
<td>69</td>
<td>8.7</td>
<td>3 42 0 21 0 3 0</td>
</tr>
<tr>
<td>SMR 9</td>
<td>938</td>
<td>23</td>
<td>2.5</td>
<td>4 12 0 7 0 0 0</td>
</tr>
<tr>
<td>SMR 10</td>
<td>604</td>
<td>0</td>
<td>0</td>
<td>0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>SMR 11</td>
<td>1366</td>
<td>16</td>
<td>1.2</td>
<td>9 6 0 1 0 0 0</td>
</tr>
<tr>
<td>SMR 12</td>
<td>1173</td>
<td>3</td>
<td>0.3</td>
<td>0 3 0 0 0 0 0</td>
</tr>
<tr>
<td>Total</td>
<td>409</td>
<td></td>
<td></td>
<td>92 215 1 89 1 6 5</td>
</tr>
</tbody>
</table>

113
In 2006, by far the highest proportion of failures with respect to SMRs was in relation to SMR 7&8 (cattle identification). Nearly a quarter of inspections where this standard was applicable failed. Failures in relation to other SMRs were all less than 10%, the highest being for SMR 8a (animal identification and registration – sheep and goats) and SMR 4 (NVZs). Most penalties were warning letters or 1% penalties, but there were some at 3% and a few at 5% or higher (SMRs 2, 7, 8 and 8a only).

In 2007, failure rates increased for SMRs 6 (animal identification and registration – pigs) and 8a, but reduced slightly for SMR 4. Substantial levels of failures were also recorded for the newly introduced SMRs 16, 17 and 18 (welfare of calves, pigs and farmed animals respectively) (Table 52). The most commonly awarded penalty was 1%, but once again a number of penalties at 3% were given, mainly for SMRs 7, 8 and 8a, and a few at 5%. SMR 18 was the exception in this regard, with around a quarter of the penalties at the 5% level.

Table 52: Summary of inspection data for SMRs in 2007

<table>
<thead>
<tr>
<th>SMR</th>
<th>No. where Standard is Applicable</th>
<th>Number Failed</th>
<th>Failed %</th>
<th>Penalty</th>
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<tbody>
<tr>
<td></td>
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<td>WL 1%</td>
</tr>
<tr>
<td>SMR 1</td>
<td>1039</td>
<td>1</td>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>SMR 2</td>
<td>982</td>
<td>5</td>
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<td>0</td>
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<td>SMR 3</td>
<td>77</td>
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<td>847</td>
<td>33</td>
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<td>13</td>
</tr>
<tr>
<td>SMR 5</td>
<td>1041</td>
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<td>0.3</td>
<td>0</td>
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<tr>
<td>SMR 6</td>
<td>98</td>
<td>11</td>
<td>11.2</td>
<td>0</td>
</tr>
<tr>
<td>SMR 7 &amp; 8</td>
<td>610</td>
<td>131</td>
<td>21.5</td>
<td>34</td>
</tr>
<tr>
<td>SMR 8a</td>
<td>477</td>
<td>60</td>
<td>12.6</td>
<td>30</td>
</tr>
<tr>
<td>SMR 9</td>
<td>497</td>
<td>17</td>
<td>3.4</td>
<td>0</td>
</tr>
<tr>
<td>SMR 10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SMR 11</td>
<td>891</td>
<td>22</td>
<td>2.5</td>
<td>13</td>
</tr>
<tr>
<td>SMR 12</td>
<td>779</td>
<td>2</td>
<td>0.3</td>
<td>0</td>
</tr>
<tr>
<td>SMR 13</td>
<td>66</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SMR 14</td>
<td>65</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>SMR 15</td>
<td>66</td>
<td>0</td>
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<td>0</td>
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<td>SMR 16</td>
<td>238</td>
<td>11</td>
<td>4.6</td>
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<td>SMR 17</td>
<td>117</td>
<td>16</td>
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</tr>
<tr>
<td>SMR 18</td>
<td>723</td>
<td>139</td>
<td>19.2</td>
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</tr>
<tr>
<td>Total</td>
<td>451</td>
<td></td>
<td>90</td>
<td>226</td>
</tr>
</tbody>
</table>

Breakdown of inspection data by farm type

Table 53 shows a breakdown of SMR inspection failures by farm type28.

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28 these are farm types as defined by Defra for classifying survey results. All holdings are allocated a farm type which is based on the Standard Gross Margin (SGM) for each of the enterprises within the business.
Table 53: Breakdown of SMR inspection failures by farm type (NB. does not include refused inspections)

<table>
<thead>
<tr>
<th></th>
<th>Cereals</th>
<th>Dairy</th>
<th>General Cropping</th>
<th>Grazing Livestock (LFA)</th>
<th>Grazing Livestock (Lowland)</th>
<th>Horticulture</th>
<th>Mixed</th>
<th>Other Types</th>
<th>Specialist Pigs</th>
<th>Specialist Poultry</th>
<th>Unclassified</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 1</td>
<td>1</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>SMR 2</td>
<td>11</td>
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<td>4</td>
<td>23</td>
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<td></td>
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<td></td>
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<td>62</td>
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<tr>
<td>SMR 3</td>
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<td>2</td>
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<tr>
<td>SMR 4</td>
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<td>10</td>
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<td>3</td>
<td></td>
<td>199</td>
</tr>
<tr>
<td>SMR 5</td>
<td>2</td>
<td></td>
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<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>SMR 6</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td></td>
<td></td>
<td>7</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>SMR 7/8</td>
<td>461</td>
<td>1134</td>
<td>196</td>
<td>622</td>
<td>1630</td>
<td>45</td>
<td>543</td>
<td>247</td>
<td>31</td>
<td>32</td>
<td></td>
<td>298</td>
</tr>
<tr>
<td>SMR 8a</td>
<td>27</td>
<td>32</td>
<td>13</td>
<td>59</td>
<td>101</td>
<td>30</td>
<td>15</td>
<td>3</td>
<td>2</td>
<td>16</td>
<td></td>
<td>298</td>
</tr>
<tr>
<td>SMR 9</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>SMR 11</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>12</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>SMR 12</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>SMR 16</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>SMR 17</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>SMR 18</td>
<td>10</td>
<td>31</td>
<td>8</td>
<td>50</td>
<td>86</td>
<td>4</td>
<td>36</td>
<td>9</td>
<td>3</td>
<td>2</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>568</td>
<td>1294</td>
<td>256</td>
<td>790</td>
<td>1871</td>
<td>50</td>
<td>668</td>
<td>283</td>
<td>44</td>
<td>39</td>
<td></td>
<td>6211</td>
</tr>
</tbody>
</table>
Clearly, a greater number of livestock farmers keeping cattle are subject to penalties than other farm types, largely because of the large number of SMR 7/8 breaches, but also because they are more likely to breach SMRs 4 (especially dairy farms), 8a and 18 (especially lowland grazing livestock farms). Even for farm types that were crop-dominated, breaches of livestock-related SMRs were the most commonly occurring. Livestock farms seemed to be as likely as arable farms to fail SMR 9, perhaps because of lower familiarity with the regulations governing pesticide usage.

Breakdown by farm size

The largest numbers of breaches for animal identification SMRs were in the small and very small categories. They were also the worst offenders for SMR 11 (food and feed law). SMR 2 (groundwater) and SMR 4 (NVZs) were equally likely to be breached by small, medium or large farms. The largest number of inspection failures for SMR 8 (restriction on use of plant protection products) was on medium sized farms. Small, very small and medium sized holdings were most likely to have problems with SMR 18 (animal welfare).

<table>
<thead>
<tr>
<th>SMR</th>
<th>very large</th>
<th>large</th>
<th>medium</th>
<th>small</th>
<th>very small</th>
<th>Un-classified</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMR 1</td>
<td>1</td>
<td>9</td>
<td>33</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>62</td>
<td>1.00</td>
</tr>
<tr>
<td>SMR 2</td>
<td>9</td>
<td>17</td>
<td>51</td>
<td>43</td>
<td>13</td>
<td>5</td>
<td>199</td>
<td>3.20</td>
</tr>
<tr>
<td>SMR 3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0.05</td>
</tr>
<tr>
<td>SMR 4</td>
<td>33</td>
<td>51</td>
<td>54</td>
<td>43</td>
<td>13</td>
<td>5</td>
<td>199</td>
<td>3.20</td>
</tr>
<tr>
<td>SMR 5</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0.05</td>
</tr>
<tr>
<td>SMR 6</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>21</td>
<td>0.34</td>
</tr>
<tr>
<td>SMR 7/8</td>
<td>511</td>
<td>635</td>
<td>960</td>
<td>1631</td>
<td>1204</td>
<td>298</td>
<td>5239</td>
<td>84.35</td>
</tr>
<tr>
<td>SMR 8a</td>
<td>26</td>
<td>28</td>
<td>66</td>
<td>88</td>
<td>74</td>
<td>16</td>
<td>298</td>
<td>4.80</td>
</tr>
<tr>
<td>SMR 9</td>
<td>6</td>
<td>6</td>
<td>15</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>42</td>
<td>0.68</td>
</tr>
<tr>
<td>SMR 11</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>13</td>
<td>14</td>
<td>2</td>
<td>42</td>
<td>0.68</td>
</tr>
<tr>
<td>SMR 12</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0.08</td>
</tr>
<tr>
<td>SMR 16</td>
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<td>7</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>18</td>
<td>18</td>
<td>0.29</td>
</tr>
<tr>
<td>SMR 17</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>21</td>
<td>0.34</td>
</tr>
<tr>
<td>SMR 18</td>
<td>10</td>
<td>20</td>
<td>63</td>
<td>87</td>
<td>59</td>
<td>19</td>
<td>258</td>
<td>4.15</td>
</tr>
<tr>
<td>Total</td>
<td>604</td>
<td>767</td>
<td>1199</td>
<td>1912</td>
<td>1381</td>
<td>348</td>
<td>6211</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Reasons for breaches

Data were provided by the RPA on reasons why breaches had occurred for each inspection failure. Reasons why compliance failures were recorded with respect to breaches of SMR conditions, other than SMRs 6-8a, are summarised in Table 55 (NB there were some missing data so some values may be slight underestimates).

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29 Farm sizes are defined by the economic activity of the farm, as determined by Standard Labour Requirement (SLR), rather than the size in area. For further detail, see: http://www.defra.gov.uk/esg/work.htm/publications/cs/farmstats_web/1_ABOUT_THE_SURVEY/FAQs_ABOUT_THE_DATA_AND_SURVEY/Introduction.htm#holdingtypeclassification
### Table 55: Reasons for breaches of SMR conditions

<table>
<thead>
<tr>
<th>SMR</th>
<th>Breach</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shooting of starlings</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Failure to comply with Authorization</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Failure to keep records (20 of the 27 'Failure to comply with</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Authorization' were specific to record keeping)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disposal of pesticide washings without authorisation</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Sheep dip disposal without authorization</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Manure effluent</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Pollution control</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Over application of effluent to land</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Unauthorised waste disposal</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Poor record keeping</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Over application</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Incomplete records</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>Over application of manure/ N fertilizer</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Breach of closed period</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Inappropriate application of fertilizer</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Application to water logged soils</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Unaware of NVZ on land</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Breaching habitat protection agreements</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Plant protection products records not kept</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Plant protection products (PPP) not used as directed</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>PPP not used on accordance with code of good practice</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Use of PPP that is no longer approved</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PPP used on buffer or unintended area</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PPP applied by person without certificate of confidence</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Records not kept up to date</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Failure to comply with TB herd surveillance</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Incomplete Vet records</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>No records/ incomplete records'</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Animal feed not stored/recording appropriately</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Dirty equipment</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Failure to minimise risk of contamination of milk with milk from animal on treatment</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Inappropriate handling of waste/ hazardous substances</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unclear reason for failure</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Farmer does not have permission to use feeds containing restricted proteins</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>Accommodation not clean</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>No access to clean water</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Lack of food</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unclear reason for failure</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unsuitable housing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Failure to inspect animals twice daily</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 55: continued

<table>
<thead>
<tr>
<th>SMR</th>
<th>Breach</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>No water</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Inadequate accommodation provided</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Boar kept very isolated</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Teeth clipped/ tail docking</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Inappropriate breeding (Boar and v young sows)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No access to farrowing crate</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Parasites evident</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Poor lighting</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Unsuitable area to isolate sick pigs</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>Inadequate medical records</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Animals kept in unsuitable conditions</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Inadequate mortality records</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Inadequate care of sick livestock</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Failed to seek veterinary advice</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Animals in poor condition</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Inadequate feeding</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Insufficient staff</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>No isolation of sick animals</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Poorly trained staff</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Animals not inspected frequently enough</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>No constant access to water</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Inappropriate breeding</td>
<td>6</td>
</tr>
</tbody>
</table>

The number of breaches in animal identification SMRs, combined with the way in which the data were recorded, meant that it was not feasible to analyse the farm-level data, however a summary was provided separately for SMR 7 and 8, and this is recorded in Table 56. Many failures related to inadequate record keeping. Problems relating to animal welfare included:

- Medicine records not kept
- Mortality records not kept
- Sharp edges or protrusions in accommodation or fittings likely to cause injury
- Sick animals that have not been cared for properly

With respect to NVZs, the following causes of failure were found:

- Problems with the quantity of organic manure and artificial fertiliser used within designated NVZs
- The level of organic manure is over the field limit
- The level of fertiliser N used is in excess of crop requirements, with no agronomic justification

SMR 9 difficulties included:

- Not complying with the principles of good plant protection practice, as explained in Defra’s Code of Practice for Using Plant Protection Products
- An approved product has been used, but not in compliance with the conditions and requirements for its approval, e.g. sprayers/operators did not hold the necessary qualification/certificate of competence

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Table 56: Breakdown of reasons for breaches of SMRs 7 & 8 (cattle identification) found from 1% selection or additional selection

<table>
<thead>
<tr>
<th>Code</th>
<th>Discrepancy</th>
<th>Total breaches</th>
<th>No. inspections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2006 2007 2006 2007</td>
<td></td>
</tr>
<tr>
<td>FM</td>
<td>Failure to report movement</td>
<td>2939 2370 250 110</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Serious DAM identification error with Date Based Export Scheme impact</td>
<td>517 105 109 24</td>
<td></td>
</tr>
<tr>
<td>LZ</td>
<td>Less Serious DAM ID error</td>
<td>265 33 53 7</td>
<td></td>
</tr>
<tr>
<td>NF</td>
<td>Animal not found in farm records</td>
<td>592 1402 56 41</td>
<td></td>
</tr>
<tr>
<td>MV</td>
<td>Movement details not recorded or incorrectly recorded on farm register/database</td>
<td>983 592 115 65</td>
<td></td>
</tr>
<tr>
<td>DB</td>
<td>Incorrect Date of birth</td>
<td>249 116 59 20</td>
<td></td>
</tr>
<tr>
<td>NP</td>
<td>Animal present without passport, COR or CPP35</td>
<td>642 1288 120 38</td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td>Dead animal, Passport not returned</td>
<td>2256 661 234 82</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>Passport/Cor/CPP35 present - no animal</td>
<td>547 97 97 27</td>
<td></td>
</tr>
<tr>
<td>OP</td>
<td>Other passport details incorrect</td>
<td>344 70 145 36</td>
<td></td>
</tr>
<tr>
<td>TG1</td>
<td>Lost all tags/never been tagged</td>
<td>499 197 85 41</td>
<td></td>
</tr>
<tr>
<td>TG2</td>
<td>Tags lost over 28 days/less serious tagging errors</td>
<td>663 558 66 60</td>
<td></td>
</tr>
</tbody>
</table>

Problems with SMR 11 (Food and feed law) were generally a lack of records, or inadequate records kept, whilst SMR 2 (groundwater) failures related to unauthorised disposal of List 1 and List 2 substances such as waste sheep dip or pesticide washings, or failure to comply with the conditions of a groundwater authorisation.

Major problems with respect to animal identification SMRs included:
- Failure to report the movement of an animal
- Failure to tag or re-tag animals within 28 days
- Cattle present with no passport, or passports with no cattle
- Cattle movement details not recorded or incorrectly recorded on Cattle Tracing Scheme or in farm records

Problems reported by the RPA for SMRs 6 and 8a included:
- Failure to make an annual inventory (on December 1) of sheep/goats kept on a farm;
- Failure to keep records of movements of pigs on and off the holding and no annual record of maximum pigs on holding
- Sheep and/or goat records not maintained as required

Good Agricultural and Environmental Condition

Inspection failures for GAEC requirements were generally low in both 2006 (Table 57) and 2007 (Table 58).
### Table 57: Summary of inspection data for GAECs in 2006

<table>
<thead>
<tr>
<th>GAEC</th>
<th>No where Standard is Applicable</th>
<th>Number Failed</th>
<th>Failed %</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>WL</td>
<td>1%</td>
</tr>
<tr>
<td>GAEC 1</td>
<td>1462</td>
<td>14</td>
<td>1.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 2</td>
<td>842</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 3</td>
<td>1403</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 4</td>
<td>833</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
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<tr>
<td>GAEC 5</td>
<td>478</td>
<td>1</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 6</td>
<td>322</td>
<td>4</td>
<td>1.2</td>
<td>3</td>
</tr>
<tr>
<td>GAEC 7</td>
<td>223</td>
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<td>0.0</td>
<td>0</td>
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<tr>
<td>GAEC 8</td>
<td>1219</td>
<td>17</td>
<td>1.4</td>
<td>9</td>
</tr>
<tr>
<td>GAEC 9</td>
<td>842</td>
<td>2</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 10</td>
<td>635</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 11</td>
<td>1463</td>
<td>11</td>
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<td>9</td>
</tr>
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<td>GAEC 12</td>
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<td>0.4</td>
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<td>GAEC 13</td>
<td>544</td>
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<td>47</td>
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</tr>
<tr>
<td>GAEC 16</td>
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<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 17</td>
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<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Set-aside</td>
<td>127</td>
<td>7</td>
<td>5.5</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>70</td>
<td>34</td>
<td>0</td>
</tr>
<tr>
<td>GAEC</td>
<td>No where Penalty</td>
<td>Standard is</td>
<td>Number Failed</td>
<td>Failed</td>
</tr>
<tr>
<td>------</td>
<td>-----------------</td>
<td>-------------</td>
<td>---------------</td>
<td>--------</td>
</tr>
<tr>
<td>GAEC 1</td>
<td>1041</td>
<td>37</td>
<td>3.6</td>
<td>3</td>
</tr>
<tr>
<td>GAEC 2</td>
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<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 3</td>
<td>1034</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 4</td>
<td>260</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 5</td>
<td>309</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 6</td>
<td>317</td>
<td>3</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>GAEC 7</td>
<td>164</td>
<td>1</td>
<td>0.6</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 8</td>
<td>778</td>
<td>11</td>
<td>1.4</td>
<td>2</td>
</tr>
<tr>
<td>GAEC 9</td>
<td>478</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 10</td>
<td>252</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 11</td>
<td>1035</td>
<td>9</td>
<td>0.9</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 12</td>
<td>167</td>
<td>2</td>
<td>1.2</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 13</td>
<td>354</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 14</td>
<td>950</td>
<td>22</td>
<td>2.3</td>
<td>13</td>
</tr>
<tr>
<td>GAEC 15</td>
<td>938</td>
<td>3</td>
<td>0.3</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 16</td>
<td>865</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>GAEC 17</td>
<td>639</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Set-aside</td>
<td>302</td>
<td>11</td>
<td>3.6</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>21</td>
<td>31</td>
<td>0</td>
</tr>
</tbody>
</table>

Where failures occurred they were generally around 1% or less except for GAEC 1 (Soil protection review) in 2007 (3.6%), GAEC 14 (2m margins; 3.5% in 2006 and 2.3% in 2007), and set-aside (5.5% in 2006; 3.6% in 2007). Around two thirds of penalties were warning letters, with the remaining third almost entirely at the 1% level.

**Reasons for breaches**

Reasons why compliance failures were recorded with respect to breaches of GAEC conditions are summarised in Table 59. Breaches of GAEC 1 were generally a result of failure to complete the Soil Protection Review. Breaches of GAEC 11 related to a failure to prevent spread of a range of weed species, including the non-native invasive species Japanese knotweed and Himalayan balsam.

Overall, the most frequently breached GAEC condition was GAEC 14. Nearly half of these breaches were a result of cultivating within the prescribed distance of the boundary feature. A significant proportion had no uncultivated strip at all, and in a number of cases there was evidence of damage from pesticides, fertiliser or manure.

The other area where substantial breaches were seen related to GAEC 8. Around two thirds of these related to a failure to re-establish a public right of way sufficiently quickly after cultivation, but nearly a quarter were a result of the right of way becoming obstructed.
<table>
<thead>
<tr>
<th>GAEC</th>
<th>Nature of breach</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Failure to complete SPR</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>SPR not completed accurately or to level required</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>No access to GAEC Soil Management Guidance Booklet</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Unable to locate SPR at time of inspection</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Cultivation on BAP land</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Inappropriate use of land</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Manuring/liming activities</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Cattle on land out of agreed times</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Poaching on SSSI</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Damage to monument due to drainage works</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Footpath has been cropped/cultivated and not re-established</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Obstruction of PROW</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Style and gateposts not maintained</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Path &lt;1m width</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Re-directed</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Overgrazing</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Unsuitable supplementary feeding</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Cattle grazed on land without a grazing licence</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>General failure to prevent spread of injurious weeds</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Failure to prevent spread of spear thistle</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Failure to prevent spread of common ragwort</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Failure to prevent spread of Himalayan balsam</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Failure to prevent spread of creeping thistle</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Failure to prevent spread of broad leaved dock</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Failure to prevent spread of Japanese knotweed</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Land not maintained as specified</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Green cover not established/ damaged</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Land used as demo/ manure store</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No access to assess the land</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Land has been grazed before 31 August</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Land cultivated between 1 March and 31 August</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Stone wall removal</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Cultivation of buffer strip</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>No 2m buffer</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Damage of protection zone by spray/ fertilizer/ manure</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Use of buffer as storage (bales, manure etc.)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Buffer strip not well maintained</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Unclear reason for failure</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>burning in protection zone</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Damage to hedgerow/ditch</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Stone wall removal</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Hedgerow removed</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Hedgerow trimmed in the closed period</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Cultivation on buffer strip (? Not sure of relevance to GAEC15)</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Tree felling without licence</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>Mature tree removed (presumably with TPO on it)</td>
<td>1</td>
</tr>
</tbody>
</table>
Breakdown by farm type

Table 60 shows GAEC breaches by farm type. Unlike the inspection failures recorded for SMRs, crop-dominated farm types were more likely to fail the inspection, especially in relation to GAEC 14, GAEC 12 and set-aside. However, the largest numbers of failures for GAEC 1 were by Lowland livestock farmers and ‘other’ types (mainly small livestock farms), rather than arable farms, despite the fact that it is probably considerably easier for livestock farmers to complete. This may be a result of a lack of familiarity with the requirements by these groups.
Table 60: Breakdown of GAEC inspection failures by farm type (NB. does not include refused inspections)

<table>
<thead>
<tr>
<th>GAEC</th>
<th>Cereals</th>
<th>Dairy</th>
<th>General Cropping</th>
<th>Grazing Livestock (LFA)</th>
<th>Grazing Livestock (Lowland)</th>
<th>Horticulture</th>
<th>Mixed</th>
<th>Other Types</th>
<th>Specialist Pigs</th>
<th>Specialist Poultry</th>
<th>Unclassified</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>19</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>64</td>
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<tr>
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<tr>
<td>8</td>
<td>12</td>
<td>9</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>9</td>
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<td>11</td>
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<td>4</td>
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<td>32</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>33</td>
<td>17</td>
<td>19</td>
<td>5</td>
<td>10</td>
<td>1</td>
<td>11</td>
<td>2</td>
<td></td>
<td>2</td>
<td>3</td>
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<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Set Aside</td>
<td>13</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>74</td>
<td>32</td>
<td>39</td>
<td>21</td>
<td>46</td>
<td>3</td>
<td>34</td>
<td>37</td>
<td>2</td>
<td>3</td>
<td>20</td>
<td>321</td>
</tr>
</tbody>
</table>
Breakdown by farm size

Breaches of GAEC conditions are classified by farm size in Table 61. Small and very small farms were the most likely to fail an inspection for GAEC 1. There were very few breaches of this condition by medium, large or very large farms. However, medium, large and very large farms were more likely to breach GAEC 8 probably because they were more likely to have a Public Rights of Way (PROW) crossing the farm. Inspection failures related to GAEC 14 were evenly distributed across farm sizes, with the exception of very small holdings. It is likely that many of these very small holdings were largely or entirely composed of field sizes less than 2ha, and were therefore exempt. They were however more likely to have problems with GAEC 11, with nearly half the failures related to prevention of weed spread attributed to very small farms.

Table 61: Breakdown of GAEC inspection failures by farm size

<table>
<thead>
<tr>
<th>GAEC</th>
<th>Un-classified</th>
<th>very large</th>
<th>large</th>
<th>medium</th>
<th>small</th>
<th>very small</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAEC 1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>42</td>
<td>64</td>
<td>19.81</td>
</tr>
<tr>
<td>GAEC 5</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>GAEC 6</td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>2.17</td>
<td></td>
</tr>
<tr>
<td>GAEC 7</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>GAEC 8</td>
<td>3</td>
<td>14</td>
<td>12</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>49</td>
<td>15.17</td>
</tr>
<tr>
<td>GAEC 9</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td></td>
<td>8</td>
<td>2.48</td>
<td></td>
</tr>
<tr>
<td>GAEC 11</td>
<td>2</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>14</td>
<td>34</td>
<td>10.53</td>
<td></td>
</tr>
<tr>
<td>GAEC 12</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td></td>
<td>11</td>
<td>3.41</td>
<td></td>
</tr>
<tr>
<td>GAEC 13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>GAEC 14</td>
<td>3</td>
<td>29</td>
<td>17</td>
<td>28</td>
<td>22</td>
<td>4</td>
<td>103</td>
<td>31.89</td>
</tr>
<tr>
<td>GAEC 15</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>12</td>
<td>3.72</td>
<td></td>
</tr>
<tr>
<td>GAEC 16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>GAEC 17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>Set Aside</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>30</td>
<td>9.29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>58</strong></td>
<td><strong>45</strong></td>
<td><strong>67</strong></td>
<td><strong>55</strong></td>
<td><strong>78</strong></td>
<td><strong>323</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Requests for derogations

Table 62 shows the number of derogations requested and granted by the RPA in 2006, 2007 and 2008. It is notable that by far the greatest number of requests related to GAEC 14, but that the number has declined considerably from year to year, even allowing for the fact that 2008 data do not include the last two months of the year. This is largely due to applicants for derogations being required to take measures to negate the need for derogation in future years, especially in relation to spraying under electric fences (see below).

Numbers of requests for most other requirements were low, but there were around 40 for GAEC 15 in 2006 and 2007, supporting evidence previously cited that this provision involved a change in management for a relatively high proportion of farmers. Unlike the other requirements, the number of requests for derogations relating to GAEC 12 appears to be increasing year on year. However, the increase in applications in 2008, and large numbers granted, are accounted for by increases in
numbers of derogations to create lapwing and stone curlew nesting habitat on land
that would formerly have been classed as set-aside (see below).

Table 62: Numbers of derogations requested (granted)

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008 (to 21/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAEC 1 (General reqts &amp; SPR)</td>
<td>1 (0)</td>
<td>1 (0)</td>
<td></td>
</tr>
<tr>
<td>GAEC 3 (Waterlogged soil)</td>
<td>4 (0)</td>
<td>2 (0)</td>
<td></td>
</tr>
<tr>
<td>GAEC 4 (Crop residue burning)</td>
<td>2 (0)</td>
<td>5 (0)</td>
<td></td>
</tr>
<tr>
<td>GAEC 9 (Overgrazing/supplementary feeding)</td>
<td>1 (0)</td>
<td>1 (0)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>GAEC 11 (Control of weeds)</td>
<td>2 (0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAEC 12 (Uncropped land)</td>
<td>12 (1)</td>
<td>21 (2)</td>
<td>39 (41)¹</td>
</tr>
<tr>
<td>GAEC 13 (Stone walls)</td>
<td>5 (3)</td>
<td>5 (1)</td>
<td>8 (0)</td>
</tr>
<tr>
<td>GAEC 14 (2m margins)</td>
<td>304 (139)</td>
<td>74 (34)</td>
<td>29 (14)</td>
</tr>
<tr>
<td>GAEC 15 (Hedgerows)</td>
<td>40 (4)</td>
<td>36 (4)</td>
<td>11 (10)</td>
</tr>
<tr>
<td>SMR 1 (Wild birds)</td>
<td>1 (0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Some derogations for creation of lapwing/stone curlew habitat were anticipated due
to changes in set-aside rules, and letters sent to farmers in advance of an application
from them.

Table 63 shows the reasons that derogations were requested for those that were
granted. Information for derogations that were refused is not available. For GAEC
12 (uncropped land), the most common reason for derogation requests was to create
bare areas for nesting lapwings and/or stone curlews. Twenty two of the 34 were
letters sent out in anticipation to landowners who applied for derogation from the
requirement to maintain a green cover on set-aside in 2007 for lapwing/curlew habitat
creation. These were sent out a letter in 2008 (after the setting of a zero rate for set-
aside) to give them derogation from GAEC 12, in order to enable them to keep the
management specific to habitat provision.

Of the large number of derogations from GAEC 14 that were granted in 2006, just
under a quarter were related to the establishment or improvement of the margin,
usually involving cultivation and sowing. As would be expected, this reason was less
apparent in subsequent years. Sixteen were related to the SAFFIE research
project³⁰, where margins were managed using experimental treatments including
selective herbicides (graminicides) and scarification. The research for this project
ended in 2006, so no further derogations were required in subsequent years.
However, the major reason for granting derogations was to allow spraying beneath
an electric fence. These derogations were granted on condition that the applicant
took measures to negate the need for a derogation in future years, so a repeat
application for the same reason was not likely to be approved, hence the number of
derogations has declined.

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³⁰ Sustainable Arable Farming For an Improved Environment; see http://www.saffie.info/
Table 63: Reasons for individual derogation requests for granted derogations

<table>
<thead>
<tr>
<th>GAEC No.</th>
<th>Reason for application for derogation</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Blue tongue movement restrictions leading to poaching</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Create habitat for stone-curlows/ lapwings etc</td>
<td>10</td>
<td>1</td>
<td>34</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Leave set-aside uncut</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Archaeological work</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Cut vegetation between 1st March-31st July</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Cultivate the areas prone to soil erosion</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Use a herbicide to re-establish green cover</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Use of this land as demonstration plots</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Drainage repair work</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>keep fields as bare fallow rather than establish green cover</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>remove stone wall for public safety</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>remove stone wall-no reason given</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>replace wall with fence and use stone to repair other stone walls</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Spraying under electric fence</td>
<td>65</td>
<td>25</td>
<td>4</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>Work to re-establish/improve margin</td>
<td>33</td>
<td>1</td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>SAFFIE</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Herbicide application to control weeds</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Statutory works, e.g. pipes, pylons, cables</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Fire damage to margins</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Involvement in other scheme (CSS)</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Perceived crop production benefits</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Cut hedge for fence repair</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Hedge/ditch/boundary maintenance</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Cut hedge while conditions allow</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Cut hedge on animal welfare grounds</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Cut hedge to improve visibility</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Hedge trimming for works by statutory authority</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Trim hedge bottom for rabbit control</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>unspecified</strong></td>
<td><strong>6</strong></td>
<td><strong>10</strong></td>
<td><strong>24</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

In addition to the individual derogations discussed above, national derogations from GAEC 3 were granted in 2007 and 2008, in response to requests by the farming industry representatives, to allow harvesting of crops from waterlogged soil, as a result of the unusually wet weather at harvest time in both years.31

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Appendix 4: Impact of individual requirements

Soil Management & Protection

GAEC 1: General requirements for soil management & protection

Benefits of management

The function of soil is far reaching yet its importance has only relatively recently been acknowledged and efforts are being made at the European level to protect this fragile resource (The Thematic Strategy for Soil Protection). Views differ as to as to whether a Directive is needed though there is agreement that soil must be protected. Defra has a Soil Action Plan and is currently developing a Soil Strategy for England$^{32}$.

Maintaining a healthy soil is fundamental to agriculture (and the wider environment) and an underlying feature is the structure of the soil. A well-structured soil contains a good balance of organic matter, clay, silt, sand, and pore spaces, providing good drainage and aeration. An imbalance through, for example, a reduction in organic matter due to continuous cropping with the use of inorganic fertilisers, or compaction by machinery, reduces the quality of the soil.

The soil protection review (SPR) requires the farmer to prepare a detailed assessment of farmed land and cropping practices in relation to this land. The farmer is required to 1) identify any soil issues; 2) implement measures to manage this land appropriately, and 3) review this action on at least an annual basis. The requirement to ‘self-police’ through reviewing the plan is potentially significant and it differs from previous Soil Management Plans in Entry Level Stewardship (ELS) where simply preparing a plan achieved the relevant points. Similarly, the specificity of the assessment ensures that remedial measures are tailored to the actual risk which is essential for benefits to be realised. Research investigating the environmental impact of ELS concluded that targeting options to land most at risk would be of much greater benefit to the soil and water quality than may occur under the current system (Defra project MA0104133). A risk-based approach was also fundamental to the England Catchment Sensitive Farming Directive Initiative (ECSFDI) where it is predicted that the changes will result in reductions of 10 – 40% of pollutants (ECSFDI Evaluation Report).

Examples of evidence of soil damage include: if soils cap and slump easily, the land is difficult to cultivate, erosion and/or runoff occur, compaction and/or poaching occurs, land retains water for long periods and/or is waterlogged. The extent to which any of these occurs will depend on a variety of factors, including soil type depth, slope, drainage, rainfall patterns, and cropping history. Likewise, the appropriate remedial actions (e.g. maintaining stubble and incorporating crop residues, including cover crops in the rotation (GAEC 2), applying bulky organic matter, shallow cultivation, across-slope cultivation, removing compaction and having adequate drainage) will also vary depending on the aforementioned factors.

$^{32}$ http://www.defra.gov.uk/environment/land/soil/sap/index.htm
$^{33}$ Follow on to the Initial Evaluation of Environmental Stewardship (Estimating impacts of ELS on key biodiversity indicators and diffuse pollution of surface waters by nutrients)
#RelatedDocuments
Research has been conducted into the effects of land management practices, for example on soil erosion and compaction, but such work has necessarily considered a limited range of crop/soil combinations (although generally representative areas were used). Consequently, it is not possible to extrapolate findings to all situations. This is acknowledged to some extent in the guidelines for conducting the SPR, where it illustrates the different potential problems/solutions for different crop/soil type/slope combinations. Examples of the supporting literature are given below.

Douglas et al. (1998a) quantified improvements in soil structure (increased volume, mean size and number of macropores; decrease in vane shear strength) through the use of reduced ground-pressure and/or zero-traffic systems. Infiltration can be increased from 84 to 400% without wheel compaction, with 6 – 34% increase in plant available water (Chamen, 2006). The interdependence of soil properties was exemplified by O'Sullivan (1992) who concluded that soils with the highest levels of organic matter were the least vulnerable to compaction when water contents were raised.

Increases in yields of 4–14% have been reported where zero traffic was employed compared to conventional tillage (and traffic-induced compaction) (Chamen et al., 1992). Reduced yields of barley (27 – 40%), maize (> 25%) and beans (> 30%) in compacted soils were attributed to a reduction in the interception of light due to smaller leaf areas (Assaeed et al., 1990). Restricted root growth due to compaction also reduced root length by 50% (Shierlaw & Alston, 1983; Kristoffersen & Riley, 2005), and to a lesser extent yield. However, Douglas (1997) reported higher yields from compacted soil under conventional tillage compared to zero-traffic, which was attributed to the fact that uncompacted soil was more dependent on rainfall than compacted soil, and Ball & Ritchie (1999) recorded lower winter barley yields due to compaction only when in combination with a wet soil. This illustrates the complexity of the issue and the difficulties involved in gathering evidence of impacts. Similarly, although a higher level of traffic can be directly related to a reduction in soil quality and the consistency of yields, the timing of operations is equally important and this can be an effective way of preserving soil quality (Ball et al., 1992).

Douglas et al (1998b) not only demonstrated reductions in yields of around 15% in grassland when comparing typical and zero compaction, but, when more fertiliser was added to improve yields, only 55% of nitrogen could be accounted for after typical compaction compared to 71% for zero compaction. The authors suggested that the observed losses in N were due to greater surface runoff, denitrification and ammonia volatilisation from the compacted soil, exemplifying the complexity of interactions and the impact on soil and water quality. Compaction is also known to reduce the uptake of nutrients (Wolkowski, 1990) as does a higher soil moisture level (Abassi et al., 2005). Further evidence of the extended impact of compaction is provided by Zhao et al. (2007) who demonstrated that soil compaction significantly increased the concentration of the carcinogen arsenic in wheat grain under irrigation, which was attributed to the mobility of the compound in soil and transport to the roots. An overview of the impact of soil compaction on grassland in England and Wales is given by the Defra-funded study BD2304 (Anon, 2007). The role of soil in protecting the environment is equally complex, and the status of the soil in terms of organic matter content, water content, and pore spaces/aeration influences processes such as pesticide degradation and nutrient cycling, which, in turn, affects the release of greenhouse gases.

Nitrous oxide (N₂O) is a greenhouse gas; it can cause enrichment of nutrient-poor habitats, and it serves to acidify ecosystems. Generalising, N₂O is released when nitrate is reduced under anaerobic conditions, conditions that are induced by a poor
soil structure and waterlogging, although N₂O may also be produced under aerobic conditions (Bateman and Baggs, 2005). Evidence of increased release of N₂O with an increase in water-filled pore space has been provided by a number of researchers (Aulakh et al., 1991; Ciarlo et al., 2007; Clayton et al., 1997; del Prado et al., 2006; Dobie et al., 1999; Dobie et al., 2001; Dobie & Smith, 2003; Gillam et al., 2008; Maag & Vinther, 1999; Ruser et al., 2006; Sanchez-Martin, 2008; Smith et al., 1998; van Groeningen et al., 2005; Weier et al., 1993). This effect can be augmented by compaction (Ball et al., 1999a; Bhandral et al., 2007; Ruser et al., 1998; Ruser et al., 2006; van Groeningen et al., 2005; Yamulkil & Jarvis, 2002). Conversely, land cultivated under minimum tillage can have a higher release of nitrous oxide compared to conventional tillage (Beheydt et al., 2008; Liu et al., 2007; Ball et al., 1999b) which may be attributed to lower water retention capacity associated with conventional tillage. Appropriate management techniques must therefore be tailored to the land.

Methane is another greenhouse gas that is both sequestered by and released from the soil. The uptake of atmospheric methane by the soil is reduced by compaction (Ruser et al., 1998; Teepe et al., 2004; Merino, 2004; Li & Kelliher, 2007; Flessa et al., 2002; Sitaula et al., 2002) and it can cause a rise in methane production through anaerobic microbial processes (Yamukil & Jarvis, 2002). Higher water contents also reduce methane oxidation (Li & Kelliher, 2007); conversely aerobic soils are an important sink for methane (Powlson et al., 1997). The soil is also important for the sequestration of carbon which ultimately could assist in the reduction of the greenhouse gas, carbon dioxide. Preventing the depletion of soil organic matter can preserve the soil's ability to sequester carbon (Tiberti et al., 2008).

The degradation of pesticides in the soil is essential to prevent the contamination of both ground and surface water, and to reduce the risk to terrestrial organisms. Pesticide degradation is enhanced by the presence of organic matter (e.g. Kah et al., 2007; Barriuso & Benoit 2003; Gaultier et al., 2008; Webb & Aylmore, 2002) and it can therefore be influenced by soil quality.

**Costs of management**

The cost of implementing GAEC 1 will be similar to that of implementing a Soil Management Plan as assessed in the Regulatory Impact Assessment (RIA) (2004), i.e. medium to high, though the SPR involves less paperwork than the SMP and more work on the ground. This assessment indicated that costs could be skewed, affecting particular farm types and therefore regions. It was suggested that costs would be high for arable, general cropping, outdoor pigs and dairy farms with maize where either soils are vulnerable, slopes are steep, or watercourses are apparent, as there is a greater likelihood that changes would need to be made. In addition, regardless of the farming type, small and medium farms are likely to be worse off as they tend not to have dedicated management/advisors to assist with implementation. In such instances, consultants may need to be used and/or the farmer may wish to receive training. Consequently, initial costs are likely to be high, but should reduce relatively over time. In addition, the small/medium farm has less flexibility with land and may have to adopt crops with lower profits; these costs being highly significant in particular cases. There is however the potential for some farmers to curb the financial loss due to, for example, higher yields associated with a better soil structure.

Whilst many farmers may already practice good husbandry and therefore already farm in a manner that avoids creating soil problems, there will still be some costs involved with the need to document their practices on an annual basis.
Impact of Cross Compliance on uptake of management

The SPR is applicable to over 80% of farmers and most farmers (96%) considered they were fully compliant, a figure which is supported by the inspection data (99% compliant in 2006; 95% compliant in 2007). Many farmers were already practicing good husbandry and did not need to make changes to their farming, but 28% of farmers did need to make some changes. It is likely that the SPR will have (or have had) some positive impact on soil (and water) quality. Moreover, the SPR can highlight very specific issues at farm, or even field level, due to the detailed nature of the Review, thus any non-compliance issues can be appropriately addressed. Common reasons for non-compliance included not identifying the broad soil type on the farm and not including measures to address soil management issues. Identifying the correct soil type will enable any remedial measures to be more effective, as the soil type is fundamental to both the problem and therefore the solution in any soil management issue. If more soil types are correctly identified as a result of implementing SPR, then there is likely to be a positive impact on the environment.

The Farm Practices Surveys (FPS) has recorded details of measures taken by respondents to protect soils and water, though it is not possible to ascertain the role of Cross Compliance in stimulating these actions. In 2008, 57% of holdings used, or planned to use, minimum tillage to maintain water quality. Measures to increase soil organic matter taken in the last 12 months included the application of organic manure (75%), returning straw or other crop residues to the soil after harvest (59%), the use of reduced or shallow cultivations (49%), the inclusion of short term leys or cover crops in the rotation (43%), and other actions (16%). Measures taken to reduce soil compaction in the last 12 months included removing compaction from headlands after harvest (69%), using low ground pressure vehicles (61%) and improving drainage (48%). Percentages of FPS respondents taking measures to reduce runoff, water and wind erosion and reduce poaching by livestock, where the same or a similar measure was reported in more than one year, are shown in Table 64.

Table 64: Percentages of farmers taking measures to reduce soil erosion and poaching or maintain water quality in 2005, 2006 and 2008 (data from Defra Farm Practices Surveys).

<table>
<thead>
<tr>
<th>Measure</th>
<th>2005</th>
<th>2006</th>
<th>2008*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce arable cultivation</td>
<td>11</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Working across rather than down slopes / contour ploughing</td>
<td>14¹</td>
<td>11</td>
<td>71</td>
</tr>
<tr>
<td>Change timing of cultivation</td>
<td>15</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Use buffer strips</td>
<td>9</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Switch from autumn to spring cropping</td>
<td>8</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Improving field drainage (29%)</td>
<td></td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Sow grass strips across slopes</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Fencing watercourses to prevent stock from eroding banks</td>
<td>22²</td>
<td>36</td>
<td>50</td>
</tr>
<tr>
<td>Taking livestock off fields subject to poaching (89%)</td>
<td>60</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Delaying putting livestock out to grass (84%)</td>
<td>56</td>
<td>84</td>
<td></td>
</tr>
</tbody>
</table>

Only measures reported in more than one year are included; a number of additional measures were reported in single years.

¹ In last 5 years  
² In a typical year  
* In the last 12 months

These examples indicate that substantial proportions of farmers are taking steps to protect their soil and avoid effects on water quality. Care needs to be taken in
comparing years as the questions were asked in slightly different ways, but there is evidence that for a number of measures the percentage of farmers taking them increased with time.

In 2008, 6% said that they last updated their SPR in 2006, 53% in 2007 and 17% in 2008 (but note that the survey was carried out in the first half of 2008). Twenty four percent said that they did not have a SPR.

Summary of Cross Compliance impacts

There is sound evidence that impacts of soil degradation on agriculture and the environment due to, for example, erosion, compaction, and loss of organic matter, are far reaching, ranging from loss in yields to increased uptake of contaminants in crops.

Soil issues are specific to factors such as the soil type, slope, crop, and rainfall patterns, the combination of which produces a vast amount of variation. The SPR introduces a risk-based approach that accounts for these individualities and it introduces an element of ‘policing’ (albeit largely self-policing). The potential for real environmental (and agricultural) benefits is therefore far greater than would be expected from any generic prescriptions.

Evidence from the Farm Practices Survey indicates that a substantial proportion of farmers are carrying out measures to protect soils and water quality. However, a quarter of respondents still did not have a SPR.

Failure to comply was attributed to problems in carrying out the review and identifying soil types, indicating that more training and/or advice may be beneficial and further enhance the effectiveness of the SPR.

Costs will vary widely. They could be high for some farms and impacts are likely to be seen on a regional and/or farm type basis.

GAEC 2: Post-harvest management of land

Benefits of management

GAEC 2 applies to land that has been combined mechanically and it aims to reduce erosion and runoff by ensuring that the bare land is left in such a way that runoff is minimised, which can include leaving a rough surface and/or stubble, or growing a temporary cover crop.

Temporary cover crops will stabilise the soil through their root systems, reduce the physical impact of raindrops due to the presence of a canopy, utilise water and, more importantly, utilise available nitrate, thus reducing the potential for nitrate leaching to groundwater and surface water. Evidence of the efficacy of cover crops in protecting soil and water is largely limited to their impact on nitrate leaching. Tonitto et al. (2006) reviewed literature to investigate the performance of non-leguminous and leguminous cover crops on crop yield and nitrate leaching compared to bare fallows. On average, compared to bare fallow, reductions in nitrate leaching were 70% and 40% respectively. However, it should be noted that over 60% of the data included in their meta-analysis related to corn grown in the US or Canada and only one dataset from the UK was included. Moreover, the sites were largely sandy soils and, whilst there is evidence to demonstrate that cover crops are effective on sandy soils (Shepherd, 1999; Askegaard et al., 2005), this is not necessarily the case on soils
less prone to nitrate leaching, where effects may be highly variable (Shepherd and Webb, 1999). Macdonald et al. (2005) concluded that cover crops are less likely to be effective on poorly draining soils in the driest parts of SE England and the regeneration of weeds and volunteer cereals may be sufficient to avoid excessive nitrate losses. This is supported by the work of Baggs et al. (2000) who reported no difference in nitrate leaching from plots sown with cover crops and those with volunteer and/or weed growth. However, Johnson et al. (2002) and Akegaard et al. (2005) both reported greater reductions in nitrate leaching from cover crops compared to natural regeneration. The effectiveness of cover crops may be more a function of soil type, cropping history and rainfall than the type of cover.

Although it has been suggested that experts believe that cereal stubble is not efficient at stopping erosion (Hilton, 2003), it may be that it is not efficient in all cases and factors such as soil type and slope may be significant. Other research has demonstrated the benefit of stubble compared to bare ground (Zuzel et al., 1993; Aiken et al., 2003) or other management techniques such as ploughing. For example, Puustinen et al. (2005) recorded erosional losses of 270–1500 kg/ha from stubble fields which compares to 1120–3330 kg/ha from cultivated land and 390–1380 kg/ha for contour-ploughed land, illustrating the fact that all management techniques must be considered at one time to define the overall impact on soil and water quality.

The evidence for the benefits of post-harvest management is difficult to separate from general protection of the soil, and GAEC 2 (and 3) are, in essence, fundamental to the achievement of the objectives of GAEC 1.

Cost of management

There are costs associated with seed for cover crops and the resource for planting, compared to allowing natural regeneration. In non-sandy soils such costs may be unnecessary, but the SPR may allow appropriate remedial measures to be identified.

There may be penalties associated with reduced yields due to cover crops removing nutrients and water from the soil, but these will be specific to the conditions/soil/crop.

Under exceptional weather conditions, the Secretary of State may issue a derogation from the need to comply with GAEC 3 for a fixed period. Such a derogation was granted in autumn 2008 owing to the exceptionally wet conditions experienced during late summer and autumn.  

Impact of Cross Compliance on uptake of management

Stubble burning has not been practiced regularly in the UK for some time, thus the requirement to maintain stubble is unlikely to have had an impact on farm practices. Nevertheless, the Momenta survey indicated that 17% of farmers did need to change their practice in order to comply with GAEC 2, thus Cross Compliance is likely to have had a small positive impact on soil and water quality in relation to this requirement. GAEC 2 has been generally observed, as indicated by the absence of non-compliance cases in either 2006 or 2007. The Momenta survey indicated that GAEC 2 was applicable to just less than 50% of farmers.

The Farm Practices Survey 2008 recorded that 59% of respondents had taken measures to remove compaction from headlands after harvest in the last 12 months.

Summary of Cross Compliance impacts

The benefits of cover crops are proven on sandy soils, but not for other soil types. Factors such as slope and angle of ploughing can be more significant in reducing runoff than a green cover. The SPR will be fundamental to ensuring that soil protection measures are appropriate to the risk.

GAEC 2 may have a small positive impact on soil and water quality, but it is inherently interlinked with, and fundamental to GAEC 1.

GAEC 3: Waterlogged soil

Benefits of management

It is well understood that allowing heavy machinery on waterlogged soil disrupts the soil structure and causes compaction, further reducing the ability of the water to infiltrate and rendering the land more susceptible to runoff and erosion. Research has therefore focused on how compaction can best be reduced or alleviated rather than quantifying the extent to which the resulting compaction will contribute to runoff and associated pollution losses. Evidence for the impact of compaction on crop growth is given in the section on GAEC 1, and, as with GAEC 2, GAEC 3 is fundamental to good husbandry and will therefore be applicable to the SPR.

Costs of management

There may be some costs incurred where farmers need to drain the land. Other administrative and practical costs fall within GAEC 1.

Impact of Cross Compliance on uptake of management

The Momenta survey indicated that GAEC 3 was applicable to just less than 50% of farmers and that 22% of farmers had to change their practice in order to comply with GAEC 3; thus Cross Compliance is likely to have had some positive impact on soil and water quality in relation to this requirement. GAEC 3 has been generally observed, as indicated by the absence of non-compliance cases in either 2006 or 2007.

Summary of Cross Compliance impacts

GAEC 3 is likely to have some positive impact on soil and water quality, but it is inherently interlinked with, and fundamental to, GAEC 1.

GAEC 4: Burning of crop residues

Benefits of management

Burning crop residues removes organic matter from the soil system, thus reducing the fertility of the soil, preventing the maintenance of a good soil structure and increasing the risk of capping. These serve to increase the risk of runoff and erosion.

This measure reinforces existing legislation (The Crop Burning (Residues) Act 1993) and prevents the burning of crop residues except under special circumstances.
However, since the introduction of the Crop Residues (Burning) Regulations 1993, this practice has effectively ceased, thus, in reality, this requirement is likely to have a negligible impact.

**Costs of management**

There are unlikely to be any additional costs as no change is required from current practice to comply with GAEC 4.

**Impact of Cross Compliance on uptake of management**

Stubble burning is no longer common practice. Only 11% of farmers indicated that GAEC 4 was applicable to them in 2006 and by 2007 it was applicable to none. Inspection data indicate that farmers are complying with GAEC 4.

**Summary of Cross Compliance impacts**

GAEC 4 is unlikely to have a significant impact on soil and water quality as this reinforces existing legislation.

The principles of GAEC 4 in relation to soil quality are underpinned within GAEC 2 and therefore GAEC 1.

**Water Quality**

**SMR 2: Groundwater**

**Benefits of management**

The requirements aim to control the discharge and/or disposal of potentially harmful and polluting materials. These largely reinforce existing requirements that are imposed by the Environment Agency (EA).

EA monitoring data demonstrate that groundwater can become contaminated with pesticides to the extent that it cannot be used, or, more frequently, must be diluted with other water sources. Pesticides were detected at over one quarter of the groundwater sites monitored, but only some had levels greater than the regulatory threshold of 0.1µg.L⁻¹ and this was largely compound-dependent. In 2007, seven of the most frequently detected pesticides were detected above the threshold at a frequency of <1% of groundwater monitoring sites, but atrazine (and its degradation products), simazine, diuron and bentazone had detections of >0.1µg.L⁻¹ for 1–2% of all groundwater monitoring sites. The pesticides detected were associated with both agriculture and amenity, but none were sheep dips. It is not expected that sheep dips should contaminate groundwater when disposed of correctly, as a risk assessment is completed by the EA prior to granting of a Groundwater Authorisation Licence (GWA). Nevertheless, incidents may lead to groundwater contamination depending on local conditions. It should be noted that not all sites can be monitored and the monitoring programme necessarily focuses on the larger aquifers.
Costs of management

The costs of management are unlikely to be above those already imposed by the Environment Agency.

Impacts of Cross Compliance on uptake of management

Over 60% of farmers indicated that SMR 2 was applicable to them. Less than 1% of farms failed their inspection in relation to SMR 2 and most received a 1% penalty. Failure to comply with the GWA and unauthorised disposal of waste sheep dip or pesticide washings were common reasons for failure.

Whilst SMR 2 reinforces existing requirements, the additional financial penalties for non-compliance may serve to encourage adherence to the requirements. This is more so given that some farmers were concerned about implementing this requirement (27 out of 96 respondents; 1167 were surveyed), thus it could be inferred that there is room for improvement.

Summary of Cross Compliance impact

There may be some positive impact of SMR 2 by way of reinforcing requirements of the EA.

SMR 3: Sewage sludge

Benefits of management

SMR 3 aims to ensure that there is no risk to human, animal, or plant health and no harmful effect on soil when sewage sludge is applied. This SMR largely reinforces the Sludge Use in Agriculture Regulations 1989.

Costs of management

The costs of management are likely to be minimal as the practices are already required under other regulations and utility companies are required to provide sewage of particular standards.

Impacts of Cross Compliance on uptake of management

Only 12% of farmers reported that this SMR was applicable, there were no compliance failures in 2006 and 2007, and only a handful of farmers had any concern about implementing this SMR (11 out of 34 respondents; 1167 were surveyed) indicating that there may be little additional benefit from this SMR.

Summary of Cross Compliance impact

SMR 3 merely serves to reinforce existing regulation.

SMR 4: Nitrate Vulnerable Zones

Benefits of management

The aim of SMR 4 is to reduce water pollution caused by nitrates, through reinforcement of the NVZ regulations. The discussion below considers the impacts
of NVZs, but, as for other regulation-based Cross Compliance standards, the impacts of SMR 4 apply only in so far as they increase compliance with the regulations.

There is substantial evidence in the EA monitoring programmes of nitrate pollution in both surface and groundwater. Indeed, the monitoring programmes have provided evidence that the original programme of measures designed for Nitrate Vulnerable Zones (NVZs) was not sufficiently robust and a revised Action Programme was introduced in September 2008 in order to comply with the Water Framework Directive.

There is little direct evidence of the benefits to water quality of implementing NVZs, but this is partly due to the prohibitive costs that would be associated with providing the necessary data on a representative scale as: 1) nitrate leaching is dependent on many factors (e.g. land use, soil type, climate etc), 2) there is natural variability in nitrogen (N) concentrations throughout the year so identifying changes in N due to farm practices and what would occur naturally is inherently difficult, and 3) there can be a substantial time-delay between changing a farm practice and a reduction in N concentrations (particularly for groundwater). The evidence of the benefits of NVZs to water quality is necessarily derived from predictive modelling (e.g. MANNER) where the models incorporate the many factors affecting nitrogen dynamics. A summary of the key measures included in the revised Action Programme and the predicted impact that these will have on water quality is shown in Table 65

It can be seen that measures relating to closed periods for organic manures and manure storage (which are inextricably linked) are likely to have the greatest beneficial impact on reducing N losses, although there could be some pollution swapping with ammonia and phosphorus. There are substantial differences between organic manure types (farmyard manure, slurry, poultry manure) and these are recognised in the Action Programme by way of length of storage period. In general, slurry (pig and cattle) and poultry manure have a higher available-N content than farmyard (and duck) manure and therefore require a longer storage period. In terms of their impact on water quality, these differences have been accounted for in the model predictions and the outcome is generalised to a national scale. However, the implication of the NVZ rules for the farmer will clearly depend on the farm type.

Improvements in water quality relating to the application of inorganic fertilisers may not be so noticeable, as data from the British Survey of Fertiliser Practice indicate that inputs within NVZs are already lower than elsewhere.

The area of land to be included in an NVZ has increased from around 55% to 70% of England, and this can be expected to be beneficial to water quality. Most of this is agricultural land, though some built-up areas are included in order to capture outlying fields.35

35 The methodology for determining NVZ boundaries is described at http://www.defra.gov.uk/environment/water/quality/nitrate/pdf/methodology-summary.pdf
<table>
<thead>
<tr>
<th>Measure</th>
<th>Prescription</th>
<th>Impact¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole farm manure N loading limit</td>
<td>Establishes a limit of 170 kg/ha of total N from livestock manures (deposited during grazing and by spreading) per calendar year, averaged across the farmed area.</td>
<td>Little change where additional land is acquired or manure transported. Where stocking density must be decreased, reduction in nitrate losses from the NVZ area small (&lt;1%). There may be a polarisation of in stocking densities leading to intensification in some areas.</td>
</tr>
<tr>
<td>Closed period (organic manures)</td>
<td>Prohibits the spreading of organic manures with high available nitrogen content during specified periods. The length of the closed periods ranges from 3 – 5 months, and it applies to all soil types.</td>
<td>Total nitrate losses from slurry and poultry manures could be reduced by ~ 50%*, (but ammonia and phosphorus losses could increase)</td>
</tr>
<tr>
<td>Manure storage</td>
<td>Requires farms to provide sufficient storage facilities to store all slurry produced by livestock during a period of 6 months for pigs and 5 months for cattle, and to store all poultry manure for a period of 6 months.</td>
<td>Enables closed periods to be better observed (see above).</td>
</tr>
<tr>
<td>Closed period (manufactured nitrogen fertilisers)</td>
<td>Prohibits the spreading of manufactured nitrogen fertiliser during specified periods unless there is a crop nitrogen requirement.</td>
<td>Nitrate losses may be reduced by &lt; 1%.</td>
</tr>
<tr>
<td>Crop nitrogen requirement limit</td>
<td>Requires farmers to plan their applications of nitrogen to crops and to comply with an upper cap on nitrogen applications (N max), assuming a set level of efficiency of nitrogen supply from any organic manure applications.</td>
<td>Nitrate losses could be reduced by 1 – 6%, but estimate are dependent on the degree of compliance currently practiced.</td>
</tr>
</tbody>
</table>
Table 65 continued

<table>
<thead>
<tr>
<th>Measure</th>
<th>Prescription</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spreading locations</td>
<td>Requires farmers to undertake a written assessment to identify areas of land at risk of runoff and causing water pollution. Applications of nitrogen fertiliser and organic manures to areas of land identified as posing a high risk of runoff are prohibited.</td>
<td>Self-evident</td>
</tr>
<tr>
<td>Spreading techniques</td>
<td>Prohibits the use of high trajectory application techniques for spreading slurry. Additionally, applications of organic manure to bare soil or stubble will require incorporation into the soil in certain situations.</td>
<td>This is largely to reduce ammonia volatilisation and increase the accuracy of spreading. Other application techniques can reduce ammonia losses by 30 –70% (Chadwick &amp; Laws, 2002)</td>
</tr>
<tr>
<td>Record-keeping</td>
<td>Establishes a requirement to keep a record of all N applications to land to facilitate compliance checking, and all to keep records of livestock numbers kept on the holding.</td>
<td>Self-evident</td>
</tr>
</tbody>
</table>

The reductions may be marginally less than predicted, as the scenarios used in the consultation exercise may differ slightly from the rules that were finally adopted. The predictions do however provide a good indication of the expected changes. (Source, ADAS, 2007; D5)
Costs of management

NVZs will affect the livestock sector more than the arable sector, particularly dairy farming where the associated slurry or farmyard manure (FYM) is ordinarily applied to the land on the farm (cf the pig and poultry sector where manure is often exported off-farm, due to lack of land for spreading). UK dairy cattle are typically housed in slurry-based systems (74% of the main herd in 2007) which compares to > 80% of beef finishers and sucklers being held in straw-based systems that produce FYM. Previous NVZ rules required “sufficient storage to meet the autumn closed period” in relation to slurry/poultry manure spreading, which was 2–3 months, but only if the soil was sandy or shallow. The revised Action Programme (AP) has increased the closed period to 3–4 months on sandy or shallow soils, and it has included a closed period for all other soils. Moreover, the revised AP has specified storage requirements for all farms in the NVZ irrespective of the closed period (6 months for pig slurry and poultry manure; 5 months for other slurry, including cattle).

Dairy farms have the smallest slurry storage capacity (mean = 5.1 months), although the median is only 4.0 months. It is therefore likely that 50% of farms will require some form of investment to match the requirements of the AP. Costs incurred could relate to building more storage and/or roofs/covers for yard areas, alteration of drainage from the farmyard in order to divert rainwater away from slurry pits, or separation of solids from the slurry. These costs will be augmented where there is a need to apply for planning permission. In addition, the quantity of livestock manure that can be applied to the farm has been reduced from 250 kg/ha to 170 kg/ha, thus it may be necessary to acquire more land, export the manure (incurred transport costs), and/or reduce cattle numbers. This is of particular relevance to dairy farms where 94% spread manure compared to around 50% for pigs and poultry. There may be further costs for farmers who currently apply organic manures using high trajectory application techniques and need to purchase other equipment, although this will not be specific to dairy farmers. The impact of the new regulations on dairy farms is likely to be marginally greater for small and medium farms who have a lower proportion of straw-based systems (22%) compared to large dairy farms (28%).

Pig and poultry farmers may also need to increase slurry/manure storage capacity as the median storage capacity is 4 months, although the mean is 6.3 months. However, the number that this will apply to is likely to be less than for dairy farmers as many pig and poultry farmers already export their manure on a regular basis because they do not have the land on which to spread it and this is a normal part of their enterprise.

Beef farmers are less likely to be affected by the NVZ regulations. These farmers largely produce farmyard manure which has a lower available-N content than slurry and is therefore subject to less rigorous requirements. For example, temporary, appropriately-sited manure heaps may be located in fields as well as the farmyard, thus expansion of the storage capacity may be achieved with less cost, and the need for storage capacity is lessened as the closed period will largely not apply to manure produced from straw-based systems.

Small and medium sized enterprises are more likely to be affected than larger enterprises owing to the structure of the farming industry (Anon, 2008). It is anticipated that there will be regional variations associated with the locality of different farming types (Anon, 2008). Costs of £129–£752 per farm per year have been estimated for administrative burdens (Anon, 2008). Further costs to account for storage, spreading, reducing stocking rates and more efficient slurry handling have been estimated for different farming sectors (Table 66).

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36 Slurry is livestock excreta from a yard/building that has a consistency that allows it to be pumped or discharged by gravity
37 Unless indicated otherwise, data in this section are taken from the Farm Practices Survey 2007
38 FYM is livestock excreta mixed with straw that can be stacked without slumping
Table 66: Estimated annual costs per farm (£/farm)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Minimum £</th>
<th>Maximum £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>62</td>
<td>2913</td>
</tr>
<tr>
<td>Beef</td>
<td>227</td>
<td>1235</td>
</tr>
<tr>
<td>Pigs</td>
<td>309</td>
<td>3336</td>
</tr>
<tr>
<td>Poultry</td>
<td>183</td>
<td>984</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Anon, 2008

Impacts of Cross Compliance on uptake of management

In the Momenta survey, around 30% of farmers had to make changes to their farming practice in order to comply with SMR 4, indicating that Cross Compliance has greater potential for ensuring that necessary measures are carried out in practice. The financial penalty for non-compliance could encourage farms recently entering an NVZ to comply with the requirements.

Summary of Cross Compliance impact

Cross Compliance may provide a financial incentive to adhere to the requirements of being in an NVZ. The revised Action Programme is likely to reduce nitrate losses to some extent, although this could vary between farm types and soil types. Dairy, pigs and poultry farmers may incur higher costs than arable farms.

HISTORIC AND LANDSCAPE FEATURES

GAEC 7: Scheduled monuments

Benefits of management

This requirement reinforces existing legislation (the Ancient Monuments and Archaeological Areas Act 1979 as amended), referring to Scheduled Monuments (SMs), which include around 5% of archaeological and historical sites. Farmers must identify SMs on their land and not take any action which might result in damage to, or destruction of the monument unless permitted under a consent from English Heritage. Works that are not permitted without such consent include demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or tipping material onto the monument (English Heritage, 2004).

Costs of management

No additional impacts on farm businesses were anticipated in the RIA, as farmers should already be complying with the legislation. Support for management of archaeological sites is available under Environmental Stewardship.
Impact of Cross Compliance on uptake of management (evidence of change from counterfactual)

GAEC 7 was only applicable to just less than 10% of farmers interviewed in Momenta surveys (see Table 2). Dwyer et al. (2007a) reported that English Heritage did not expect any non-compliance problems, as they considered that most farmers already knew if they had a SM and what their management requirements were. No compliance failures were reported in 2006, and only one in 2007.

Summary of Cross Compliance impact

The impact of Cross Compliance is likely to be minimal, but serves to remind farmers of their obligations with respect to the protection of archaeological and historic features.

GAEC 8: Public Rights of Way

Benefits of management

In England there are about 188,700 kilometres of Public Rights Of Way (PROWs). This measure reinforces existing legislation (the Highways Act 1980 (as amended by the Rights of Way Act 1990)). Rights of Way must be kept open and unobstructed, to their full width. Stiles and gates must be maintained and paths crossing fields must be reinstated when disturbed by cultivations within 14 days if sowing a crop, or 24 hours in other circumstances.

Dwyer et al. (2007a) noted that public access can have negative impacts on biodiversity, particularly where walkers are accompanied by dogs. The effect of open access on breeding birds is currently the subject of research by the BTO (Davis & Noble, 2007).

Costs of management

The RIA stated that there would be no additional costs resulting from cross compliance, as farmers are already under a statutory duty to comply with these requirements by law. In order to comply with the cross compliance regulations and avoid potential financial penalties, farmers may have been prompted to comply with their statutory duties and pay to carry out clearance operations to prevent paths becoming overgrown, and incur the costs of materials and labour to maintain stiles and gates.

Impact of Cross Compliance on uptake of management

GAEC 8 was applicable to between two thirds and three quarters of farmers surveyed by Momenta (Table 2). The RIA anticipated that the requirement may improve the proportion of footpaths in favourable condition, thus enhancing access to the countryside. On farms where the standard was applicable, 1.4% of inspections resulted in failure with respect to this requirement in both 2006 and 2007. Breaches were related to the obstruction of footpaths and failure to reinstate the footpath within the statutory period after disturbance. Natural England were reported to be surprised that failure rates were not higher, but were not sure whether this was because inspections were missing breaches or because farmers were now more aware of their obligations (Dwyer et al., 2007). The Momenta survey of 2007 indicated that 10% of farmers had needed to make changes in order to comply (Table 4).

Rights of way performance was formerly assessed by the Audit Commission's Best Value Performance Indicator (BVPI) 178. BVPI 178 was abolished in April 2008, and the last available statistics relate to 2006/7. The percentages of lengths of rights of way that was ‘easy to use’ are shown in Table 67. This indicates an apparent increase in the proportion of PROWs that were easy to use between 2004/5 and 2005/6, coincident with the introduction of Cross Compliance, suggesting that Cross Compliance has had an impact in terms of increasing observance of their statutory obligations. However, even in 2006/7, it seems that around 14% of footpaths were still not being adequately maintained. Hence it seems likely
that there has been an increase in observance of the regulations as a result of the Cross Compliance incentive, but also that a significant proportion of non-compliance is not being detected.

Table 67: Percentages of lengths of rights of way that were ‘easy to use’ in different years, as measured by the Audit Commission’s Best Value Performance Indicator (BVPI) 178.

<table>
<thead>
<tr>
<th>Year</th>
<th>2001/2</th>
<th>2002/3</th>
<th>2003/4</th>
<th>2004/5</th>
<th>2005/6</th>
<th>2006/7</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>69</td>
<td>65</td>
<td>60.2</td>
<td>66.8</td>
<td>74.6</td>
<td>76.3</td>
</tr>
</tbody>
</table>

Summary of Cross Compliance impact

It appears that, in spite of being a regulatory reinforcement measure, the inclusion of public rights of way as a Cross Compliance requirement is having an impact on a minority of farmers who were not fully observing the regulations.

GAEC 13: Stone walls

Benefits of management

Stone walls have archaeological and historic importance as well as being key landscape features, especially in the uplands. They also vary from region to region in aspects of their construction, thus adding to the local character of an area.

Estimates of the length of stone walls in England vary from 80,000km to 112,600km; very roughly, they make up about 10% of the length of field boundaries in England (Land Use Consultants & AC Archaeology, 2007). Considerable loss and deterioration in the stock of dry stone walls has occurred in the past. The Countryside Commission (1990) estimated that England lost 7,000 km (7%) of dry stone wall between 1947 and 1985. Between 1984 and 1990 there was a net loss of 10 per cent in England (Barr et al. 1993). Between 1990 and 1998 the net loss of dry stone wall was 2,700 km (2.5%) (Haines-Young et al. 2000). CBA (2001) reported that a survey of England’s dry stone walls in 1994 concluded that overall the condition of walls was generally poor, with 49% in serious states of dereliction, and only 13% in good condition. Recent results from the Countryside Survey 2007 indicate that the length of stone walls in Great Britain decreased by 1.1% between 1998 and 2007. 39

In upland areas, where livestock farming dominates, agricultural restructuring tends not to result in the active removal of boundaries to create larger fields. Rather, when a boundary becomes functionally redundant it is more likely that active management will be withdrawn and the boundary will be left to become derelict. GAEC 13 is a new measure (i.e. not underpinned by legislation) designed to encourage retention of stone walls. It prohibits the removal of stone from walls except under certain conditions, e.g. to widen a gateway (up to 10m; permission must be sought from the RPA to create gateways wider than 10m), repair another wall in better condition, or for minor improvements to a public footpath. Land Use Consultants & AC Archaeology (2007) carried out a review of the distribution and importance of stone walls, and methods for assessing their historic and landscape importance. They also developed a proforma for assessing importance in historic and landscape contexts, in order to clarify the circumstances under which derogations may be provided.

Costs of management

The requirement does not impose an obligation to maintain walls, and farmers are not penalised for allowing walls to degrade naturally. The RIA therefore considered that the only direct costs would relate to applying for a derogation, plus the opportunity cost if consent were withheld.

Impact of Cross Compliance on uptake of management

GAEC 13 was applicable to between 16 and 21% of farmers responding to Momenta surveys in 2005 (Table 2). The RIA considered that the impact on landscape would be significant, and there may be a small positive impact on rural tourism. Expert opinion reported by Dwyer et al. (2007a) was that farmers would not have a problem complying with GAEC 13, and this has been borne out by inspection statistics. Only one farm in 2006 (out of 544 inspected where it was applicable), and none in 2007 (out of 354), was found at inspection to have failed to comply (Appendix 3, Tables 57 and 58). Few applications have been made for derogations (five in 2006 and 2007, eight in 2008 up to 21 October (Appendix 3, Table 63), suggesting that in general compliance with the measure has not caused difficulties for farmers. However, the few derogations that have been granted show that on occasion farmers do wish to remove walls. Although it is impossible to judge the extent of damage to walls that might have occurred in the absence of Cross Compliance, it seems likely that GAEC 13 will have reduced the amount of damage that might otherwise have occurred.

Summary of Cross Compliance impact

There has been considerable loss and deterioration in the stock of stone walls, in the past, but it is not known what proportion of this has been due to deliberate dismantling. GAEC 13 is likely to have prevented the removal of stone from walls, but it is difficult to ascertain the extent to which this has occurred.

GAEC 15: Hedgerows

There are two elements to this requirement. The first is related to the Hedgerow Regulations 1997, which prohibit the removal of all or part of a hedgerow without written authorisation from the local authority (unless no reply is received within 42 days of notification of intention to remove). This simply reinforces a statutory obligation.

The second element prohibits the cutting or trimming of a farm hedge between 1 March and 31 July (the main breeding season for birds), except under certain specified conditions. This is not a legal requirement, but the Wildlife and Countryside Act (1981) prohibits the disturbance of nesting birds or nests whilst in use.

Benefits of management

The Countryside Survey recorded a 23% loss in length of hedgerow between 1984 and 1990 (Petit et al., 2003). However, there was no net decline in the amount of hedgerows between 1990 and 1998. This does not mean that hedge removal ceased, but the 15,000km removed were balanced by the planting of new hedges, as a result of the availability of grant aid under the Hedgerow Incentive Scheme, and later the Countryside Stewardship Scheme. It is likely that a substantial proportion of the losses were ancient hedgerows, the ecological and historic value of which would not have been replaced by the planting of new hedges. The Hedgerow Regulations were introduced to halt the loss of such ecologically and historically important hedgerows. Recent results from the Countryside Survey 2007 indicate that the total length of woody linear features decreased by 1.7% in Great Britain between 1998 and 2007, and that the length of ‘managed’ hedgerows decreased by 6.2%, though a large
The proportion of these ‘managed’ hedges had turned into lines of trees and relict hedges, due to lack of management.\(^{40}\)

The cutting date requirements were introduced to protect nesting birds. Natural England (2007) states that cutting a hedge while birds are nesting is highly likely to damage nests or cause them to be deserted. Although recommendations for managing hedgerows generally include this stipulation (e.g. Hinsley & Bellamy, 2000), the impact of time of cutting on nesting success appears to have been little studied. Meneer (1994) (cited by Maudsley, 2000) recorded reduced invertebrate diversity in a hedge flail-mowed in summer. Maudsley et al. (2000) compared the effects of February and September cutting of hedgerows on invertebrate populations, but not cutting in summer. Cutting hedges immediately after harvest removes flowers that are useful to butterflies (Dover, 1989). Cutting in August is recommended for the brown hairstreak butterfly, but cutting earlier could prevent emergence of the adults (Bourn and Warren, 1998).

Bannister & Watt (1992) studied the effect of time of cutting on hawthorn. Summer cutting stimulated greater production of shoots than winter cutting, but shoots produced from winter-cut shrubs were stronger and more vigorous. A survey of hedges subject to different cutting regimes showed that winter-cut and unmanaged hedges had a larger leaf area per square metre than summer-cut hedges. Summer-cut hedges were also characterised by the presence of cleavers \textit{Galium aparine}, a scrambling weed that smothers hedges and is also highly damaging to the yield of crops.

**Costs of management**

The Defra RIA considered that the impact of this measure on the farm business would be minimal.

Cutting of hedges after harvest is generally convenient because the ground is more likely to be dry and tractors can run on stubbles without damaging crops or soil structure. Early drilling of autumn-sown crops has been shown to increase yields, and there is therefore an incentive to drill crops as soon as the ground can be prepared. Oilseed rape should be drilled in August; therefore there would be an incentive to cut hedges round any fields to be sown to this crop within the proscribed period. Current advice is to cut most hedges in January or February or, if ground conditions make this difficult, as late as possible in autumn (Natural England, 2007). However, autumn is a busy period on arable farms, when cultivations and drilling are the priorities. Also, if the soil is wet, cutting at these times could breach GAEC 3 conditions, so cutting at the ideal times may not always be feasible. Some hedges may therefore remain uncut, which may be advantageous in some respects, but could result in overgrowing of herbaceous vegetation at the base of the hedge, and ultimately, interfere with crop drilling and harvesting at the field edge.

**Impact of Cross Compliance on uptake of management**

Dwyer et al. (2007a) reported expert views that compliance with the hedgerow regulations has generally been good prior to Cross Compliance. Local Authorities were not receiving as many applications to remove hedges as when the regulations were first introduced, and large scale removal seems to have halted. Six breaches of the requirement relating to hedgerow removal were recorded from inspections between 2005 and 2008 (Appendix 3, Table 65). It seems likely therefore that the additional impact of Cross Compliance in reinforcing the regulations is relatively small, but the more certain loss of payments if unauthorised hedge removal is discovered may be an added disincentive in comparison with the likelihood of a successful prosecution.

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Momenta survey data indicates that GAEC 15 is applicable to around 90% of farms (section 2.1.2, Table 9). This is supported by the Farm Practices Survey (2008), which reported that 92% of respondents had hedges on their farm. In the Momenta survey of 2007, 54.5% of those surveyed said that they made changes to their hedge-cutting practice to comply with GAEC 15, however in answer to a subsequent question on changes required to become fully compliant, only 28% said that they had made changes. A similar discrepancy was noted in relation to GAEC 14 (section 2.1.2, Table 11). Whichever of these figures is correct, it does appear that a substantial proportion of farmers have changed the timing of their hedge-cutting operations.

The situation is further complicated by the fact that farmers in agri-environment schemes were already subject to the hedge-cutting requirements prior to the introduction of Cross Compliance. Boatman et al. (2007) reported that 66% of those who had not previously been in an agri-environment scheme said that they would have to change the timing of their hedge cutting for standard options, which stipulated that hedges must not be cut between 1 March and 31 July, but this increased to 23% for those undertaking enhanced hedgerow management, when the proscribed period was increased to 31 August.

The Farm Practices Survey (2008) reported that almost half (47%) of the farmers who had hedges on their farm cut their hedges once every 2 or 3 years, and 37% cut their hedges once a year. 17% of farmers raise the cutting height each time they cut the hedges. Farmers were also asked when they cut their hedges. The results are compared with those from similar questions in 2004 and 2006 in Table 68.

It is significant that some respondents, albeit a small proportion, admitted to cutting between April and June, as this contravenes GAEC 15, unless one of the exceptional conditions applies. There appeared to be a shift between 2004 and 2006 from cutting in autumn to cutting in spring. Unfortunately, the 2008 data are not comparable with the earlier years. In 2008, the data relate to the proportion of hedges cut, whereas in earlier years the results are given in terms of the proportion of farmers who cut at different times.

Table 68: Percentage of respondents to Defra Farm Practices Survey who cut their hedges at different times of year

<table>
<thead>
<tr>
<th>Year</th>
<th>January-March</th>
<th>April-June</th>
<th>July-September</th>
<th>October-December</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>32</td>
<td>0.6</td>
<td>28</td>
<td>63</td>
</tr>
<tr>
<td>2006</td>
<td>40</td>
<td>1</td>
<td>23</td>
<td>62</td>
</tr>
<tr>
<td>2008</td>
<td>33</td>
<td>1</td>
<td>17</td>
<td>49</td>
</tr>
</tbody>
</table>

Very few breaches of GAEC 15 have been reported during Cross Compliance inspections. Five breaches resulting from cutting within the prohibited period were recorded between 2005 and 2008.

Summary of Cross Compliance impact

It is difficult to determine the precise impact of Cross Compliance, because of the application of similar rules to the large proportion of Entry Level Scheme agreement holders who have undertaken hedgerow management options. Nevertheless, evidence indicates that a substantial proportion of farmers have amended their practice as a result of the introduction

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41 In the revised edition of the ELS handbook, the period during which hedge cutting is not allowed has been extended to 31 August for all hedgerow management options.
42 Hedge overhanging and obstructing a road or PROW or is a danger to users (including where dead or diseased); to carry out hedge-laying or coppicing, or to trim a newly laid hedge by hand within 6 months of it being laid.
of Cross Compliance, and this will have some benefits for hedgerow-nesting birds. However, few farmers cut hedgerows whilst crops are in the field, and most of the change is likely to be a delay in cutting after harvest, i.e. where hedges would formerly have been cut in July.

**GAEC 16: Felling of trees**

**Benefits of management**

This requirement reinforces existing legislation set out in the Forestry Act 1967 and the Forestry (Felling of Trees) Regulations 1979. Within this legislation the landowner

- May not fell a tree without a licence (where a licence is required) (Forestry Act 1967 Section 9(1))
- Must comply to all the conditions of the licence, restocking notice, enforcement notice or directions served upon them (Forestry Act 1967 Section 24)

**Costs of management**

This GAEC covers pre-existing legislation and so there should be no added cost on the landowner through its inclusion in Cross Compliance.

**Impact of Cross Compliance on uptake of management**

GAEC 16 should have no impact on the farmer (Dwyer et al., 2007a). The legislation has been in place since 1979 and does not require any specific management for the landowner. This GAEC is easy to apply and this is reflected in RPA Inspection statistics for both 2006 and 2007; during these 2 years over 2000 farms were inspected for this condition, and no failures were recorded (see section 2.2.2).

**Summary of Cross Compliance impact**

The majority of farmers were already compliant with this legislation before Cross Compliance was introduced and little additional impact is likely to have occurred.

**GAEC 17: Tree Preservation Orders (TPOs)**

**Benefits of management**

TPOs apply to landowners with trees on their land that have a tree preservation order over them. Landowners with TPOs trees are not permitted to;

- Damage, uproot, cut down, destroy, lop or top any tree with a TPO on it (unless written consent granted from the local planning authority)
- Damage, uproot, cut down, destroy, lop or top any tree located in a conservation area without giving 42 days written notice to the local planning authority.

**Costs of management**

This GAEC covers pre-existing legislation and so there should be no added cost on the landowner through its inclusion in cross compliance.

**Impact of Cross Compliance on uptake of management**

Expert opinion quoted by Dwyer et al. (2007a) considered that most farmers already complied with this condition. Inspection data from the RPA reveal a very low failure rate for GAEC 17. In 2006 there were 614 farms surveyed where this GAEC applied, and only one farm failed the inspection on this condition. In 2007 none of the 639 farms inspected for GAEC failed this condition (see section 2.2.2).
Summary of Cross Compliance impact

Minimal impact is expected.

HABITATS AND WILDLIFE

GAEC 5: Environmental Impact Assessment (EIA)

Benefits of management

The aim of GAEC 5 is to consider the environmental importance of uncultivated and semi-natural areas. These conditions apply to land that has been out of cultivation for 15 years or is classed as semi-natural. GAEC 5 provides an additional means of enforcing the EIA (Agriculture) (England) (No.2) Regulations 2006 (SI 2006/2522).

The main conditions are:

- Not to carry out any uncultivated land project on uncultivated/ semi-natural areas of more than 2 hectares (unless permission received from Natural England);
- Not to carry out any uncultivated land project if a screening notice applies, unless permission has been granted by Natural England

The same applies to woodland but permission must be obtained from the Forestry Commission rather than Natural England.

Costs of management

EIA Regulations were existent pre-Cross Compliance so this GAEC should have incurred no additional cost to farmers.

Impact of Cross Compliance on uptake of management

Statistics from the RPA in 2006 record one failure for this condition (relating to the cultivation of land subject to a Biodiversity Action Plan) on 478 inspected farms; in 2007 no failures were recorded out of 865 inspections (see section 2.2.2). However as highlighted by Dwyer et al. (2007a) it is hard to identify any farms not complying with the conditions of EIA. Natural England responds to tip offs from the public to monitor any possible infringements. Although EIA Regulations were in place before cross compliance, it is possible that farmers were not aware of the requirements they imposed (Dwyer et al., 2007a). Data from Natural England support this; since cross compliance was introduced, the number of EIA applications has been increasing whilst the number of tip-offs from the public has been decreasing (Dwyer et al., 2007a).

Summary of Cross Compliance impact

It is likely that the introduction of GAEC 5 has raised farmers’ awareness of the Environmental Impact Assessment Regulations. The low level of breaches, increasing number of enquiries and reduction in the level of tip-offs to Natural England suggests that farmers are increasingly compliant with the regulations; however Natural England believes that some farmers may still not be adhering to the requirement (Dwyer et al., 2007a).
GAEC 6: SSSIs

Benefits of management

The purpose of GAEC 6 is to protect, manage and maintain Sites of Special Scientific Interest (SSSIs). It reinforces existing rules on SSSIs set out in the Wildlife & Countryside Act 1981 (as amended).

Regulations require that farmers:

- must notify Natural England of any proposal to carry out, cause or permit any operation not covered in the management agreement and obtain permission to carry out the operation;
- must comply with all notices served by Natural England or a court;
- must not intentionally damage/destroy/disturb any feature of the SSSI.

Costs of management

There should be no additional costs of the inclusion of existing SSSIs in cross compliance. The correct management should have been undertaken, with assistance from Natural England, since the site was designated as a SSSI. The budget for the Wildlife Enhancement Scheme has been transferred to HLS, which will now be the main vehicle for funding SSSI management.

Impact of Cross Compliance on uptake of management

Dwyer et al. (2007a) quoted an opinion of a Natural England representative that this is one of the weakest Cross Compliance conditions in terms of its impact. However, the current Natural England view is that this is not the case, and GAEC 6 is a useful standard that has a positive effect on compliance. In advice to Defra on possible changes to GAEC standards43, they make the following points:

- "Anecdotal evidence from farmers and the NFU suggests that the risk of payment reductions is a significant incentive to avoid breaching the SSSI legislation.
- There have been eight payment reductions in response to breaches of GAEC 6, all detected by the RPA inspecting sites selected on the basis of risk. Five were detected in 2006 and three in 2007. Given that the RPA only inspects 1% of claimants, and that Natural England detected 108 cases of SSSI damage in 2006 and 61 in 2007 (from both claimants and non-claimants), this level of detection indicates that the risk-based approach is working.
- So far in 2008 we have referred 19 cases of SSSI damage to the RPA. Ten of these allegations concerned SPS claimants. At the time they committed the alleged offences they were warned that information would be passed to the RPA. The RPA has inspected and processed four of these cases. All were found to be compliant, indicating that the threat of payment reduction was a significant incentive to rectify the situation. We will know the results of the other six inspections by the end of the year.
- While a Member State exercises a degree of flexibility over the GAEC standards imposed on SPS claimants in its own country, there is no such flexibility with respect to adherence to the EU-wide Statutory Management Requirements (SMR). With SMRs 1 and 5 (relating to wild birds and habitats & species) still applying, dropping GAEC 6 would mean that the SSSI legislation would only be removed from 25% of SSSI land by area. This would send out a very confusing message especially where

“SSSI only” features are present on Special Areas of Conservation or Special Protection Areas land.

- Cross compliance offers a useful alternative to a criminal prosecution. Advantages include a civil rather than criminal burden of proof (‘more probable than not’ versus ‘beyond all reasonable doubt’), and the potential for higher penalties (for example the penalty for a SSSI offence heard in the criminal court is capped at £20,000, whereas a breach of a grazing consent on Bodmin Moor resulted in a payment reduction in excess of £30,000).

- SSSIs represent our most important reservoir of biodiversity and geodiversity. It would send out completely the wrong message to weaken their protection.”

RPA statistics show that in 2006, only 4 out of 322 farms failed on GAEC 6. In 2007, only three out of 317 failed (see section 2.2.2). GAEC 6 applies to 12% of farmers but Momenta survey results indicate that it is the one they are least worried about, with only 18% of respondents being concerned.

Dwyer et al. (2007a), highlight overgrazing and inappropriate burning as the main problems on SSSIs. Other problems can occur when numerous parties are involved such as on common land, or where large areas are unfenced so that controlling grazing intensity becomes very difficult (Dwyer et al., 2007a). Although Natural England collects data on changes in condition of SSSIs, the direct effect of cross compliance on land management will be difficult to assess.

**Summary of Cross Compliance impact**

Although difficult to assess, it is probable that the impact of GAEC 6 is low.

**GAEC 9: Overgrazing and unsuitable supplementary feeding**

GAEC 9 is unusual in that it represents an extension of a Cross Compliance condition that was already in existence prior to 2005, and applied to recipients of the Hill Farming Allowance, sheep and beef headage payments, and to agri-environment schemes. It extended the requirement to all SPS claimants with animals that grazed semi-natural vegetation. However, the number of additional claimants affected by this change is small, comprising dairy farmers and owners of only horses and ponies, who graze semi-natural habitats. GAEC 9 is also one of the few requirements that does not reinforce existing regulations.

**Benefits of management**

The aim of the requirement is to protect habitats from overgrazing or unsuitable supplementary feeding, except where necessary during extreme weather conditions for the purposes of animal welfare.

The Defra RIA considered that: “If applied effectively these controls would be an important safety net to underpin other policies (such as the Entry Level Stewardship Scheme and Higher Tier Scheme) designed to deliver Defra targets on favourable condition of SSSIs and BAP habitats; such as the PSA target for bringing into favourable condition by 2010 95% of all nationally important wildlife sites.” However it also stated that: “It is important to recognise the limitations of overgrazing controls – they cannot apply penalties or remedies for past damage, only for damage occurring at the time of inspection. Without them, on the other hand, the burden on agri-environment schemes will be greater.” In addition, a positive impact in protecting the landscape and habitat resources, upon which rural tourism depends, from damage, was indicated.

Anon (1998) indicated that an estimated 440,000 ha of land in the uplands in England and Wales consisted of grassland containing dwarf shrubs suppressed by overgrazing, with less
than 25% cover of heather, and that there was likely to be further significant loss of heather moorland to acid grassland if current grazing levels and pressures continue. Overgrazing is the main agricultural cause of damage to SSSIs.

Reductions in pastoral bird populations have been linked to increases in stocking densities of sheep (Pain et al., 1997). The decline in ground nesting birds in the Welsh uplands has been linked to the large increase in sheep numbers during the 1970s and 1980s (Fuller & Gough, 1999). Overgrazing reduces seed and insect availability to birds through reduced sward height and plant diversity, impacting upon almost all species of open upland habitats (Newton 2004). Invertebrates vary in response to grazing, but in general, high grazing pressure is detrimental because it reduces the structural complexity of the sward as well as the botanical diversity. For example, lepidopteran larvae, which are key food items for chicks of black grouse are less abundant in heavily grazed than lightly grazed moorland (Baines, 1996). Calladine et al. (2002) reported that on sites with reduced grazing, numbers and breeding success of black grouse increased compared to normally grazed reference areas. Overgrazing renders vegetation less suitable as nesting and wintering habitat for birds, as short, uniform swards are poor for shelter and protection from predators (Fuller and Gough 1999; Vickery et al. 2001). Key species affected include ground-nesting birds such as black grouse and red grouse (Newton 2004).

In addition to biodiversity impacts, overgrazing can have adverse effects on soil and water quality. Soil compaction caused by grazing animals reduces infiltration rates enhancing the potential for surface runoff and erosion and there is sound evidence to support the occurrence of soil compaction and erosion at feeding troughs, water troughs, water courses and gates, i.e. where animals congregate (Pletola, 2005). This impact is exacerbated when overgrazing occurs removing the protective layer of vegetation (e.g. Meyles, 2006; Pietola, 2005; James & Alexander, 1996). There is evidence that cattle are more damaging to the soil than sheep, partly due to the relative forces imparted by the hooves (Drewry et al., 2000; Evans, 2005), but behavioural patterns may also contribute to the potential for erosion. Cattle are more likely to congregate in riparian areas than sheep (Glimp & Swanson, 1994) and they are more likely to create narrow paths between grazing and resting areas (Lake et al., 2001) which could increase the potential for erosion and subsequent transfer of pollutants to surface waters if the compacted path leads to a surface water body.

Supplementary feeding of livestock, particularly of sheep on upland areas, is often carried out over the winter months when the nutritional value of the vegetation is low. In such instances, instead of spreading their grazing over an area, flocks tend to concentrate around the sites where supplementary feed is put out, leading to a degradation of the upland heather vegetation (Hudson & Newborn 1995; Shrubb 2003; Milsom 2003). Hay is often placed upon areas of old heather to prevent it from blowing away, but this also leads to a concentration of trampling and grazing on vegetation least able to withstand it. Urea based feed blocks can also stimulate the sheep to eat more roughage, which is usually taken as heather (Hudson & Newborn 1995), which can also contribute to the decline of the vegetation. Ideally, supplementary feeding on heather moorlands should be given on areas of course grass or dead bracken, away from heather stands.

GAEC 9 defines unsuitable supplementary feeding as “providing supplementary feed for livestock in a way that adversely affects the quality or diversity of natural and semi-natural vegetation through trampling or poaching of land by livestock, or by ruts caused by vehicles used to transport feed”. Supplementary feeding is likely to be required when ground conditions are susceptible to poaching, i.e. in winter when the ground is wet and grass growth is minimal, or close to lambing when there may be a temporary increase in stocking density on lower lying land. Such conditions create potential problems and in some cases sacrificial areas away from sensitive habitats and/or water courses may be more appropriate than spreading the effects over a large area.
Costs of management

The Defra RIA indicated that: "The main on-farm impact from this measure, ...is the resultant pressure to remove cattle off the land in the winter, and the consequent housing and/or increased rental charge cost, and the pressure to reduce sheep numbers throughout the year, but particularly in the autumn months. For beef and sheep farmers and those claiming HFA or agri-environment payments, there should be minimal impact, because these controls already apply to them. There could be a cost impact on farmers who are affected by these rules for the first time; these are likely to be stock farmers outside the LFA who are not in an agri-environment scheme but rear sheep or beef animals, including some dairy farmers and claimants whose only grazing animals are horses and ponies, and any farmers moving into livestock production on semi-natural grazing. Farmers new to the concept of overgrazing are likely to need advisory support.

The majority of dairy farms are based on improved grassland systems, so it is unlikely that they will be affected, due to the absence of semi-natural habitats. However, a number of small dairy farms do exist in the SDA and their overall response to the CAP reform package may result in pressure on neighbouring local semi-natural habitats. In these cases additional costs may include management time to understand the requirements and to identify habitats on their land to which the controls apply; complying with the requirements may involve reducing or limiting stock numbers, or finding alternative sources of fodder. For example, Dwyer et al. (2007a) quote the case of a dairy farmer who decided to house his cows two weeks earlier than usual to adhere to GAEC 9 and reduce poaching risk in late autumn.

One respondent from Cumbria in the farmer survey carried out by Dwyer et al. (2007a) had needed to construct a new building to provide winter housing suckler cows that had previously been outwintered on permanent pasture, in order to comply with the requirement. However, it is not stated whether this occurred pre- or post- 2005.

Impact of Cross Compliance on uptake of management

The impact of Cross Compliance is difficult to assess, because the advent of the SPS payment and decoupling of subsidies from livestock numbers has also stimulated a trend towards a reduction in numbers of grazing livestock. In addition, changes to market prices, impact of pre-2005 overgrazing cross compliance and impact of agri-environment schemes all influence the situation.

Evidence provided by Natural England indicates that prior to 2005, Cross Compliance had a significant impact on reducing grazing pressure on many upland areas and had a significant effect on the area of land entering agri-environment agreements. From 1996 until the end of 2005, the investigation and enforcement of overgrazing cross compliance requirements took in 199 sites covering 105,059 hectares. In addition 106 cases of unsuitable supplementary feeding were investigated (although some were also on overgrazed sites). A high proportion of cases were ultimately resolved by the land entering into an agri-environment agreement. A total of 99 of the 130 cases classed as closed in 2005 had gone into an agreement. Many of these cases were on common land and/or SSSI. At the end of 2007 there were still 56 open overgrazing cases covering 9901 ha. Management prescriptions had been issued on 34 of these (and on an additional seven sites with unsuitable supplementary feeding). A total of 38 of the open cases were on common land and 33 (7843ha) on SSSIs.

GAEC 9 was not included in Momenta survey questions relating to individual requirements, so no information on the proportions of farmers to which GAEC 9 was applicable was available from this source. However, the impacts of overgrazing are generally greatest in

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44 15% of dairy cattle were located in the LFA in 2007
winter, and the Defra Farm Practices Survey (2008) indicated that 60% of livestock farmers out-winter their cattle or sheep and of these, the most common practice was to keep the animals on grass fields, with more than 80% of farmers opting for this for every livestock type. However, most of these fields will be improved, whereas GAEC 9 only applies to semi-natural vegetation.

There were only two compliance failures detected out of 842 inspected in 2006, and none (out of 478) in 2007. There were single requests for derogations in each of 2006, 2007 and 2008.

Several comments were made in the small survey of farmers and advisers conducted by Dwyer et al. (2007a), particularly in relation to supplementary feeding. For example, some farmers were restricting supplementary feeding to a small area, others were moving feeders to new locations each time they were replenished45.

Summary of Cross Compliance impact

This condition could have a range of impacts, from none for farmers who were already compliant pre-2005, to major, where for example new buildings need to be erected to house stock over winter (though only one report of this occurring has been found, and it is not clear if this is a result of the new, post 2005, Cross Compliance provisions). The benefits of avoiding overgrazing are well established, but the relative impact of GAEC 9 in bringing these about is less clear, due to other influences affecting grazing levels on sensitive habitats, and the pre-2005 impact of controls on overgrazing.

GAEC 10: Heather and grass burning

Benefits of management

Single farm payment claimants must comply with aspects of with the Heather and Grass etc. Burning (England) Regulations 2007 (No. 2003). The aim of this GAEC is to maintain moorland and heathland landscapes and habitats.

The main requirements of GAEC 10 are:

- Burning of heather, rough grass, gorse or Vaccinium must not occur outside the burning season unless a licence is obtained from Natural England
- To take the necessary precautions to prevent any human injuries or damage to other land, and ensure you have sufficient resources to control the fire throughout its duration.

Burning is undertaken to promote the growth of young grass and heather shoots, for the benefit of grouse and grazing sheep. Its impacts on vegetation and biodiversity have been reviewed by Rebane (2001), who also gives detailed recommendations for burning in different habitats.

A limited number of reviews have indicated that burning may increase rates of erosion and runoff in the uplands (Shaw et al., 1996; Tucker, 2003), which, in turn, may marginally increase the nutrient load to surface waters (Shaw et al., 1996; Niemeyer et al., 2005) that can be seen as a flush after burning events (Cresser et al., 2004). However, there is now a general consensus that the input from atmospheric nitrogen is a more significant source of N to British uplands than burning (Hardtle et al., 2006; Cresser et al., 2004).

Costs of management

Under the requirements for GAEC 10, there is no additional legislation to adhere to. Assuming the landowner/farmer is already compliant with the legislation, this condition brings

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45 According to the Farm Practices Survey 2006, 48% of farmers questioned regularly moved feed and water troughs.
no extra cost. Dwyer et al. (2007a) suggested, with particular reference to Exmoor, that most farmers were already complying with the burning codes as the majority of moorland is under ESA management. However, elsewhere farmers have clearly not complied with burning codes in the past, because burning is one of the main reasons for unfavourable SSSI condition.

**Impact of Cross Compliance on uptake of management**

In a Momenta baseline survey (June 2005) this GAEC requirement applied to the fewest respondents, only 1.8% (section 0). From the inspection statistics reported by the RPA, compliance was 100% in both 2006 and 2007 (2.2.2). Dwyer et al. (2007a) mention that in some areas there are fire partnerships that undertake most of the burning, and in the North Yorkshire Moors estates, these partnerships, not farmers, usually undertake the burning. The report implies that this will mean the regulations are complied with as burning is undertaken by larger consortia.

One of the major problems with GAEC 10 is monitoring. Dwyer et al. (2007) suggests that it may be possible to use aerial photography, and Natural England is investigating the use of remote sensing to monitor burning.

**Summary of Cross Compliance impact**

Although evidence from Exmoor suggested that most farmers were already compliant with the regulation prior to the introduction of Cross Compliance, elsewhere burning is one of the main reasons for unfavourable SSSI condition, suggesting that the regulations have not been adequately observed and therefore Cross Compliance may have a beneficial impact.

**GAEC 11: Control of weeds (non-natives)**

**Benefits of management**

This condition reinforces the Weeds Act 1959, requiring farmers to take all reasonable steps to prevent the spread of ‘injurious weeds’, defined as common ragwort (Senecio jacobea), spear thistle (Cirsium vulgare), creeping thistle (Cirsium arvense), broad-leaved dock (Rumex obtusifolius) and curled dock (Rumex crispus). In addition, it requires similar measures to be taken with respect to ‘invasive weeds’, defined as rhododendron (Rhododendron ponticum), Japanese knotweed (Reynoutria japonica), giant hogweed (Heracleum mantegazzianum) and Himalayan balsam (Impatiens glandulifera).

Pre-Cross Compliance, the Weeds Act was mainly invoked in relation to ragwort, a cause of concern because of its toxicity to grazing livestock. The other species are very common, indeed almost ubiquitous, but easily controlled with modern herbicides (not available when the Weeds Act was first enacted), and it is a matter of conjecture whether regulations to enforce their control are necessary or, indeed, effective in reducing their impact. For example, Sutcliffe and Kay (2000) found creeping thistle and spear thistle in 25% and 1% respectively of fields surveyed in the 1960s, but 62% and 52% in a repeat survey in 1997.

Furthermore, they have benefits for biodiversity. Marshall et al. (2003) reported that creeping thistle supports 19 families and 50 species of insects, five of which are host-specific; and broad-leaved dock supports 15 families and 79 species, four of which are host-specific. Furthermore, seeds of both thistles and docks are important items in the diet of a number of farmland birds.

Invasive species, in contrast, are damaging to the environment, though rarely to agricultural crops as they are largely riparian (Japanese knotweed, Himalayan balsam, giant hogweed)
or woodland (rhododendron) plants. Japanese knotweed is probably the most damaging; it reproduces vegetatively and forms dense monoculture stands that out-compete native plants. It has an extensive root and rhizome structure that can extend several metres deep, and can grow through concrete and paving thus causing damage to roads and structures. It is very difficult and expensive to eradicate because it can regrow from the smallest piece of stem remaining\footnote{http://www.introduced-species.co.uk/Plants.htm}.

Himalayan balsam is mainly of concern because of its rapid spread and ability to out-compete native plants. Giant hogweed however has toxic sap that can cause blistering of skin in sunlight. Rhododendron, originally introduced to woodlands to provide game cover, creates dense thickets that block the light to other plants. In addition, its root system produces toxins that prevent other plants competing. Rhododendron is also very difficult to remove successfully.

**Costs of management**

Thistles and docks are readily controlled with herbicides, and on many farms would be regularly treated as part of the standard weed control programme. Ragwort however can be more difficult to treat successfully. Defra have produced a code of practice on preventing the spread of ragwort.\footnote{http://www.defra.gov.uk/farm/wildlife/weeds/pdf/cop_ragwort.pdf} Control of non-native invasive species can be very difficult and expensive; in spite of this, GAEC 11 was not considered in the RIA.

**Impact of Cross Compliance on uptake of management**

It is likely that Cross Compliance has raised awareness of the Weeds Act and the need to control invasive species. Formerly, enforcement depended on a prosecution being brought under the Act, which was expensive for the litigant and the offence was difficult to prove. However, under Cross Compliance, the risk of failing an inspection is far greater thus providing an added incentive to prevent spread of the named weed species.

GAEC 11 was not included in Momenta survey questions relating to specific requirements. There were 11 inspection failures out of 1463 in 2006 and 9 out of 1035 in 2007. Breaches related to failures in controlling spread of creeping and spear thistle, ragwort, broadleaved dock, Japanese knotweed and Himalayan balsam.

**Summary of Cross Compliance impact**

It is likely that GAEC 9 has raised awareness of the requirement to control the named species. Control of thistles and docks can be achieved with standard herbicides as a normal part of a weed control programme, but the benefit of regulation with respect to these species is not clear. Control of ragwort is a large issue because of its toxicity to livestock. Non-native invasive species are an increasing problem and could be a major cost if large infestations are allowed to develop. Cross Compliance could help to combat this spread by stimulating timely measures to control problems with these species before they get out of hand.

**GAEC 12: Agricultural land which is not in agricultural production**

**Benefits of management**

Prior to 2008, land not in agricultural production could be classified as set-aside or managed under GAEC 12 rules, if the set-aside obligation was fulfilled. However, in 2007 the European Commission announced its intention to set a zero rate for set-aside in the 2007-8 cropping year, with the intention of abolishing set-aside as part of the CAP ‘Healthcheck’
reform. Thus, all land eligible for support payments that is not in agricultural production should now be managed according to GAEC 12. In 2007 there was an estimated land area of 423,500ha out of production (excluding industrial crops), of which 148,800 were managed according to GAEC 12 rules. In 2008, it was estimated that only 47% of this area remained (Langton, 2008). In the discussion below, ‘set-aside’ excludes land in industrial crops unless stated otherwise.

A considerable amount of information is available on farmers’ choices from the Farm Practices Survey (FPS) 2008, which asked a number of questions about this land. The results indicate that 46% of holdings with arable land intend to retain roughly the same amount of uncropped land in 2008/9. However, on 32% of holdings, no arable land would be left uncropped in future years and a further 19% would leave less arable land uncropped than in the current cropping year. Only 2% would leave more arable land uncropped.48

Of those who intend to leave some arable land uncropped in future years, field margins or corners would be left uncropped by 81% of holdings and 51% of holdings would leave unproductive fields uncropped. Fourteen percent would leave fields uncropped as part of the rotation, and 29% land that was already in long-term set-aside or fallow. When asked what cover crops would be present on currently uncropped land, 49% indicated naturally regenerated vegetation, 44% would sow the land with grass, and 36% would sow wildflower or bird seed mix. Five percent answered ‘not applicable and 2% ‘other’. It is presumed that these included any land to be managed as ‘bare fallow’, as permitted under the GAEC 12 rules.

The same question was asked in relation to additional land that might be taken out of production in future. In this case, 51% would allow natural regeneration, 35% would sow with grass, 36% would sow wildflower or bird seed mix, 12% answered ‘not applicable’, and 3% ‘other’. The higher figures for the latter two categories could indicate an intention to leave land as bare fallow in order to control weeds.

The environmental benefits of set-aside are relatively well established (e.g. see Vickery et al., 2008; Defra, 2007; Boatman et al., 2008 and references therein). The key question is the extent to which these benefits are retained or improved upon on land managed under GAEC 12.

On both types of land, there was a requirement to establish a green cover, though in the case of set-aside this had to be done by 15 January whereas the GAEC 12 rules state that it must be done ‘as soon as practicable on or after 1 March following the date when the land ceased to be in production’. Thus, if the land came out of cropping in the autumn, a whole winter could pass without a green cover, during which time there would be a substantial risk of nitrate leaching. Furthermore, there is a provision to manage GAEC 12 land as bare fallow, during which time a green cover only has to be established ‘within the 15 month period’. The rules do stipulate that the land must be recorded in the Soil Protection Review and appropriate soil protection measures identified and then taken, nevertheless the risks of nitrate leaching and losses through runoff are clearly greater than under the set-aside rules. Nitrate concentrations in leachate can be halved by the presence of cover crops compared to over-winter bare fallow (Shepherd, 1999), though this depends on soil type (see section on GAEC 1 for further discussion).

Set-aside cover had to be either cut or destroyed between 15 July and 15 August (with some exceptions). Advice was given not to cut between 1 March and 15 July, but this was not prohibited. Non-selective herbicides could be used from 15 April to destroy the green cover. GAEC 12 cover may not be cut between 1 March and 31 July, but must be cut or grazed at

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48 It should however be borne in mind that these data were collected in March -April 2008 when cereal prices were high, input prices were much lower and farmers had not suffered the difficult summer harvest of summer 2008. It may be therefore that actual figures differ considerably from these estimates.
least once every five years, with no more than 50% cut in the fourth and no more than 50% in the fifth year.

Where GAEC 12 land is being managed as bare fallow, it may be cut or ploughed to control infestations of blackgrass (*Alopecurus myosuroides*), couch, creeping thistle or docks. Certain graminicides may also be applied to control blackgrass or couch. Where the land is not being managed as bare fallow, no information is given or herbicide use. Fertilisers, manure or slurry may not be applied unless the land is being managed as a goose feeding area. It is presumed that this is intended to refer to wild geese, though this is not specified.

The latitude allowed and lack of clarity in the GAEC 12 rules make it difficult to assess the relative environmental impacts compared with set-aside. If spraying the green cover with non-selective herbicide in spring or early summer is not allowed, farmers may be less inclined to use GAEC 12 land as rotational fallow for a year in the way that much set-aside was managed in the past. This contention is supported by the large proportion of respondents who indicated that they would sow land taken out of production in the 2008 FPS; farmers are unlikely to spend money on seed if the land is not intended to be uncropped for some time. Therefore, GAEC 12 land is more likely to take on the characteristics of long-term set-aside, but often developing coarser vegetation, owing to the longer period that it can be left without cutting. The first year of set-aside provided the benefits of over-wintered stubbles as sources of food for seed-eating birds, but for the whole winter. As vegetation succession takes place, these benefits are largely lost as perennial plants become predominant (Boatman et al., 2008). Conversely, if the sward is not disturbed in summer, it will provide more favourable habitat for ground nesting birds, though with time the sward may become too dense for species that prefer some open ground, such as skylark and lapwing.

Much therefore depends on how GAEC 12 land is managed. Boatman et al. (2008) found that vegetation communities on set-aside generally had limited botanical value when compared to more established semi-natural vegetation, though in certain circumstances, more botanically interesting communities did appear to be developing. They considered that the value of set-aside as a habitat for a range of animals may be its most important contribution to farmland biodiversity and this may apply to even the least botanically interesting areas. There was an increase with the age of set-aside in their value as a source of food plants to both birds and butterflies; the percentage of butterfly species analysed for which larval food plants were available increased from 37% in one-year set-aside to 54% in land that had been set aside for over 15 years. Similarly, the percentage of bird species analysed for which food plants were present increased from 75% to 85%.

It is encouraging that more than a third of those who responded to the 2008 FPS indicated that they would establish wildflower or bird seed mixes, as this is probably the best way of achieving environmental benefits from long-term uncropped land on most sites. In general, areas sown with wildflower and bird seed mixtures support a wider range of species than grass mixtures or naturally regenerated swards. For example, Carvell et al. (2007) found that uncropped margins sown with mixtures containing nectar- and pollen-producing plants were more effective in providing bumble bee forage than margins sown with a grass mix or allowed to regenerate naturally. Parish & Sotherton (2004a) found that game crops supported up to 100 times as many songbirds per hectare in winter as stubbles and naturally regenerated set-aside, while Parish & Sotherton (2004b) found up to 80 times as many birds in game crops in summer as nearby conventional crops. At the same time, butterflies and bumble-bees were, respectively, up to 15 and 40 times more abundant in the game crops than conventional crops. Although these were not specifically managed under agri-environment prescriptions, the results suggest that wildlife seed mixture – type prescriptions are likely to provide good habitat for pollinators and nesting birds in summer as well as providing seed sources for birds in winter.
Costs of management

The main costs of management will consist of seed costs (if sown) and costs of cutting, unless the area is grazed. For land maintained as a bare fallow, there may be herbicide costs also, if used.

Impact of Cross Compliance on uptake of management

The situation is slightly different from most Cross Compliance conditions in that the decision to take land out of production is usually a voluntary one, and the pre-Cross Compliance counterfactual was that land should be managed according to the set-aside rules rather than there being no conditions applying.

Estimates of the amounts of land managed under GAEC 12 rules were given by Langton (2008). In 2005, 2006 and 2007 it was estimated that 143,600ha (27% of total land out of production), 178,100ha (36%) and 148,800 (35%) respectively were managed as GAEC 12.

FPS 2008 data indicate that 43% of respondents were influenced by GAEC 12 rules in their decision to take land out of production. Other influences were crop prices (78%), weed concerns (35%), ELS/HLS payments (54%), environmental concerns (43%) and ‘other’ (6%).

Summary of Cross Compliance impact

By preventing the application of fertilisers, manures, or slurry, the Cross Compliance regulations will promote the development of a more diverse vegetation than if these materials were permitted, as well as reducing the potential for nutrient loss. However, the long time period before a green cover has to be established could create conditions in which the level of nitrate leaching was greater than for a conventional crop during this period.

The requirement to establish a green cover will reduce nutrient losses in the longer term compared to conventional cropping, and provide the opportunity for valuable habitats to develop. The benefits of short-term set-aside stubbles for seed eating birds may be less widespread, but these could be more than compensated for by the sowing of bird seed mixtures and wildflower mixtures.

The requirement to cut every five years will maintain the land in a condition that can be readily returned to agriculture. However, it will not necessarily increase the environmental benefits, especially if the cut vegetation is not removed.

Apart from initial seed costs (if sown), maintenance costs will be low. GAEC 12 offers a valuable opportunity for farmers to create habitats for the benefit of biodiversity and resource protection on land not needed, or unsuitable, for cropping.

GAEC 14: Protection of hedgerows and watercourses

This is the GAEC condition that has probably the greatest impact in terms of change in management and concern to farmers (see section 0).

Benefits of management

The Defra RIA suggested that there would be “significant environmental benefits, particularly in areas where natural boundaries have been lost”. It was considered that these would include “resource protection (soils and water), biodiversity gains from more margins adjacent sensitive habitats and wildlife corridors, and landscape definition of features otherwise not

\[49\] Also relevant to soils and water
easily seen”. Specific benefits identified included a “moderate to significant impact” on water pollution from agriculture, a “marginal to limited benefit” on soil erosion, a “significant impact” on biodiversity, and a “limited to moderate impact” on damage to the landscape. It was noted that an estimated 70% of the biodiversity on English farms is found in the uncropped area on the edge of fields, and that the measure would help achieve PSA and BAP targets.

**Buffering hedges and watercourses**

There have been numerous studies investigating the impact of buffer strips along watercourses (riparian buffers) in reducing sediment, nutrient and pesticide loadings, and subsequent reviews of the literature e.g. Muscutt et al., 1993; Dosskey, 2001; Krutz et al., 2005; Lovell & Sullivan, 2006; Reichenberger et al., 2007. However, it should be noted that very few studies investigated buffers as small as 1m wide, and many of the studies reviewed were conducted in the US. A commonality between the different studies was the variability in the findings. For example, buffers can reduce nutrient and sediment transport to water courses (Addy et al., 1999; Borin & Bigon, 2002; Patty et al., 1997), but they can also be ineffective (Leeds-Harrison et al., 1996), and/or act as a source of pollutants (Parkinson et al., 2000; Borin et al., 2005). Buffers are more effective at trapping coarse, sand-sized sediment, than the finer fractions that may be enriched with phosphorus (Abu-Zreig, 2001; Owens et al., 2007). They are relatively ineffective at reducing soluble reactive phosphorus (SRP) concentrations, and/or the effect is inconsistent, but they are more effective at reducing losses of total phosphorus (P) (Borin et al., 2005; Uusi-Kamppa et al., 2000). Similarly, strongly-sorbing pesticides may be retained within buffers (Otto et al., 2008; Reichenberger et al., 2007; Patty et al., 1997), but buffers can be less effective at retaining weakly sorbing compounds (Reichenberger et al., 2007; Lovell & Sullivan, 2006). Nitrate concentrations may be reduced in the order of 50% (Lovell & Sullivan, 2006), but it is known that buffers are particularly ineffective at reducing nitrate losses where the land is under-drained, as water simply by-passes the buffer (Muscutt et al., 1993). It is possible that the same process may partly explain the variability in the findings regarding SRP and weakly-sorbing pesticides, as these compounds have a greater potential to leach down to drains.

The vegetation cover is a factor that can influence the effectiveness of buffers Melville & Morgan (2001) suggested that different grass species may only be of significance under certain circumstances e.g. at very high flows or on steep slopes when there was sufficient runoff to flatten grasses. Cutting vegetation can increase the uptake of nitrate from buffer strips (Bedard-Haughn et al., 2005) and harvesting the vegetation can remove significant quantities of N and P from systems (Toet et al., 2005), but this is unlikely to be undertaken on GAEC 14 strips without additional incentives.

The evidence supporting the effectiveness of buffer strips in reducing sediment, pesticide and nutrient loadings to surface waters via runoff and drainage is highly variable. It cannot be stated with confidence that 1m buffers will protect watercourses under all circumstances, indeed protection will be case specific. There is however sound evidence that buffer strips, and hedges in particular, can reduce pesticide drift to watercourses. De Snoo & Wit, 1998 demonstrated that a 3m buffer reduced drift to a ditch by a minimum of 10%, and that even a 2m buffer reduced drift. Porskamp et al. (1995) reported reductions of 50% in potato fields with a 2.25m buffer although 1.5m buffers can also be effective (Zande et al., 2001) and Zande et al. (2004) calculated that even 1m buffer strips can reduce drift from 20% to around 90%. The actual reduction however will remain variable as the initial quantity of drift is influenced by a number of factors irrespective of a buffer zone, including formulation of the product, application rate, wind speed and direction, crop type, and nozzle type (spray quality). Indeed, the use of air assistance can reduce spray drift from 50 to 70% independent of the nozzle type (Zande et al., 2001) and the use of an end-nozzle is of particular importance for 1m-wide buffer strips compared to wider strips (Zande et al, 2004). To put drift pollution into context, it has been estimated that drift losses account for 1% of total...
loadings to watercourses compared to 22% to 70% for other point sources such as leaks, cleaning spray equipment, and waste water plants (Holvoet et al., 2008).

It would also be expected that buffers strips would reduce the potential for contamination from inorganic and organic fertilisers, but quantitative data on the extent to which buffers may contribute to this are lacking.

The work described above relating to drift was concerned with protecting surface water, and the results cannot necessarily be extrapolated to the protection of hedges by buffers. The Defra project NT1030 provides some evidence that hedges can retain sediment and associated P, thus preventing down-field pollution of water courses; the same report concurs that the efficiency of riparian buffers is variable.

Although riparian buffer strips can retain sediment and thus prevent further soil erosion (and protect water courses from siltation), they do not serve to protect the soil from which it came. Indeed, buffer strips attempt to address the impacts of pollution rather than the causes. Barling and Moore (1994) proposed that buffer strips should be considered as a secondary conservation practice, after controlling the generation of pollutants at their source, as buffer strips are only effective if they are carefully designed, installed and maintained.

Blanket installation of 1-2m buffers may not be the most effective way to protect watercourses. There is evidence to indicate that the appropriate siting of the buffer in relation to contaminants and flow pathways is essential for buffers to be effective. A strip of land 100m long x 1m wide along the edge of a watercourse will provide inadequate protection if the water drains to one point in the field. If the same area of land was in the form of 10m x 10m in the vicinity of where the water drained to, this would offer greater protection to the watercourse.

In conclusion, the success of buffers in reducing pollution from nutrient and sediment is dependent on their siting relative to the pollution and watercourse, and ideally i.e. a risk-based approach would be used to target the buffer to where drainage concentrates. Buffer strips are likely to be most effective in reducing the effects of pesticide drift, though wider buffers are needed next to sensitive habitats, particularly SSSIs, to protect biodiversity (Burn, 2003).

**Biodiversity**

Marginal areas, especially watercourse banks, can provide refuges for non-crop plant species diversity in farmed landscapes (Smart et al., 2001; 2006). Boatman et al. (2008) found that plant species richness was higher in field margins 1.5m from the boundary where set-aside was adjacent than where the adjacent land was cropped, illustrating the beneficial effect of a non-cropped buffer. Percentage cover of grasses, annuals and biennials was higher on GAEC 14 strips than at the same distance from the boundary in set-aside fields. There was a higher proportion of annual species and a lower proportion of perennial forbs in GAEC 14 margins than set-aside. This probably reflects the short period for which some GAEC 14 margins had been in place, as well as the degree of disturbance from agricultural operations.

GAEC 14 margins generally contained tall grassland/herb communities. Most were classified as National Vegetation Classification community OV24, a community type dominated by common nettle and typical of nutrient rich moist but well aerated soil subject to disturbance. GAEC 14 margins also had higher Ellenberg scores for fertility than margins of set-aside fields, suggesting a continuing influence of fertiliser application to the adjacent field.

There has been a wealth of research on the value of field margin habitats for wildlife, including butterflies (Pywell et al., 2004) and other invertebrates (Asteraki et al., 2004; Woodcock et al., 2005), birds (Vickery et al., 2002), and small mammals (Bence et al., 2003; Askew et al., 2007). Most of this research relates to margins established under agri-
environment schemes such as Countryside Stewardship, and therefore being at least 2m wide from the field edge and more often 6m wide. The benefits arising from the narrower GAEC14 margins (in practice generally only around 1m wide in terms of herbaceous vegetation, allowing for shrubby growth where next to a hedge) will be smaller than for those established through agri-environment schemes, but still greater than where no margin is present at all.

Agricultural impacts

Interactions of field margins with agriculture have been reviewed by Marshall and Moonen (2002). Despite farmers concerns, as reported in the media survey of farmer attitudes (section 0), evidence suggests that well managed uncropped margins do not increase weed occurrence on adjacent crops, especially where they contain or are sown with, non-invasive perennial species (Smith et al., 1999). Indeed, a well maintained grass strip composed of perennial species can help to control annual weeds in field margins by denying germination sites on bare ground. Boatman et al. (2004) found that the occurrence of cleavers Galium aparine, and sterile brome Bromus sterilis and couch Elymus repens in field margins was negatively related to width of field margin strip. Fertiliser application can encourage nitrophilous weed species such as cleavers and sterile brome (Boatman et al., 1994; Theaker et al., 1995; Tsiouris & Marshall, 1998), and the presence of margin strips may reduce the occurrence or vigour of such species in hedge bottoms.

Field margins may occasionally act as a source of pest species such as slugs (Frank, 1998), but also provide habitat for natural enemies of crop pests and pollinators (e.g. Sotherton, 1984, 1985; Collins et al., 2003), which can reduce pest infestations in crops (Collins et al., 2002). They also provide habitats for pollinating insects (e.g. Lagerlof et al., 1992).

Costs of management

Costs will largely be associated with taking land out of production, which in some cases may be larger than the prescriptive 2m for practical purposes as farmers indicated that a) it was difficult to access the buffer zones with large equipment, and b) they were afraid of being fined and erred on the side of safety (Dwyer et al., 2007).

Management costs are likely to be small in most cases. Boatman et al. (2008) reported that only four out of 67 GAEC 14 margins surveyed had been sown, and 70% remained uncut, with a further 16% being cut less than once a year.

The Defra RIA estimated costs of £3.50 per 100m of margin, based on income foregone (half the figure of £7 estimated for margins measured from the field inner edge). This revised estimate would equate to around 0.25% of total farm costs or 1-1.5% of the Single Payment. An example is quoted of Cross Compliance costs for a 150 ha cereal farm with 50% of its margins against sensitive habitats of around £500 per annum for the original proposal, i.e. £250 pa for the GAEC 14 prescription as finally adopted.

Although the income foregone calculation took low yields at field margins into account, it is possible that even this low figure for income foregone is an over-estimate. Boatman et al. (1988) measured reductions in yield from 6m wide headlands in a total of 65 cereal fields over five years, and reported an average yield reduction of 18%. Clearly, the reduction on the outer metre would have been greater than this. Similarly, Sparkes et al. (1998) showed that 18m wide headlands of cereal fields yielded on average 7% less than the midfield (range 3-19%), and sugar beet headlands 36 rows wide yielded 19-41% less than field centre (mean reduction 26%). Yield reduced more on turning headlands. Crucially, headland effects did not move towards the centre of the field when grass margins were planted at the edge of the field. Wilcox et al. (2000) found that the yield at the outermost edge of cereal fields was on average only 60% of the midfield yield. At this level, there is some doubt as to whether the
yield obtained would cover the costs of the inputs used, as these would be gauged at a level linked to the estimated yield level from the field as a whole.

In addition to the impacts identified above, expert views expressed in the study by Dwyer et al. (2007a) highlighted concerns identified about implementation, e.g. where to measure from, can horses be ridden on it, can herbicide be used under electric fences, how to establish cover, unauthorised access etc. Spraying under electric fences was the most frequent reason for the granting of derogations from this requirement (see section 2.2.3).

**Impact of Cross Compliance on uptake of management**

Momenta data indicated that GAECs 14 and 15 were applicable to around 90% of farms, though where only watercourses were considered, GAEC 14 only applied to around 70%. Inspection failure rates were 49 out of 1409 (3.48%) in 2006 and 22 out of 950 (2.32%) in 2007, mostly as a result of cultivating the margin too close to the boundary (section 2.2.2).

It is difficult to assess the proportion of farms that have had to make management changes to comply with GAEC 14, as the available data are not consistent. GAEC 14 was the most frequently mentioned example of something new done that wasn’t done before in the small survey carried out by Dwyer et al. (16 out of 26 interviewees). In a 2007 survey carried out by Momenta, in which farmers were asked about the nature of changes made to farm practices in order to comply with Cross Compliance requirements, 71.4% of respondents indicated that they had inserted 2m margins against hedgerows and watercourses for cross compliance purposes (section 0). However in a different question in the same survey, farmers were asked whether they were fully compliant with certain requirements, and whether they had had to make changes to achieve full compliance. In this case, only 32.6% indicated that they had made changes in response to GAEC 14 (0), presumably because of differences in the way the questions were phrased. This indicates the difficulty in using survey data where the precise wording of the questions is not clear. Perhaps a more reliable indication is given by the results obtained by Boatman et al. (2008), who reported that only 21% of margins surveyed had been extended to comply with GAEC 14, the rest presumably being deemed to be already sufficiently wide.

The situation is further complicated by the fact that farmers in Entry Level Stewardship (ELS) who adopted hedgerow or ditch management options were already required not to cultivate or apply fertilisers, manures or pesticides to land within 2 m of the centre of the hedge when they adopted hedgerow management options, or within 2 m of the centre of the ditch or 1 m of the top of the ditch bank, as part of the prescription for the option. Boatman et al. (2007) reported results of a field survey in 2006 which indicated that between 4 and 17% of those adopting hedgerow management options under ELS (depending on the specific option) would need to change their management to comply with this requirement.

**Summary of Cross Compliance impacts**

In terms of protecting water courses, the impact of GAEC 14 is likely to vary spatially depending on factors such as land use management, soil type, crop, and rainfall, (i.e. the magnitude of the risk) ranging from no benefit to some benefit. GAEC 14 margins will provide biodiversity benefits in terms of habitat in their own right and also through protection of adjacent boundary habitats from disturbance through cultivations and agrochemical drift. They can also have agricultural benefits in terms of weed management and pest control. Costs are likely to be minimal, as little management is required and crop yields and quality from the outer metre or so of the field are poor, thus little profit is likely to be foregone. On balance, it seems probable that any costs will be more than outweighed by the benefits accruing. However, this is not necessarily the perception of farmers, and greater provision of information and advice about the positive and negative implications of the measure may help to foster more favourable attitudes.
SMR 1: Wild birds

Benefits of management

SMR 1 reinforces the provisions of the Wildlife and Countryside Act 1981 with respect to the protection of wild birds. There are also additional rules relating to Special Protection Areas (SPAs). These regulations are not specific to agricultural areas or farmers, but apply to everyone.

Costs of management

There are no costs involved in complying with this provision.

Impact of Cross Compliance on uptake of management

Cross Compliance may have a role to play in raising awareness, but Dwyer et al. (2007a) considered that these rules are not generally an issue for farmers. However, Natural England point out that Article 7 of the Birds Directive, referring to hunting (in the EU sense, which means the taking of quarry species, whether birds or other animals, for food or recreation) is commonly associated with farming. This is especially so in the UK, where hunting (i.e. game shooting and pest control) rights belong to the landowner\textsuperscript{50}. Furthermore, control of "pest" species damaging agricultural crops is an activity that is closely linked to farming. Natural England also suggest that links between Cross Compliance and Article 8 of the Birds Directive, relating to indiscriminate killing, also have an important role in relation to farming activities, in that they should help to prevent the use of illegal methods for control of species for which there is a derogation (such as the General Licence to protect agricultural crops which allows control of otherwise protected species).

Only one inspection failure has been recorded. However, this could be interpreted as indicating that Cross Compliance is having a significant deterrent effect.

Summary of Cross Compliance impact

The impact of SMR 1 is likely to be small. Most farmers are already aware of, and compliant with, the regulations concerned. However, as noted above there may be instances where Cross Compliance is having a deterrent effect, preventing the illegal killing of birds for reasons associated with recreational shooting or pest control.

SMR 5: Habitats

Benefits of management

SMR 5 reinforces regulations arising from the EU Habitats Directive, relating to the protection of European Protected Species. There are also additional rules relating to Special Areas of Conservation (SACs), and it reinforces the provisions of the Wildlife and Countryside Act 1981 relating to the release of non-native species of animals and plants. Like SMR 1, these regulations are not specific to agricultural areas or farmers, but apply to everyone. However, Natural England, in their advice to Defra, highlighted the importance of maintaining a deterrent against illegal control of protected species, and also the release of non-native species.

\textsuperscript{50} Natural England advice on the potential implications of changes to SMR standards 1 and 5 proposed in the CAP Health Check legislative proposals.
Costs of management

There are no costs involved in complying with this provision.

Impact of Cross Compliance on uptake of management

Cross Compliance may have a role to play in raising awareness, but Dwyer et al. (2007a) considered that these rules are not generally an issue for farmers. Very few inspection failures have been recorded; however, as for SMR 1, this could be interpreted as indicating that Cross Compliance is having a significant deterrent effect.

Summary of Cross Compliance impact

The impact of SMR 5 is likely to be small. Most farmers are already compliant with the regulations concerned. Nevertheless, SMR5 still has a role to play in terms of the maintenance of a deterrent against occasional infringements of the regulations.

ANIMAL IDENTIFICATION

In baseline surveys the Momenta Survey of April 2005, animal identification was an issue that many farmers expressed concerns about when considering the implications of cross compliance. However, the three relevant SMRs were ones that farmers highlighted as being the ones on which they felt they required least information as the measures reflect the requirements of pre-existing legislation. However, RPA inspection failure rates for SMRs are amongst the highest for this particular group of SMRs.

SMR 6: Animal identification and registration - pigs

Benefits of management

This requirement reinforces existing legislation (Pigs (Records, Identification and Movement) Order 2003). The key requirements of cross compliance with respect to SMR 6 are to control movement and traceability of pigs to reduce risk of disease spread. Pig keepers must:

- Register holdings keeping pigs;
- Identify pigs before they leave holdings (method depends on the age and destination);
- Record the maximum number of pigs kept;
- Record pig movements within 36 hours;
- Keep farm records up to date and allow at least 6 years for look-back;
- Ensure movement documents are kept with the pigs during moves, and are signed by the keeper;
- Ensure copies of movement records are sent within 3 days of the move;
- Ensure movement records are kept for 6 months.

Costs of management

As this covers the requirements of pre-existing legislation it should place no additional financial burden on farmers through inclusion in cross compliance requirements.

Impacts of Cross Compliance on uptake of management

While this SMR covers regulations and requirements that pig farmers should have already been complying with, the results of RPA inspection data indicate that compliance levels have ranged from 89 to 96% in recent years. The following were listed as the main causes for compliance failures (RPA Cross Compliance Newsletter, Aug 2008):
• Failure to report the movement of an animal;
• Failure to tag or re-tag animals within 28 days;
• Failure to keep records of movements of pigs on and off the holding and no annual record of maximum pigs on holding.

Inspections and financial penalties associated with non-compliance issues should help improve compliance levels for this SMR. It is difficult to clearly identify the impacts of introduction of this SMR into cross compliance requirements, however, results of future inspection visits will identify if levels of SMR 6 compliance are improving over time.

Summary of Cross Compliance impact

The key impact of cross compliance in this area is an expected improvement in levels of compliance. It is also expected to encourage compliance by 'middle ground' farmers, through financial imperatives.

SMR 7&8: Cattle identification

Benefits of management

These requirements reinforce existing legislation (Cattle Identification Regulations 1998 and Cattle database Regulations 1998 and the Cattle (Identification of Older Animals) Regulations 2000). The aims are to control cattle movement and aid traceability, with specific application to use in any disease control measures. Key requirements are to:

• Tag all cattle on holdings, and to ensure lost tags are replaced within 28 days;
• Register calves within 27 days of birth;
• Register other EU cattle within 15 days of arrival on the holding;
• Apply for UK passport for non EU cattle within 15 days of tagging and <35 days from release from the port;
• Hold a valid signed passport for every animal;
• Keep passports with the animal on all movements off the holding (including between separate holdings forming part of the same farm business);
• Notify the British Cattle Movement Service (BCMS) of cattle movement within 3 days;
• Notify BCMS of deaths within 7 days;
• Keep an up to date register for each holding (specific times for changes dependent on the changes in herd i.e. births, movements);
• Keep herd register for 10 years.

Costs of management

As this covers the requirements of pre-existing legislation it should place no additional financial burden on farmers through inclusion in cross compliance requirements.

Impacts of Cross Compliance on uptake of management

Although the majority of farmers were already complying with cattle ID requirements before they were incorporated into Cross Compliance requirements, in part due to impacts of TB testing and increasing on-farm checks, work by Dwyer et al. (2007a) identified in stakeholder interviews that the tagging of livestock under cross compliance regulations caused a number of initial concerns for farmers. The links and capabilities for information exchange between the BCMS and the Rural Payments Agency (RPA) (that can be used to report if movement books are not kept up to date) were also seen as another incentive to comply with SMR requirements. Despite this, veterinarians consulted as part of the Dwyer et al., (2007a) study, suggested 5-10% of animals were still being mis-identified on most farms, primarily as a result of genuine mistakes.
The NFU reported that this SMR placed added pressure on farmers to improve their livestock tagging systems. The National Beef Association (NBA) reported that the most likely breaches in cattle ID will be failure to report movement of cattle in the time period permitted, not informing the BCMS of cattle deaths, uncompleted movement records, animals not on record and failure to replace lost tags on time. Upland farmers with extensively grazed cattle were identified as potentially having greater difficulties in complying with tagging requirements than lowland farmers, due to staffing problems and due to cattle being out on the land unobserved for extended periods.

As part of a Momenta survey of cross compliance impacts (Cross Compliance Programme Customer Survey, 2007), farmers were asked whether they had made changes in response to the requirements of SMR 7&8 or whether they felt they were already compliant before the new regulations. For SMR 7&8 97.6% of the survey population thought they were compliant with 88.7% believing they were already compliant before cross compliance. The most recent summary of inspection data, collated by the RPA, suggests compliance has ranged from 75-78%. Key areas of non-compliance were identified as (RPA Cross Compliance newsletter, Aug 2008):

- Failure to report the movement of an animal;
- Failure to tag or re-tag animals within 28 days;
- Cattle present with no passport, or passports with no cattle;
- Cattle movement details not recorded or incorrectly recorded on CTS or in farm records.

In Ireland, high levels of non-compliance with cattle identification in 2006 led to 20% of inspected farms being fined, which led to a significant increase in compliance in the following year (Young 2007, Irish Farmers Journal).

It is difficult to clearly identify the impacts of the introduction of this SMR into cross compliance requirements and the levels of change seen will be dependent on the status of the farm pre SFP. Those farms associated with an assurance scheme such as Farm Assurance Scheme Beef and Lamb (FABBL) are likely to have had to make fewer changes in order to comply with the SMR requirements. Results of future inspection visits will identify if levels of SMR 7&8 compliance are improving over time.

**Summary of Cross Compliance impact**

The key impact of cross compliance in this area is an expected ongoing improvement in levels of compliance. It is also expected to encourage compliance by ‘middle ground’ farmers, through financial imperatives.

**SMR 8a: Animal identification and registration – sheep and goats**

**Benefits of management**

This requirement reinforces existing requirements and legislation (EU Directive 92/102 on identification and registration of animals, Sheep and Goats Identification and Movement Order 2002). The aims are to control sheep and goat movements and aid traceability, with specific application to disease control. Key requirements are to:

- Identify all sheep and goats within 6 (intensive animals) to 9 (extensive) months of birth, or when they leave farm, whichever is first;
- Double tag sheep and goats for 3rd country or intra-community trade;
- Replace id tags within 28 days of loss;

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52 “Intensively managed” animals are defined as those housed overnight.
• Keep up to date on farm records.

Costs of management

As this SMR covers the requirements of pre-existing legislation it should place no additional financial burden on farmers through inclusion in cross compliance requirements. Major changes are set to occur with regard to sheep identification from 2010 which are likely to impact on cross compliance requirements. As of 31 December 2009, under EC Regulation 21/2004, animals born on or after this date will be required to possess an electronic tag (except possibly those intended solely for slaughter within 12 months of birth). This will enable individual sheep to be traced in a similar way to cattle who possess individual passports. EID will not be mandatory for goats because the UK goat population falls below the 160,000 threshold. However, goats will still need to be individually recorded on a holding register.

Costs for EID incurred by the farmer will be the additional cost of the electronic tag compared to the standard tag, and the equipment for recording the tags presence and information contained on it. In 2007 the EC published a cost analysis of the impacts of electronic ID (EID) on small ruminants within member states (EID of small ruminants in accordance with regulation (EC) 21/2004, 2007). Four types of tagging are considered and their costs are as follows:

- €2.25 bolus and standard tag;
- €1.80 electronic ear tag & conventional tag;
- €0.29 single conventional tag;
- €1.03 two conventional 15 digit tags;

As this represents the imposition into UK statutes of an EU Directive, it should not be seen as an additional cost associated with cross compliance itself, since this approach would have been required whether cross compliance was in place or not. However UK farmers may not necessarily make this distinction.

A regulatory impact assessment by Defra in 2006 (UK EID Evidence Report, Defra 2006) estimated the typical costs for an upland farm would be in the order of £2,383 and £1,621 for lowland farms. The total cost to the UK sheep industry of moving to EID was estimated to be £90million (English pilot trial of EID/EDT in sheep (Defra), October 2005). Costs thereafter were predicted to be £44m annually. It is hoped that the new level of traceability of sheep delivered will help to significantly reduce the severity and costs of any future disease outbreaks, as well as providing additional benefits to farmers in being able to track market and slaughter data to individuals.

It is estimated that the ability to trace individual animals can reduce the cost of managing the outbreak of an exotic (not endemic) disease over the current UK system by up to 15%. A report for Defra (Impact of sheep e-ID on disease control, August 2006) used an FMD model to assess impacts of EID on a future outbreak that based on the 2001 outbreak would have cost £674million. It was estimated that batch ID regulations would reduce outbreak cost between 17-23% (£113 million). The batch ID system alone would result in a 5-9% reduction (£55million). By factoring in the additional effect that EID would have, the cost of outbreak was further reduced by up to £7.9 million.

Impacts of Cross Compliance on uptake of management

Sheep and goat farmers find it more difficult to comply with identification requirements. Tags are more easily lost and farmers are less likely to replace them. Double tagging is also seen by farmers as unfeasible (though required for live export). The requirement for double tagging was also introduced on 1 Jan 2008. Slaughter animals still only need one tag but those intended for breeding must have two tags, one in each ear (Animal Health 2007).
It is difficult to check the records and tags of sheep and goats out at grass, especially in extensive grazing systems. Inspectors do not have the time to inspect all animals when dispersed, and so may not detect tag losses. This is reflected in the RPA inspection statistics for 2007. These report a failure rate for SMR 8a of 12.6% (sheep and goats), yet for 7&8 (cattle) a higher failure of 21.5%. These statistics are likely to have been influenced by the ease of inspection.

It is difficult to clearly identify the impacts of introduction of this SMR into cross compliance requirements, given that the relevant legislation pre-dates cross compliance. The levels of change required to meet the introduction of cross compliance will also depend on the status of the farm pre SFP, and whether it was part of an assurance scheme such as FABBL that encourages good record keeping. Results of future inspection visits will identify if levels of SMR 8a compliance are improving over time.

**Summary of Cross Compliance impact**

The key impact of cross compliance in this area is an expected ongoing improvement in levels of compliance. As for SMRs 6, 7 and 8, it is also expected to encourage compliance by 'middle ground' farmers, through financial imperatives.

**CONTROL OF CHEMICALS, FOOD AND FEEDSTUFFS**

**SMR 9: Restriction on the use of plant protection products**

**Benefits of management**

This requirement reinforces existing legislation (Plant Protection Products Regulations 2005, Control of Pesticides Regulations 1986). Key aims are to ensure that plant protection products (PPPs) are not used other than for specific approved uses under the product registration, and are disposed of in an acceptable and approved manner.

**Costs of management**

This should place no additional cost burdens on farmers as this just compels users of plant protection products to comply with existing rules and regulations.

**Impacts of Cross Compliance on uptake of management**

Pesticide use is well regulated and most recommendations for use are made by BASIS[^53] - registered agronomists, so farmers can demonstrate compliance with usage restrictions fairly easily. However, problems may potentially occur if the conditions and requirements specified in a specific PPP approval are not followed or the spray operator is not appropriately trained or qualified. Such problems accounted for the majority of the 3-4% of cases of non-compliance recorded for this SMR. The widespread use of quality assurance schemes for arable and fresh produce that require suppliers to comply with Good Agricultural Practice and legislation affecting use of PPP’s, as well as their associated inspection regimes, are likely to ensure a high level of compliance within the industry.

**Summary of Cross Compliance impact**

Unlikely to have an additional impact on the majority of farmers and growers, but the inclusion in compliance inspections of those not involved in quality assurance schemes will

[^53]: BASIS is an Independent Registration, Standards and Certification Scheme Serving Pesticide, Fertiliser and Allied organisations and interests (for further details see [http://www.basis-reg.com/about.aspx](http://www.basis-reg.com/about.aspx))
increase the pressure to comply with relevant legislation. It may help to increase compliance amongst occasional users of pesticides such as livestock farmers using products such as sheep dips and herbicides and who may be less aware of the pertinent rules and regulations.

**SMR 10: Restriction on the use of substances having hormonal or thyrostatic action and beta-antagonists**

**Benefits of management**

This requirement reinforces existing legislation (Animals and Animal Products (Examination for Residues and Maximum Residue Limits) Regulations 1997 Veterinary Medicines Regulations 2005). The aims are to restrict use of hormones and other treatments of public concern in animal diets or appearing as residues in food chains. Key requirements of cross compliance are to ensure that:

- Food animals are not given restricted substances;
- Restricted substances in question are not present on farm;
- Animals are not sent to slaughter that have been given restricted substances without observance of the appropriate withdrawal period;
- Records are kept of restricted substances administered by veterinary surgeons.

**Costs of management**

No additional costs are imposed on farmers who should already be complying with the relevant legislation. The likelihood of falling foul of the legislation is also limited by restricted access to the materials in question within the industry.

**Impacts of Cross Compliance on uptake of management**

Dwyer et al. (2007a) reported that the relevant substances covered by this SMR are banned throughout the EU and so are very difficult to acquire. Compliance is therefore virtually 100%. This is supported by the results from recent inspection data.

**Summary of Cross Compliance impact**

Limited, if any, additional impact arising from inclusion in Cross Compliance requirements.

**SMR 11: Food and feed law**

**Benefits of management**

The aims of SMR 11 are to ensure safe production of food for human consumption and of food/feed produced for food producing animals, and this incorporates the requirement of current Food and Feed law (Domestic and EC Regulations/Directives on food and feed law, including the General Food Regulations, 2004). Key requirements are:

- To ensure no unsafe food is put on the market, or fed to animals;
- To ensure unsafe produce is withdrawn from the market and destroyed;
- To ensure traceability of produce and products coming onto farms;
- Food and feed hygiene;
- Ensure stored products are stored correctly, away from waste and hazardous substances;
- To protect produce from sources of contamination;
- To ensure additives and medicines are used correctly as directed;
- To keep records of medicines, agrochemicals, results on analysis of any animals/produce, use of GMs.
For raw milk producers, to ensure:

- Milk is from healthy cows, given no unauthorised substances, and that the prescribed withdrawal period is adhered too if given veterinary medicines;
- No TB/ Brucellosis;
- Infected animals and associated milk is isolated;
- Milk storage area is free of vermin, away from the livestock housing, suitable refrigeration;
- Hygienic milking and cooling to specified temperatures.

For egg producers, to ensure storage in an appropriate area, cool and out of direct sunlight.

**Costs of management**

This SMR incorporates existing food and feed law and as such imposes no additional burden on farmers and producers.

**Impacts of Cross Compliance on uptake of management**

Most companies follow the rules closely. However, some farmers sell mixed rations and it may be that not all components are checked sufficiently (Dwyer et al., 2007a). This is also a relatively new area for Local Authorities to enforce, so there is no previous experience against which to assess change. The Animal Health & Welfare Management & Enforcement System (AMES) database (owned by Defra) holds data on all Local Authority enforcement orders, which it is suggested could help track compliance levels. However, it was identified that it would be difficult to disaggregate the data to ascertain Cross Compliance impacts (Dwyer et al., 2007a). Inspections by the RPA indicate that compliance levels are high (95.4-97.5 %) and that most failures are minor in nature, requiring only written warnings.

**Summary of Cross Compliance impact**

It is reported that farmers are concerned about the record keeping requirements involved and are not always entirely sure what is required (Dwyer et al., 2007a). However, compliance levels are high. Inclusion within cross compliance requirements helps to reinforce adherence to the regulations and provides an opportunity to address areas where there is a lack of knowledge or poor practice.

**CONTROL OF ANIMAL DISEASES**

**SMR 12: Prevention and control of TSE's**

**Benefits of management**

The aim of SMR 12 is to prevent and control spread of transmissible spongiform encephalopathies (TSEs). This ensures compliance with the requirements of legislation in this area (The Transmissible Spongiform Encephalopathies (England) Regulations 2008). Key requirements are that feed-stuffs containing animal protein (with some limited exceptions of sourced and processed materials) should not be fed to ruminants and should never be fed to other farmed animals.

**Costs of management**

Given that this reinforces existing legislation requirements, SMR 12 should pose no additional costs on livestock farmers.

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54 Animals with a rumen, including sheep and cattle
Impacts of Cross Compliance on uptake of management

The regulations underpinning this SMR have been implemented since 1988 when the original feed ban (prohibiting the use of ruminant protein in ruminant feeds) was introduced. Feed laws became harmonised with EU feed controls in 2001. The introduction of the feed laws and other regulatory measures such as the National Scrapie Plan (in 2001) has ensured that levels of scrapie and BSE have been declining in UK herds. The National Feed Audit also takes around 12,000 feed samples a year to check for prohibited protein.

It seems unlikely that Cross Compliance will have had any direct effect upon these trends. The results of RPA inspection surveys demonstrate a high level of compliance (99.7%) with this SMR, with only a handful of minor breaches noted. Inspection regimes associated with cross compliance may therefore help to maintain a high level of vigilance and identify any areas of poor compliance.

Problems may occur if TSE develops in the future, as it is now very uncommon to see TSE affected animals compared to the past. There is therefore a risk that it may not be recognised in its early stages, delaying imposition of control measures. SMR 12 could therefore have a role in maintaining awareness in the absence of recent outbreaks. In situations of disease outbreak, the interaction with livestock identification requirements (SMRs 6-8) will increase in importance as a result of the need to track and control movements of animals to eradicate outbreaks.

Summary of Cross Compliance impact

The high profile of animal diseases in recent years ensures a high level of awareness and compliance with legislation within the industry. SMR 12 requirements act as a further incentive to encourage high levels of compliance and maintain awareness.

SMR 13, 14 & 15: Control of Foot and Mouth Disease, certain animal disease and bluetongue

Benefits of management

The aim of SMRs 13-15 is to prevent and control spread of animal diseases of specific concern. This ensures compliance with the requirements of legislation in this area (Disease Control Order 2005, The Foot and Mouth Disease Order 2006, Bluetongue Regulations 2008). The key requirement is to ensure Divisional Veterinary Officers are informed immediately of notifiable diseases of specific concern to help eradicate such diseases in UK livestock.

Costs of management

Given that this reinforces existing legislation and animal health requirements, this should pose no additional costs on livestock farmers.

Impacts of Cross Compliance on uptake of management

The high level of compliance (100%) reported in RPA inspection data indicate a high level of understanding and compliance within the industry. Inspection regimes associated with cross compliance may therefore help to maintain a high level of awareness, especially in periods between disease outbreaks when attention to detail can lapse.

The diseases relating to SMR 14 and 15 are not commonly seen and can be hard to detect, so it is likely that non-detection will be the largest problem rather than under reporting.
In situations of disease outbreak, the interaction with livestock identification requirements (SMRs 6-8) will increase in importance as a result of the need to track and control movements of animals to eradicate outbreaks.

**Summary of Cross Compliance impact**

The high profile of recent animal disease outbreaks of foot and mouth and bluetongue ensures a high level of awareness and compliance with legislation within the industry. SMR 13-15 requirements act as a further incentive to encourage high levels of vigilance. Cross compliance measures could have a valuable role in maintaining awareness about these important diseases.

**Animal Welfare (SMR 16, 17 and 18)**

SMR 16 (Welfare of calves), 17 (Welfare of pigs) and 18 (Welfare of animals) came into force in January 2007. Animal Health (AH - formerly State Veterinary Service) is the competent authority that carries out the inspections and reports findings to the Rural Payment Agency.


SMR 18 applies to all animals kept for farming purposes on a SFP claimants holding, including for example sheep dogs. If a claimant keeps calves then additional rules apply, which are inspected under SMR 16. Claimants holding pigs are inspected under SMR 17. Both are in addition to inspection under SMR 18.

Inspections are carried out on a random, risk, or targeted basis. The latter category of inspections includes those carried out as the result of a complaint or allegation, e.g. from a veterinary surgeon or a member of the public, and those following inspections where a breach is identified when inspecting a premise either for a welfare inspection or any other purpose. Of the risk-based visits, currently 68% of inspections are based on the outcome of previous inspections, the time since the last inspection & cattle mortality. Twenty percent of inspections are random.

As the Welfare SMRs were introduced less than two years ago, there is little evidence on which to base an impact assessment.

**Benefits of management**

It is thought that overall approximately 80% of those keeping animals for farming purposes are SFP claimants, though this will differ considerably between enterprises. The proportion of SFP claimants in beef (approximately 95%) and sheep enterprises is significantly higher than in pigs (40%) and poultry (33%) enterprises.

Linking a financial penalty to animal welfare legislation breaches therefore has a reasonable potential to increase compliance particularly in areas that have historically seen low levels of compliance. Clearly this will be more so in enterprises that have high proportion of SFP claimants.

In addition to the risk of a financial penalty, the increased advertising of animal welfare requirements may also have been beneficial generally, through raising awareness.
Cost of management

The three animal welfare SMRs enforce existing regulation, thus there was no requirement for new management practices or investment in new materials.

However, coinciding with the inspection requirements for animal welfare, a number of other European documents pertinent to on-farm animal welfare inspection and reporting became applicable (e.g. Regulation (EC) No 882/2004), leading to an appraisal of the inspection forms. This resulted in more detailed certifiable standards, resulting in some cases in increased clarity of legislative details. In the case of SMR 16 for example, the more detailed inspection criteria brought to light the fact that certain recently purchased calf boxes were found to be inadequate to satisfy the legislative welfare requirements. Though this required investment from the farmer to rectify, the cost of rectification cannot be attributed to the introduction of the cross compliance requirements.

Impact of Cross Compliance on uptake of management: Evidence of compliance

Both before and after the introduction of cross compliance, the main breaches related to poor record-keeping, housing (sharp edges or protrusions that can cause injury) and caring for sick animals. Failure to keep adequate mortality and medicine records is considered to be a breach of low severity, but both housing and caring for sick or injured animals are either of medium or high severity, as they directly impact on animal welfare.

The inspection forms were clarified and became more detailed in 2007. This means that in a direct comparison of pre- and post- 1 January 2007 inspection data there is a real chance that data from after this date are biased towards higher levels of breaches because there is a more structured framework for finding them (see example in the previous paragraph). At worst this could give the false impression that the introduction of cross compliance resulted in more, rather than less breaches of welfare legislation. In addition, since the introduction of animal welfare into cross compliance only a small number of truly random samples are available, amounting to 20% of inspections. Given the fact that random inspections tend to find a low level of non-compliances or breaches, the sample size is currently likely to be too small to show a significant effect if there is one. The approach we have taken here is therefore to compare inspection data of 2007 with those collected in 2008. Whilst this may not be a true change from the counterfactual, it is a valid like-for-like comparison. In addition, 2008 was the first year that the severity of penalties became evident, thus the first year following visible reinforcement.

A comparison of 2007 and 2008 shows a similar distribution of penalties, with approximately three-quarters of the penalties being 1%. There were two penalties of 100% deduction in 2007, both due to refused inspections, compared to none in 2008 (though data reporting had not been completed at the time of this report). Based on a forecast of the current trend, the total number of penalties deducted due to breaches of SMR 16, 17 or 18 is likely to be similar between the two reporting years.

Summary of Cross Compliance impact

SMRs 16-18 enforce existing welfare legislation and as such did not require changes in management to be made. The proportion of livestock farmers claiming SFP differs between enterprises and the impact of the introduction of cross compliance requirements on animal welfare is therefore likely to be more pronounced in some sectors, e.g. beef, than others, e.g. poultry.

Both before and after the introduction of cross compliance, the main breaches of welfare legislation recorded related to poor record-keeping, housing (sharp edges or protrusions that can cause injury) and caring for sick animals. However, it is too early to make a full impact assessment of SMR 16, 17 and 18, since they were only introduced in 2007. In addition
there is some difficulty in comparing on-farm welfare inspection results to those following the introduction of SMRs 16-18, due to differences in inspection assessments. Based on a qualitative evaluation of data collected pre and post introduction of cross compliance, no significant effect of the introduction of cross compliance on animal welfare has yet been observed.
Appendix 5: Literature Review on Farmer Behaviour

This section provides a brief review of key studies that identify factors influencing farmer behaviour and the development of farmer decision-making typologies, particularly in relation to the adoption of environmental practices. The review was carried out in preparation for the second stage of the project, involving primary data collection, on the basis that an understanding of this literature will help to identify the most appropriate approach to adopt when investigating the impact of cross compliance on farmer attitudes and pro-environmental behaviour.

Factors that influence farmer behaviour

Early studies looking at factors that influenced farmer behaviour in relation to environmental practices were based on the neo-classical assumption of economic rationality and focused on farmers’ economic motivations. For example, Newby et al. (1997) showed that the behaviour of farmers towards conservation was dominated by the over-riding interests of the farm business. The assumption was that farmers behaved as profit maximising agents responding in uncomplicated ways to the financial incentives on offer. However, despite recognition of the importance of the financial motivation a number of more descriptive studies in the UK showed an interest in the factors that ‘pulled’ or ‘pushed’ farmers into schemes (Potter and Gasson, 1988; Gasson and Hill, 1990; Brotherton, 1991). Some studies focused on motives, values and attitudes as determinants of the decision making process of individual farms (called behavioural approaches) e.g. Potter and Gasson, 1988. Siebert et al. (2006) argued in their comprehensive literature review analysing farmers’ willingness and ability to co-operate with biodiversity policies, that economic reasons are nearly always accompanied by other reasons and explanations, if the interview techniques in the different studies allow for multiple answers. Both ecological arguments and social reasons often play a role in the decision-making process. The review concluded that it is important to view support for positive biodiversity actions not in a static sense, as a situation determined by one or several influencing factors, but rather as a process marked by interaction.

Thus, it is increasingly clear that farmer decision making is not based on rational financial analysis alone. In fact, in some circumstances, economically irrational behaviour may arise where actions may not always be in a person’s best interest, but be influenced by habit, cognition or status quo preferences (Social Market Foundation, 2008). This suggests that in order to understand farmers’ behaviour there is a need to consider the different contexts in which farmers operate, the local conditions in which farmers make their decisions, and to understand the role of farming culture, focusing beyond the individual (Ward et al., 1995; Young et al., 1995; Dwyer et al., 2007b).

Some researchers have acknowledged the role of cultures (Bourdieu, 1990) in farmer behaviour. They argue that considering ‘farmers’ as a single cultural group fails to recognise that, within any community, there is a multitude of different ‘agri-cultures’, each with its own concept of ‘good farming’ (Burton and Wilson, 2006). This genre of research has suggested that farmers are motivated by the prospect of gaining social, as well as financial reward, and will join schemes or undertake certain practices if by doing so their self-esteem within the community is enhanced, and they gain respect from their peers (Slee et al., 2006; Dwyer et al., 2007b, Mills et al., 2008).

Tony Pike at Defra ACEO (2008) has produced a useful discussion paper exploring behaviour in a farming context. The paper proposes a framework in which to identify factors that influence farmers’ behaviour towards new policy. Three factors: external; internal; and social; are highlighted as important in contributing to an individual’s behaviour, an approach which is based upon three recent studies in particular (Garforth et al, 2006; Social Market Foundation, 2008; Dwyer et al 2007b).
External factors

External factors that might influence behaviour include government policy frameworks and measures, including regulation, economic incentives (payments and taxes or charges), cross compliance conditions, and advice and information (Dwyer et al., 2007b). Other external factors might also include market conditions (Garforth et al., 2007). Consideration of the external factors impacting on farmers might help in understanding the impact of cross compliance on farmers’ attitudes. For example, significant changes in other policies or market prices during the cross compliance period may have affected the impact of the programme on farmers’ attitudes.

Dwyer et al. (2007b) also refer to other ‘external’ (i.e. not to do with attitudes, values or beliefs) factors which affect farmers’ “capacity to change” in response to policy. This can include physical, environmental, farm business structure, financial and time resource characteristics which affect the options or ‘room for manoeuvre’ available to the farmer and/or farm family. They dictate what is practically, technically and economically feasible and can facilitate or constrain behavioural change. For example, if farmers have no time to plan, then they can end up being locked into a situation despite wanting to change. Similarly, if farmers have a large debt to service then they will have difficulties in contemplating anything that might reduce their income.

Also Davies and Hodge (2006), in a study to understand the acceptability of cross compliance by farmers as an approach to delivering biodiversity benefits, suggest that the farmers’ perception of their ability to comply with the cross compliance requirements is key to their willingness to endorse it as a principle. They identify two factors that are important constraints on a farmer’s capacity to change and thus will influence their attitude to cross compliance. These are: the current financial stress, which affects the farmer’s ability to bear any increased burden arising from new conditions; and the “situational” stress, where there are already existing difficulties in managing overall production on the farm, to which new conditions may add.

Internal factors and social factors

Internal (to the farmer or farm-family decision-making unit) factors that influence behavioural change are referred to in the Social Market Foundation (2008) report as habits and cognitive behaviour. Garforth et al. (2006) and the Social Market Foundation (2008) also refer to
social factors that influence behavioural change; in particular, the influence of social norms that shape attitudes and influence intention to change behaviour. They find that decision-making is rarely taken in isolation, and individuals act within families, network and communities. It will also be dependent on social learning, group dynamics and societal expectations. New approaches take time to embed into farming cultures – i.e. rather than simply changing attitudes, new social structures and new beliefs about ‘good farming practice’ take time to develop. This affects what Dwyer et al. (2007b) termed “willingness to change”, an important factor in influencing decisions and achieving long-term behavioural change, based upon attitudes, values and underlying beliefs. This is a complex area encompassing individual values and self-identity; perceptions of the future of farming and intelligent strategies in light of this; social and cultural influences including habits; and more flexible beliefs and expectations formed through ongoing experience in adapting to various evolving policy and market contexts. Figure 15 illustrates this concept. Dwyer et al. (2007b) suggest that the key for Defra, in order to establish long-term behavioural change, is to try to ensure that its message is picked up and discussed positively within farming communities and networks. The extent to which this can be achieved will in turn be affected by Defra’s wider image and the extent to which farmers feel empathy or personal identification with the goals and objectives pursued by Defra.

Figure 15: Farmer willingness to change – key influences

Davies and Hodge (2006) also suggest that acceptance of Cross Compliance will be dependent on the extent to which those value judgements underpinning policy can be assumed to be relatively internalised within the decision-making of a farmer. For them “A key issue in developing appropriate agri-environmental policies is understanding the extent to which the principles of policy are endorsed by farmers, and which factors may contribute to that endorsement”. According to Winter and May (2001) people are perceived to be more likely to abide by regulation when they believe it is appropriate, fair, equitable in implementation, efficient/effective in process, proportionate, relevant and necessary. An understanding of farmers’ views of Cross Compliance in relation to these criteria would provide insights into their attitudes to the programme and their willingness to change.

Dwyer et al. (2007b) also suggest that the attitudinal impact of a policy change will take time to be fully felt within farming sectors because different farms are likely to be at different stages in the cycle of planning, implementation and ‘lock-in’, in respect of their business strategies. This might suggest that whatever the evaluation identifies in respect of attitude change will only be a partial measure of the ultimate impact, because the Cross Compliance policy has only been in existence for three years. It is possible that external factors, such as decoupling, may have increased or decreased the likelihood of farmers modifying their business strategies and thus potentially being more open to picking up new attitudes from the Cross Compliance policy.
Farmer decision-making typologies

It is possible to categorise farming according to certain simply-determined attributes which may help explain differences in decision-making, such as farm size, type, tenure and so on. Whilst these attributes can be easily and regularly measured, they largely act as proxy indicators for some of the main external factors influencing decision-making. Their relationship to internal factors is much less evident, as was demonstrated by Garforth et al. (2006). Pike's (2008) review concludes that it is only by understanding these internal factors and their distribution within the farm sector that it may become possible to explain divergences in actual practices between different farms, such as the propensity to engage in activities that enhance environmental sustainability.

Defra commissioned two studies that have attempted to quantify and characterise the diversity of values, beliefs and attitudes within the farming industry. Garforth et al. (2006) developed a typology based on farmer values, goals, objectives, attitudes and beliefs and developed five predictive farm types. Each type has certain characteristics which are identified as affecting likely responses in respect of the introduction of a new policy. This study was refined by Continental Research (2008) to create a more robust ‘market segmentation’ model. Using variables representing farmer identification or agreement with ‘‘, with a 70% level of confidence.

As well as being applicable for predictive modelling of likely behavioural response, the same segmentation can be used for developing differentiated communication strategies. For example, for some farm types a more emotive approach which is inclusive is required, whilst for others a more economically based and pragmatic approach would be favoured (Pike, 2008). Pike suggests that the Continental Research segmentation model presented in Figure 16 can be used widely in research to help understand the underlying characteristics of a farm business.

![Figure 16: Defra Farmer Segmentation model](image)

It is possible that the segmentation model could be used to help understand farmers’ attitudes to cross compliance. By considering farm ‘types’ in this way, key likely positive and negative responses to cross compliance could be associated with each type. The five types

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lie on a continuum with those who see farming as a way of life to those for whom farming is a burden and a struggle. It could be expected that the “Custodians” would have a more positive attitude to cross compliance, seeing it as part of their duty of care, whilst the pragmatists might give it grudging acceptance. In contrast, the challenged farms may find cross compliance difficult to cope with. By using this typology in the farmer survey it could be possible test whether these types are good predictors of these positive and negative responses and help to explain farmers’ behaviour in relation to cross compliance.

This view is supported by Davies and Hodge (2006) who undertook a survey of 102 arable farmers to investigate the level of support for the principle of cross compliance for biodiversity objectives. They found that two attitudinal factors, referred to as “Stewardship Orientation” and “Technological Beliefs”, were more important than structural and socio-demographic factors in determining the acceptability of cross compliance. They suggest that if farmers are ‘technologically orientated’, then support for cross compliance could be expected to be low. In contrast, more ‘conservation orientated’ farmers who have an ethic of environmental management would support the principle.

The financial orientation of farmers is also important. If they are more economically rational and their priority is financial management and profit then support for cross compliance is likely to be low. The study also identified five groups of farmers according to their overall attitudinal orientation. Of the five, four appeared on average to reject cross compliance as a general principle, leaving only the most ‘Environmental’ in support. The study also notes that whilst a farmer may have a negative attitude towards cross compliance in principle, it does not mean that they will not comply with specific Cross Compliance conditions. Clearly, other internal and external factors will contribute to their direct response to the policy such as: obedience to the law; divergence in the way that compliance with the measures is conceived in the mind and the way it is observed to function; and the wider issue of whether, rather than a restriction on farming, the policy is perceived as a positive contribution to wider society which is secured through the subsidies paid (Davies & Hodge, 2006).

According to (Garzon, 2006) CAP policy has shifted from the state-assisted to the multifunctional paradigm, moving towards a greater emphasis on the production of public goods for public money. This paradigm shift in policy appears to be accepted by the ‘conservation orientated’ farmers in Davies and Hodges’ survey. In contrast, the more economically rational farmers have yet to make this paradigm shift and therefore find Cross Compliance less acceptable. This suggests that a wider paradigm shift within the agricultural industry will be important in the future acceptance of Cross Compliance.

To summarise, the key to understanding farmers’ attitude to cross compliance is to consider the external and internal factors that influence their behaviour and how this impacts on their engagement and capacity and willingness to change. One approach to the evaluation could be to identify the mix of external and internal factors that cross compliance appears to have changed. These could be summarised in a table of attitudinal impacts with engaging, capacity and willingness to change as 3 categories on one axis, and positive impacts and negative impacts on the other (see Table 69).

An understanding of farmers’ attitudes to cross compliance can also help in improving the programme’s effectiveness in relation to a number of issues. Understanding both the negative and positive attitudinal impact of cross compliance can help shape the design of the policy so that it is acceptable to farmers and still meets policy objectives. Segmentation of farmers by attitude could also help in identifying the characteristics of those who are not (or are) complying and the underlying reasons for non-compliance. This knowledge would help in predicting those at risk of non-compliance, allowing for more efficient targeting of inspections. It would also be possible to increase the efficiency of the scheme by understanding the characteristics of those not complying and the factors that are reducing their capacity and willingness to comply, so enabling appropriate targeting of relevant advice and support.
Table 69: Potential framework for evaluating the attitudinal impact of Cross Compliance

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Appendix 6: Farmers’ Survey Questionnaire

ADAS EVALUATION OF CROSS COMPLIANCE QUESTIONNAIRE V6

FIELDWORK NOVEMBER 2007

Introduction

READ OUT

Good morning/afternoon/evening, my name is …… and I am calling on behalf of ADAS. ADAS has been commissioned to evaluate Cross Compliance on behalf of Defra, and as part of this project we are conducting a survey amongst farmers to understand any changes made to farm practices in order to meet with the requirements of Cross Compliance. Your name has been taken from a list of people who responded to the ADAS Farmers’ Voice survey between 2006 and 2008, and indicated they would be prepared to help out in further surveys.

Before I go any further, can you confirm that you are required to meet Cross Compliance as a condition of receiving support under the Single Payment Scheme or other Government scheme?

Thank respondent and close interview if farmer does not claim under SPS or other scheme (RECORD THIS AS A REASON FOR NOT TAKING PART IN THE INTERVIEW)

The survey is voluntary and will take approximately 10 minutes to complete. It will contribute to ongoing improvements in the implementation of the Cross Compliance scheme. Are you willing to take part?

If No – ask Would it be possible to call you back at another more convenient time?

If No – RECORD REASON FOR NOT TAKING PART

If Yes – Thank you. The survey will be conducted in line with the Market Research Society code of conduct. The information you provide will remain confidential and will only be used for the purpose of this survey. Only aggregated results will be reported on.

Q1 Can I firstly confirm your role on the farm? (Ensure the respondent is one of the following, if not arrange to speak to…) READ OUT

Farmer
Director
Business Partner
Spouse
Farm Manager

SECTION 1: Changes Made as a Result of Cross Compliance

Q2 I would like to understand what changes you have made to the way you manage your farm as a direct result of the need to meet Cross Compliance requirements. I will read out the requirements as broad groups and I would like you to say whether you have made any changes since 2005 in order to meet the requirements.
For .......... (READ FULL DETAILS OF EACH GROUP IN TURN) have you made no
changes, minor changes or major changes to your farm practices since 2005  RECORD
ANSWERS IN GRID BELOW.

REFER TO REFERENCE SHEET SHOWING WHICH GAEC OR SMR REQUIREMENT
EACH GROUP RELATES TO IN CASE THE FARMER ASKS.

<table>
<thead>
<tr>
<th>GAEC OR SMR REQUIREMENT</th>
<th>No changes</th>
<th>Minor changes only</th>
<th>Major changes</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil management and protection including the soil protection review</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Water Quality relating to disposal of dips, pesticides, application of sewage sludge, NVZ rules</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Historic and Landscape features related to public rights of way, scheduled monuments, stone walls, hedgerows and trees</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Habitats and Wildlife relating to uncultivated land, SSSIs, overgrazing and supplementary feeding, heather burning, weed control, unfarmed land, nesting birds and wild plants/animals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Animal Identification relating to tagging and movement records</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Control of chemicals, food and feedstuffs relating to the prescribed use of plant protection products and veterinary medicines and keeping up-to-date records</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Control of animal diseases such as Foot and Mouth, Bluetongue etc.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Animal Welfare</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

ASK SECTION 2 FOR UP TO 3 GROUPS WHERE CHANGES HAVE BEEN MADE - (CATI SYSTEM TO SELECT 3 IF MORE THAN 3 CODED, WITH PRIORITY GIVEN TO MAJOR CHANGES)

SECTION 2: Details of Changes Made

READ OUT

I will now ask you a few questions about the changes you have made. I would like to emphasise that we are only concerned with changes resulting directly from the need to meet Cross Compliance standards.

ASK QUESTIONS RELEVANT TO UP TO 3 GROUPS WHERE MAJOR CHANGES HAVE BEEN MADE – (Routing controlled by CATI system, random selection if more than 3 major changes)

Soil management and protection. Don’t ask about public rights of way as a separate group see separate groupings sheet for changes
Read out: I would (now) like to you think about soil management and protection.

Q3 As a result of cross compliance what changes have you made to the way you manage your farm in terms of soil management and protection? CODE ALL MENTIONED, DO NOT PROMPT

Now complete / update a ‘Soil Protection Review’ (GAEC 1)

Now sow a cover crop on bare land (after harvest) (GAEC 2)

No longer travel on or work with waterlogged soil (GAEC 3)

No longer burn crop residues (GAEC 4)

Other (please specify)

Q4 Still thinking about changes related to soil management and protection, how many extra hours of your time have you invested over the last 12 months to make the changes.

RECORD NO. HOURS

Q5 And how much, if anything, have you had to spend on top of your usual costs within the last 12 months to make these changes? SINGLE CODE, PROMPT IF NEEDED

No costs incurred

Less than £500

£500-£1,000

More than £1,000 (please write in estimated amount)

Don’t know

Q6 Have you experienced a reduction in revenue as a result of making the changes related to soil management and protection? When answering, ignore any penalties applied by RPA. SINGLE CODE

Yes – go to Q7

No – go to Q8

Q7 By approximately how much has your average annual revenue reduced?

No change (automatic code if coded NO at Q6) SINGLE CODE, PROMPT IF NEEDED

Less than £500

£500-£1,000
More than £1,000 (please write in estimated amount)
Don’t know

Q8 How much money have you saved in the last 12 months by making the changes related to soil management and protection? SINGLE CODE, PROMPT IF NEEDED

No savings made
Less than £500
£500-£1,000
More than £1,000 (please write in estimated amount)
Don’t know

Section 2 will be adapted for each of the requirement groups by replacing the text in red. The changes will be integrated into the questionnaire on set up within the CATI system.

SECTION 3: Difficulties in complying

Q9 What aspect or aspects of cross compliance, if any, have you had the greatest difficulty in meeting?

PROBE FOR FULL EXPLANATIONS OF WHAT THE DIFFICULTY WAS e.g. if “no longer burn crop residues” mentioned ask in what way did this cause a difficulty

Q10 And which other aspects of cross compliance, if any, have you had difficulty in meeting? (PROBE FULLY)
SECTION 4: Support for Cross Compliance

Q11 What support or advice have you used to help meet the cross compliance requirements?

READ OUT LIST

<table>
<thead>
<tr>
<th>Source</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial land agent/consultant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservation adviser e.g. FWAG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Compliance workshops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Compliance advice line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defra or RPA helpline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Compliance website</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Compliance newsletter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defra guidance booklet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other (please specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q12 How helpful was the advice you received from ........ ASK OF EACH SOURCE OF ADVICE CODED “YES” AT Q11. READ OUT ANSWER SCALE

<table>
<thead>
<tr>
<th></th>
<th>Poor</th>
<th>Acceptable</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Commercial land agent/consultant
Conservation adviser e.g. FWAG
Cross Compliance workshops
Cross Compliance advice line
Defra or RPA helpline
Cross Compliance website
Cross Compliance newsletter
Defra guidance booklet

Q13 What additional help, support or advice would make it easier for you to comply with the requirements of Cross Compliance? PROBE FULLY
SECTION 5 Attitudes

Q14 I am now going to read out a list of statements about attitudes towards farming and being a farmer. Could you tell me how much you agree or disagree with each of them? It is your own opinion we are interested in and there are no right or wrong answers.

READ OUT STATEMENTS AND ANSWER SCALE, SINGLE CODE

<table>
<thead>
<tr>
<th>Agree strongly</th>
<th>Agree slightly</th>
<th>Disagree slightly</th>
<th>Disagree strongly</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

Farming gives self-respect for doing a worthwhile job

Paying attention to details is crucial in making a success of running a farm

Farmers should provide congenial working conditions, hours, security and surroundings for themselves and their staff

Local authorities do not understand farmers and their needs

I want to pass on a viable business to the next generation

Q15 The next set of statements I will read out are about using the internet. As before, please could you tell me whether you agree or disagree with each of them? We would still like to have your views even if you do not use the internet very much. READ OUT, SINGLE CODE

<table>
<thead>
<tr>
<th>Agree strongly</th>
<th>Agree slightly</th>
<th>Disagree slightly</th>
<th>Disagree strongly</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

Accessing information on-line is too complicated

The internet saves me time and effort

Q16 Farm type – Record from sample database

Cereals

General cropping

Specialist Pigs and poultry

Dairy

Grazing livestock LFA

Grazing livestock lowland

Mixed
Q17 Farm size – Record from sample database
Small
Medium
Large

Q18 Region – Record from sample database
North East
North West
Yorkshire
East Midlands
West Midlands
East
South East
South West

Thank respondent and close interview
Appendix 7: Workshop Invitation and programme

Evaluation of Cross Compliance: Arable Lowland farming

Monday 17th November 2008, 11.00 am to 2.30 pm

Location: Red Kite Room, Natural England, Northminster House, Peterborough, PE1 1UA

Defra is funding an evaluation of the Cross Compliance programme. As part of this research Countryside and Community Research Unit (CCRI) at the University of Gloucestershire with ADAS and Central Science Laboratory have carried out a review of existing evidence on the impacts and costs and benefits of Cross Compliance.

We are interested in presenting these initial findings to you to get your response and in particular to explore:

- Farmers awareness and understanding of Cross Compliance
- Changes in management as a result of Cross Compliance
- Specific difficulties with the Cross Compliance requirements
- Farmers costs (savings) from Cross Compliance
- Benefits of Cross Compliance
- Ideas for the future development of the scheme, including the set-aside mitigation proposals.

We believe that you have particular 'on the ground' knowledge of the current farm level experiences of Cross Compliance and that your experiences will be of interest to others, as such, we would like to invite you to attend the workshop looking at the impacts of Cross Compliance for the arable sector to be held in Peterborough.

The workshop will be facilitated by Jane Mills and Janet Dwyer, the programme is attached. We do hope that you can attend the workshop, and look forward to hearing from you as soon as possible. Please respond to Emma Dennis on edennis@glos.ac.uk or tel: 01242 714080, confirming attendance and stating if you have any dietary requirements. If you are unable to attend but would like to nominate a relevant colleague, please feel free to do so. Alternatively, if you know anyone with knowledge that would be particularly relevant to this discussion and is not on our email list, please let us know.

Thanks in advance
Workshop Programme

Monday 17th November 2008, 11.00 am to 2.30 pm

Location: Red Kite Room, Natural England, Northminster House, Peterborough, PE1 1UA

10.30 Arrival and coffee

11.00 Round table introductions and welcome from CCRI

11.10 Introduction to the workshop – aims and purpose (CCRI)

11.15 Summary of review of existing evidence, followed by facilitated discussion to explore issues relating to farmer’s attitudes and understanding of cross compliance, changes in management and specific difficulties encountered and costs of implementation.

12.30 Lunch

1.30 Looking at the future development of cross compliance – what needs to change, what will be the impact of the set-aside mitigation proposals?

2.30 Finish and depart
Appendix 8: Briefing and question list sent to TAP advisers

Introduction

A consortium consisting of ADAS, Central Science laboratory (CSL) and the Countryside and Community Research Institute (CCRI) has been commissioned by Defra to carry out an evaluation of cross compliance, during the autumn of 2008. This is intended to gauge how well the policy is working three years after its inception, and how effective it is in achieving its objectives. It will also inform a review of the policy being carried out as part of the CAP Health Check, which provides an opportunity to make changes where these may be beneficial.

The specific aims of the evaluation are:

- To evaluate the behavioral change of farmers and land managers since the introduction of cross compliance, in terms of attitudes and management practices;
- to provide an assessment of the effectiveness of cross compliance conditions in England in meeting their objectives;
- to identify the nature and magnitude of the costs imposed on farmers and any others in meeting cross compliance conditions;
- To assess value for money for the measures given the EU Regulatory framework;
- To recommend any areas of improvement;
- To identify any unintended consequences and make recommendations for actions to reinforce positive outcomes and counter negative outcomes.

The project is being conducted in three stages. Stage 1 (largely completed) consisted of a review of existing evidence from the academic literature, reports of earlier studies, articles in the farming press, RPA inspection data, and Momenta survey data. During stage 2 (now in progress), primary evidence will be collected through a telephone survey of 300 farmers plus follow-up interviews with 10 non-compliant farmers, two workshops with advisers, consultants and other industry representatives, and interviews with the members of the Technical Advisory Panel for the Cross Compliance Advice contract. In the third stage, the evidence will be pulled together and an evaluation of the effectiveness, costs, benefits (in so far as these can be quantified) and value for money carried out. The draft report is due in mid January 2009.

For the purposes of the evaluation, we have separated the GAEC and SMR requirements into those perceived to have little impact, and those we consider to have some impact or a significant impact. We would like to check that you agree with our classification, then for each of the requirements or groups of requirements in the second group, to ask a number of questions about them. There are also some general questions about Cross Compliance as a whole.

Outline of questions:

1. Can I confirm the nature of your role as part of the Cross Compliance advisory contract? Who do you respond to in this role?

2. What is your overall view of Cross Compliance as a policy? Do you consider that it is effective in achieving its aims in view of Commission principles that measures should (a) have a direct link with agricultural activity and relate directly to the farmer, (b) be enforceable and (c) costs should be commensurate with the benefits? What is your response to the following propositions:
   - too many conditions / not enough conditions / the wrong conditions
not possible to micro-manage farm practice across 150,000 farms
• the system of penalties for non-compliance warning letters and loss of SPS is not effective
• the audit process and or targeting could be improved
• the wrong approach overall to engender behavioural change - compel vs educate

3. For each SMR/GAEC what would be the impact (none/limited/significant) of removing this from the list and what are your reasons for this assessment.

4. For those with significant impact, can you please answer the following (separate answer sheet completed for each condition):
   • To what extent has this condition increased farmers’ awareness and understanding of the issue?
   • In your experience, what is the attitude of farmers towards this condition (e.g. is it beneficial to the environment, human or animal health and welfare, or is it an unnecessary burden)?
   • Have farmers encountered particular difficulties in complying? If so, what are they? Can you suggest any solutions?
   • Are there any significant costs (or savings) involved in complying with this condition? If so, where do they arise?
   • In your opinion, is this condition producing significant benefits for (a) farmers; (b) the public?
   • Are there any side-effects of the condition that need to be taken into account?

5. What are the benefits (or other) of grouping conditions e.g. on soils, landscape, habitats

6. It is proposed that additional Cross Compliance conditions might be introduced to mitigate the loss of environmental benefits from set-aside. These could consist of:
   • ‘Option XC1’ – a certain percentage of land to be in ‘environmental management’, with ‘top-ups’ available under ELS
   • EU Commission proposal for wider buffer strips against all water courses
   • At present these proposals are still under discussion and not finalised, but do you have any general views on the acceptability, feasibility as regards implementation, costs and benefits of these proposals? What might be the main outcomes?

7. The Momenta farm survey for 2007 showed high levels of awareness among farmers (85% understand most or all requirements). Do you consider that the present arrangements provide sufficient advice and support for the 15% of other farmers? If not, what additional or alternative measures would you suggest?

8. Is there a better way to achieve (some of) the environmental objectives of CC within the current framework or outside it? What are the key options?

9. Any other recommendations for improving effectiveness/value for money?

10. Would you be prepared to review the transcript of the interview?

Many thanks for your assistance with this exercise.
Appendix 9: Practitioner Workshop Findings

Workshop Design and Delegates

The aim of the practitioner workshops was to enable an in-depth exploration of specific issues in relation to Cross Compliance with advisors and practitioners who have “on the ground” experience of how farmers and landowners have responded to Cross Compliance. This enabled the development of a deeper understanding of the issues identified from the existing evidence in the Phase 1 report. It also helped to ensure that the findings were up to date with trends in farmer awareness and attitudes to Cross Compliance and to identify areas for improvement. As only two workshops were held and because those attending were intermediaries i.e. people who work closely with a large number of farmers in their geographical areas, it has not been possible to attribute any views directly to a particular farming sector, nor claim that they will be wholly representative of wider farmer opinion. Nevertheless, where a topic was more extensively developed in one or other of the workshops (arable east England, or livestock northern England), this has been noted in the text, to help provide more context;

Two workshops were held; the first workshop focused on the livestock sectors, representing both upland and lowland livestock, and took place in Preston, Lancashire, while the second workshop was held in Peterborough and focused mainly on the arable sector. At these events, a selected group of invitees comprising independent and agency advisors and farmer representatives was brought together for a half-day’s discussion. Table 70 shows the distribution of delegates by occupation for both events.

Table 70: Distribution of workshop delegates by occupation

<table>
<thead>
<tr>
<th>Type of support and advice</th>
<th>Preston</th>
<th>Peterborough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Advisor</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Agency Advisor</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Farmer representative</td>
<td>2</td>
<td>-</td>
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</tbody>
</table>

A morning discussion session examined farmers’ responses to individual GAEC and SMRs relevant to the sector discussed. For each GAEC or SMR discussed the workshops probed:

- Extent of farm management changes;
- Changes in understanding and attitude towards requirements;
- Any specific difficulties encountered;
- Extent of farmers costs (savings);
- Extent of public/private benefits; and
- Any side effects.

An afternoon session then sought to explore the effectiveness of the whole Cross Compliance programme in terms of the inspection process and advice and communications. A brief final discussion obtained views on the proposed future Cross Compliance options. Details of the common workshop invitation and programme for both events are given in Appendix 6.
Impact of Cross Compliance Standards

This section provides a synthesis of the main issues raised during both workshops. The discussions focused on those conditions and requirements that the Phase 1 report identified as having a significant impact and which related to the sector under discussion.

Standards with minimal Impact

Due to time constraints it was not possible to consider all GAECs and SMRs in turn. Instead a number of GAECs and SMRs were presented at the workshops which the Phase 1 review of existing evidence identified as having had minimal impact on farm management, because farmers were already complying with the legislation prior to the introduction of Cross Compliance. These were:

- GAEC 2 – Post harvest management of soils
- GAEC 3 – Waterlogged soils
- GAEC 4 – Crop residue burning
- GAEC 7 – Scheduled monuments
- GAEC 10 – Heather and grass burning
- GAEC 16 – Felling of trees
- GAEC 17 – Tree Preservation Orders
- SMR 1 - Wild birds SPAs
- SMR 2 - Groundwater protection
- SMR 3 - Sewage sludge
- SMR 5 - Habitats
- SMR 9 – Plant protection products
- SMR 10 - Animal growth hormones
- SMR 11 - Food & feed law
- SMR 12 - Prevention/control of TSEs
- SMR 13 - Control of Foot & Mouth
- SMR 14 - Control of certain animal diseases
- SMR 15 - Control of bluetongue

There was general agreement that these standards have had minimal impact, requiring few farm management changes, with the exception of SMR 9 which was felt to have had some limited impact. Whilst there may have been few examples of non-compliance with these standards, it was felt that their inclusion within Cross Compliance has raised farmers' awareness of their obligations.

It appears that rural communities are increasingly aware of farmers’ Cross Compliance obligations and may be reporting some of the more visible breaches. This ‘public policing’ would apply to the GAEC and SMRs for Public Rights of Way (PROW), trees, crop residue burning, SSSI and waste regulation conditions, whereas the public would be less aware of other obligations, such as ear tagging, or 2m margins. In practice, the RPA inspection process is based on three elements; random, scored risk and targeted risk. Only the latter relates to reported potential breaches.
Soil management and protection

The general view from both workshops was that the Soil Protection Review has been beneficial by raising awareness of soil issues. However, the SPR form itself was considered a box-ticking exercise with little or no practical value for the farmers. The following quote captures the general feeling expressed in both workshops:

“I think that there is a real role for giving farmers a deeper understanding of managing soil as a resource and sustainable soil management; I don’t think that the SPR does anything on that whatsoever. So I think that whilst soil management and protection is an important issue going forward, this booklet is just a box ticking exercise which the farmers haven’t bought into, they haven’t understood it, they haven’t actually attached any value to it” (Preston workshop).

It was suggested that one test of whether farmers are using the SPR as a practical tool would be to see how many have updated it after the recent difficult wet year.

There was general agreement that the efforts to raise awareness of soil issues were valid, but the current guidance was inadequate. It was felt that the soil guidance booklet was too general and “countrywide” and showed a lack of agronomic knowledge. Suggested improvements included guidance focused on specific locations with local interpretation and advice on restoring damaged soils. The style used in the Environment Agency (EA) “Think Soils” booklet was recommended by several advisors. It was also suggested that more education needs to be delivered at the basic level to explain the rationale and importance of good soil management, perhaps through the use of local agronomists and other farm advisors.

The general view was that most farmers try to avoid damaging their soils and generally undertake good farming practices with respect to soils, based upon their knowledge. It was suggested that even with a potato contract, farmers will cease harvesting in inappropriate conditions if it will cause problems for subsequent crops.

Water Quality

SMR 4: Nitrate Vulnerable Zones (NVZs)

The general view at the Preston workshop was that whilst Cross Compliance has brought a slightly increased threat to farmers in relation to complying with the NVZ requirements, actual changes in farmer behaviour have been limited. However, it was felt that most people are now aware of NVZs and their obligations, helped by the ample training that was available.

Specific difficulties in complying with NVZ regulations were raised. An example was given of how Lancashire peat soils requirements in RB209 are based on Cambridgeshire peat soils which have different nitrogen requirements. Consequently, the feeling was felt that the NVZ requirements should be better adapted to local conditions.

Much of the Peterborough workshop focused on the new NVZ requirements. The view in both workshops was that slurry storage will be an issue for a large number of farmers. Many farmers will have to install additional storage facilities to meet the new requirement to have enough storage for 5-6 months. The closed period for slurry application is only 3-4 months, but in unfavourable weather and soil conditions farmers may have a considerable volume of slurry stored at the start of the closed may put pressure on existing, storage capacity. The costs for new facilities could be substantial. This extra financial commitment may be beyond farmers who are already struggling financially, particularly those older farmers with no successor who may decide to leave farming. This may hasten restructuring within the industry and lead to larger, specialised farms in future, where the concentration of risks to the environment could be greater.
Another side effect would be de-stocking of livestock because as one advisor put it:

“They will make the stock fit the storage rather than the other way around” (Preston Workshop).

The feeling was that the new requirements under NVZ will have mixed benefits. On the one hand, the farmers will benefit because the new requirements provide maximum limits for fertiliser application, rather than the RB209 limits, which gives farmers more leeway. Also it was felt there would be greater positive benefits for the environment. On the other hand, there will be substantially more paperwork due to the increased record keeping requirements. The feeling was that many farmers will struggle to complete the plans due to the amount of information required and intensive farmer education will be required to make it work. This impact will be greatest on the smaller holdings which are already struggling and where the farmer often lacks time and a successor to deal with the paperwork. In contrast, larger farms will employ someone to help with the paperwork. Increasingly, farmers are becoming reliant on advisors as they have limited time and in some cases a lack of willingness to understand all the rules.

It was felt that the cost of the new NVZs will be relatively high as many farmers will have to pay for the costs of an advisor. Some costs will be absorbed by the advisors themselves, but they will charge for other services, such as the risk map and manure management plans. It was felt that very few farmers will actually make significant savings in fertiliser costs.

There was concern that with the roll out of the new NVZ regulations there is a whole new audience of farmers who will need educating and informing about the requirements. It is vital that they get advice and support now to ensure that they are up to speed once the new NVZs are introduced in 2010. There was also concern that some farmers who are part-time or have one or two fields in NVZs may not realise that they are in a NVZ. This may be partly hindered by the difficulties of locating the NVZ boundaries on the new MAGIC website which is not intuitive to use. Also the maps are based on the assumption that most farmers are web enabled, which is not the case.

Historic and Landscape features

GAEC 8: Public Rights of Way

GAEC 8 was considered to be one of the most effective standards under Cross Compliance. It has been very effective in achieving what the Local Authorities have been trying to achieve for years. As one advisor suggested:

“They love Cross Compliance, the Local Authorities. Paths that have been closed for twenty years are now open as a result of it” (Preston workshop).

Farmers would like to see a more flexible and common sense approach to PROW, which allows for deviations of paths when it makes practical sense.

Ultimately the main beneficiaries are the public who will have increased access to public footpaths.

GAEC 13: Stone Walls

Farmers were generally thought to be complying with GAEC 13 as most score points on stone walls under agri-environment schemes. This would suggest that agri-environment schemes, rather than Cross Compliance, are having an impact on stone wall management. However, Cross Compliance does appear to have halted the practices that occurred in the early 1990s when wall stones were sold for rockeries. Whilst wall removal is easy to detect

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55 There are tools available, such as MANNER, to help farmers manage their manure.
and stop, the removal of stone from a wall is much harder to detect. On some farms wall remnants are removed to build up and maintain better walls elsewhere on the property and derogations are available in such situations. A common question asked by farmers is how the RPA inspectors know what stone walls were present before Cross Compliance and whether this has changed. Farmers are asking whether they should be creating their own photographic evidence.

**GAEC 14: Protection of hedgerows and watercourses**

At both workshops GAEC 14 was thought to have caused farmers the most concern with some very negative attitudes towards the 2m margins still remaining. Margins were thought to be a more contentious issue for intensive dairy, beef and sheep farmers who are not used to leaving land out of production, unlike arable farmers who are used to set aside and fallow.

The awareness of GAEC 14 requirements was thought to be good, in part due to the media attention that it has received. It was felt that most farmers will now have margins in place, but that there may be breaches in respect of the width of the margin. Details were provided of the difficulties in accurately leaving a 2m margin for the entire length during the course of normal agricultural operations. The consensus was that inspections should allow for some flexibility in the width of the margin, to account for the practicalities of manoeuvring agricultural machinery. Either the margin width should be 2m wide on average, or a 10% leeway in measurements should be allowed. Another problem is that often, contractors are ploughing or cutting too close to the hedge. The introduction of cab cards detailing what should or should not be done may be useful in this respect.

“If anybody mentions Cross Compliance the first thing they say is, ‘oh yes I have got my 2m margins’, they don't mention any of the other GAECs or the SMRs. But really 2m was always focused on in the media that you had to have this and I’d be quite shocked if they haven't actually physically got them” (Peterborough workshop).

It appears that many arable farmers have put in wider margins than 2m, possibly because they are in a scheme, or for pheasant feeding or access. Also some farmers will try and simplify the application of the Cross Compliance rules to their farms and do a little bit extra, knowing that in this way they will comply with many separate rules in order to remove worry. For example, putting in wider margins can cover both LERAPS and the 2m margins requirements, and facilitate machinery access to field boundaries to do other required management work.

The costs of implementing GAEC 14 will be highly variable depending on the quality of the land and size of fields. On highly productive land with small fields the costs will be high. However, it was thought that the main cost was in the management time involved in implementing the GAEC and making certain that systems are in place to ensure compliance. It was suggested that the average farm manager spends five days off the farm implementing the GAEC and making certain that systems are in place to ensure compliance. It was widely felt that the cost of this is massively underestimated.

A number of specific problems with margins were also identified. There is a difficulty that reasonable sized hedges will have only 1m margins and in these cases there are no machines narrow enough to keep them clean. Also margins have caused some problems with trespassing, mainly motorbikes on urban fringes. Walkers also often use the margin to go around the edge of the field instead of following the footpath through the middle.

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56 Also relevant to soils and water
57 Local Environmental Risk Assessments for Pesticide: Relates to the legal obligation to carry out and record use of an aquatic buffer zone when certain pesticides are applied.
The feeling was that farmers have a simplistic view of margins. They comply in order to obtain the Singly Payment and do not always understand the environmental benefits. The negative attitude that farmers have to margins is partly due to their lack of understanding of their benefits. There is confusion in this respect as the margins can be used to buffer against cleavers and weeds coming out of the hedge bottom into the field but the condition also appears to be trying to create margins as a wildlife habitat in their own right, which may compromise their ability to be used as a management tool.

GAEC 15: Hedgerows

It was generally felt that farmers were complying with GAEC 15, but this was due more to the agri-environment schemes than to Cross Compliance. Surprise was expressed when it was mentioned that Entry Level Scheme (ELS) inspectors were frequently seeing Cross Compliance failures, with farmers cutting hedges too much and at the wrong time.

Farmers’ knowledge of appropriate hedge management has increased enormously over the last two decades, starting with the introduction of the Countryside Stewardship Scheme in the early 1990s. It was felt most that farmers have accepted the requirements for hedge cutting, recognising that the advice is based on sound knowledge. This is reinforced through farmers’ awareness of the associated environmental benefits of hedges, particularly those who keep pheasants and partridges. It was suggested that in some respect this GAEC is the ideal Cross Compliance condition, in that it is ‘taking farmers down a road that they have already begun to go down’ and it is not hugely costly or difficult to comply with.

An attitudinal change to hedgerows has occurred as a result of Cross Compliance, but it has been a positive change. In the past hedgerows have been very much front page news and farmers now feel good about doing the right thing, as is summed up in the following quote:

“There is always change, but it is whether it’s a positive change or a negative change and this is all positive because hedgerows have been very much a front page news type of campaign whereas now you can feel that the pendulum has definitely swung away and farmers feel good about what they have done with hedgerows” (Peterborough workshop).

An important side effect of this GAEC is the establishment of wider grass margins in order to get the tractor through to enable cutting at the appropriate time of year.

Habitats and Wildlife

GAEC 5: Environmental Impact Assessment

There is still general confusion and misinformation surrounding the ploughing of permanent pasture. There is uncertainty as to whether permission is required and it is difficult to find complete and succinct rules.

GAEC 9: Overgrazing and unsuitable supplementary feeding

The view from the Preston workshop is that there is still considerable misunderstanding and confusion surrounding GAEC 9. Many farmers are worried about breaching this GAEC and there are some who are stopping acceptable practices from fear of breaching the condition. Some believe there is a blanket ban on supplementary feeding and others do not realise that the condition only applies to semi-natural and natural grassland. Some farmers are particularly worried about poaching even in lowland areas, whilst others believe it is acceptable to cause damage through supplementary feeding as long as the ground is reseeded afterwards. There was even confusion amongst the advisors present as to what were acceptable practices.
The consequences of this lack of clarity are that farmers are often housing livestock that could have legitimately been fed outside. This is putting extra pressure on buildings and slurry systems and consequently increasing pollution risks.

There are also high additional costs as a result of this GAEC as it affects the way farmers run their business and finish their stock. This is resulting in additional feed, housing and labour costs and sometimes this is an unnecessary additional cost.

**GAEC 11: Control of Weeds**

It was suggested that highways authorities, councils and new small land owners are most likely to mismanage land under this condition. Non-compliance with weed rules is usually by the less commercial farmers such as horse owners and small land owners who were encouraged to register for the Single Payment, but are unaware of their Cross Compliance obligations.

It was thought that there are some contradictions in the rules, which confuses people. For example, there are some areas of the farm where they are not allowed to spray or only part spray, but there are specified weeds e.g. thistles, ragwort and docks on these areas which they are obliged to control.

**GAEC 12: Eligible land not in agricultural production**

GAEC 12 was thought to be widely misunderstood, with considerable confusion over the differences between set-aside and GAEC 12, to the extent that even advisors do not fully understand the rules. Generally, farmers are treating this land as set-aside despite the discrepancies between the two sets of rules. It was suggested that as farmers understood set-aside, it may be better to transfer the set-aside rules into GAEC 12.

_The farmers understood the set aside rules. They understood that they could spray at certain times and they could plough at separate times. They don’t understand GAEC 12. And there are a lot of advisors too that I think don’t understand GAEC 12_ (Peterborough workshop).

It was felt that GAEC 12 will continue to be relevant irrespective of wheat prices because some uncropped land will persist. Farmers are generally taking out the uneconomic areas of land, such as field corners and leaving them uncropped on a long-term basis, rather than taking land out as part of a rotation. Some farmers leave fields fallow to improve the soil structure, but most allow it to reseed back to a poor grass sward. Even in the absence of set-aside, areas of land will still be left uncropped.

**Animal Identification: SMRs 7-8**

There was general agreement that farmers hold some very negative attitudes towards these SMRs. Much of the discussion focused on the “fear factor” and the anxiety expressed by those farmers who are trying to comply, but fear they will be penalised for some minor breach. It was felt that farmers are unaware of many of the cattle breaches and do not realise the potential for BCMS links. One common breach is farmers not recording movements if they still hold the passport, for example, with movements from a neighbouring farm and back again. It was felt that a small amount of education would reduce many of these breaches.

Another view was that many breaches are due to late livestock registration. This is often unintentional and can relate to factors outside their control, such as delays with the post, which is felt to be unfair. Registering is also harder for farmers without computers, putting them at a disadvantage as there is more chance of delay. More proportionality to the fines was suggested to make allowances for situations that are out of the farmer’s control, such as...
lost post or slow processing. There is not perceived to be any allowance for honest mistakes or delays; this can be counterproductive and impacts on farmers’ willingness to comply.

Some farmers appear to be struggling with the record keeping requirements, with records not up to date or partially incomplete. Part of this is due to a lack of awareness of the requirement. For example, farmers may be recording the death of an animal but are not returning the passport.

“For the past couple of years there have been various changes with cattle passports and that and trying to keep up to date, as well as doing everything else. For a lot of farmers who are on their own and have no help, to read and understand the regulations and to do the paperwork and farm, there just aren’t enough hours in the day” (Preston workshop).

Some practical difficulties in complying in certain situations were also identified, such as the difficulties of not knowing if stock are missing on salt marsh summer grazing, or open moor grazing, until they have been rounded up in October. There are also some practical safety issues surrounding retagging, particularly for moorland herds that are not used to being handled. With some cows there is no way to retag without suitable facilities, such as crushes or handling pens, and it can pose a danger to farmers. It was suggested that a significant amount of time is required to maintain these SMRs, as well as hidden costs, such as getting cows in to handling pens and the cost and time to complete the paperwork.

At the Peterborough workshop it was suggested that some arable farmers in the East of England are giving up their livestock due to the huge amount of legislation and the high risk of losing their Single Payment with the livestock SMRs.

“I must admit I have got one grower …. and a big chunk of the reason for her getting rid of her cattle was all this legislation, it wasn’t the only reason but it was a major part of the decision to get rid of all the cattle and have no animals on the farm at all because of all this added legislation, passports and everything else” (Peterborough workshop).

There are also other problems such as a very low abattoir capacity in the East despite a very strong local food market. This begins to have a negative impact on animal welfare, as live animals have to be transported further. Continued pressures on livestock farming are likely to exacerbate this problem, given the need for a critical mass in terms of viability of processing plant.

Animal Welfare: SMR 16-18

As with the Animal Identification SMRs, there are similar concerns about minor breaches of SMRs 16-18. Whilst a few farmers flagrantly disregard the rules with regard to record keeping or the welfare of their stock, the majority do not and just worry about the risk of inspection as there is a high risk of penalty for small mistakes. For example, farmers are worried about taking slightly lame fat lambs to slaughter.

It was also felt that there is a considerable amount of duplication and cross-over with Quality Assurance scheme inspections which can antagonise farmers.

Proposed set-aside mitigation XC1

Details of two proposed set-aside mitigation options were presented at the workshops. These were the XC1 option proposed by Natural England which would require a certain percentage of land to be in ‘environmental management’ with ‘top-ups’ available under ELS, and the European Commission proposal for wider buffer strips against all watercourses. Participants were asked how farmers might respond to these options.

The view was that farmers would be against the introduction of XC1 condition on two grounds. Firstly it would impose a condition across all farms without considering whether
they already have SSSIs or are in an agri-environment scheme and secondly England is seen to be the only EU country enthusiastic to introduce this measure, which is widely regarded as set aside.

It would also reinforce the any negative perceptions of Cross Compliance in England, particularly given the current economic climate. It was suggested that this option was unnecessary as many farmers were unlikely to bring their set-aside land back into production as they were unproductive areas. There was also a strong feeling that the introduction of this option would undermine ELS, which was established to incentivise this type of management. It was even suggested that it may impact on the number of farmers entering ELS putting Natural England’s target of 70% of agricultural land in an agri-environment scheme by 2011 in jeopardy and causing some not to renew their agreements in 2010.

The feeling was that the introduction of 6 m margins would be viewed more positively by farmers. Farmers’ awareness of watercourses has increased considerably over the last decade and many arable farmers already have to deal with LERAPs. It would be those farmers that do have LERAPs that would be most affected.

**Implementation Issues**

**Inspection process**

A view widely expressed by participants in the workshops was the “fear factor” surrounding the inspection process which creates a negative perception of Cross Compliance in the farming community. This is a perception which is widely represented in the farming press and while it may have little credence in practice (the RPA Inspectorate receives favourable customer feedback from farmers that submitted comments about their inspection and some 700 farmers covered by the RPA Customer Satisfaction Survey), it is real. It is fundamentally due to a lack of clarity and understanding of the rules and how they are inspected. It was suggested that farmers who are trying to comply are fearful that they may incur penalties for minor breaches that are unintentional, such as differences in the measurement of margins. Whilst farmers understand the need for inspection, they also want advice to ensure that they are complying. It was suggested that it may take an inspection for farmers to fully understand how to comply.

“To me the whole problem with the Cross Compliance inspection procedure is its perception in the community, it sort of pumps up the fear factor. Farmers in the main just really worry about it” (Peterborough workshop).

The perception extends in particular to the RPA. In the Peterborough workshop the subject of the RPA approach to Cross Compliance and the apparent contrast with other approaches to inspection and enforcement, was discussed at some length. It was clear that there is poor understanding of the role of the inspectorate and the need to keep inspection separate from advice. For example, RPA must carry out unannounced inspections because it is a requirement in European legislation. Because of the nature of the SMRs for which they have CCA responsibility, the EA are not bound by this requirement, but Animal Health is. It was also suggested that inspectors should come in and run workshops, attend meetings and to talk to people and intermediaries and explain what they were looking for. While this is outside RPA’s remit, there may be scope for more partnership working between with the FAS, including an active role at events.

The workshop participants felt that anxiety also surrounds the inspection process itself because there is a lack of knowledge on the farmer’s part as to what is expected from an inspection and what the inspectors are supposed to see or do, which adds greatly to the anxiety felt at the prospect of an inspection. Letters informing of imminent inspections quote

58 RPA already attends FAS and various other events when invited
the relevant SMRs, but not what will be inspected (RPA confirms that this is available in the Guidance Notes\textsuperscript{59}). It was felt that this information would greatly ease the concerns felt by farmers and practical solutions, such as the provision of a DVD explaining the inspection procedures, would help farmers access it. It was also suggested that some measurements, such as 2 m margins should be taken with GPS and remote sensing, as in other European countries, rather than using field walkers.

According to the workshop participants farmers are not new to inspections; they have been subjected to them for years and much ingrained knowledge and wisdom about farm inspections already exists. Farmer psychology can deal with inspections from Freedom Foods, supermarkets and other inspections where they understand that the buyer stands to lose their customers if standards are not upheld. There is a fundamental lack of understanding of the underlying rationale for Cross Compliance which needs to be addressed through FAS.

The need to reduce duplication of inspections was raised. Multiple inspections (not necessarily always Cross Compliance inspections) are an issue as they can put considerable additional stress on people who may already be under time and financial pressure, such as smaller livestock farmers. It was suggested that the effort that many farmers already make to meet the standards required under the various food protocols should be acknowledged by the confidence that they are much less likely to get a Cross Compliance inspection, as a result.

Support and Advice

It was generally acknowledged that the advice contract has helped to raise awareness of the GAECs and SMRS, but due to the lack of understanding and general confusion surrounding many of these SMRs and GAECs, there was still some inadequacy in the advice provision. Whilst the Momenta workshops have been useful in raising awareness it is often difficult to give more complex and specific advice on the wide range of Cross Compliance conditions and requirements in such settings.

The feeling was that education campaigns should be targeted at those GAECs where misunderstanding and confusion is still apparent. This particularly applies to the livestock ID SMRs where there are the highest number of breaches in relation to movement records and tagging. One suggestion was to organise a BCMS training day where several parishes are targeted and the focus is on livestock movements and tagging. If farmers attend then their chances of inspection should be reduced.

Another view was that the Catchment Sensitive Farming model might work better than workshops. With this approach, farm specialists would work with growers and farmers to deliver advice. As one advisor commented:

"I do like the Catchment Sensitive Farming model, which is better than hitting someone over the head with a hammer, and is working with growers. And there are going to be advantages from that, you are going to get a better environmental result out of it by working with people. If you start putting their backs up it is just not going to work" (Peterborough workshop).

One suggestion was that the large network of existing advisors could be used to deliver advice and support, for example the Association of Independent Crop Consultants (AICC) covers about 44\% of the arable area in England, and there are also Farming and Wildlife Advisory Group (FWAG) advisors, machinery/fertiliser dealers, chemical reps, vets, and English Beef and Lamb Executive (EBLEX) advisors. The costs of delivery would not be high if support is offered to those who are already providing advice. Through the use of

\textsuperscript{59} from 1 January 2008 onwards the Guide to Cross Compliance in England has contained full details about exactly what will be checked during an XC inspection by each of the CCAs involved in the process.
these advisors it would also be possible to advise the more hard-to-reach farmers who would not normally read literature, or attend workshops or meetings. This highlights the perceived limits of the current FAS approach.

The feeling was that the rules and guidance generally need to be simplified and made more succinct. As the guides cross-reference each other farmers have to keep a large number of booklets. There was the sense that farmers are becoming overwhelmed by the number of booklets they have to read.

“They get the updates and reviews through the post and they go on the filing pile. They just haven’t got time. And the filing pile usually is under the desk it doesn’t even make it onto the desk. I don’t even know if it is about time anymore, I think that now it is just another set of books…. The NVZ books will be exactly the same there are nine leaflets they will just be put in a heap somewhere”.

Alternative information sources were suggested such as the use of DVDs or the use of continued professional development. Another suggestion was to increase the publicity about the errors farmers make and advice about how to overcome them. It was suggested that perhaps the farming press and farming organisations have a role to play in this respect.

**Farmer Behaviour**

The feeling was that Cross Compliance has increased farmers' awareness of their obligations. However, it was less clear whether it has prompted any environmental behavioural change. It was felt that farmers are generally more aware of environmental issues now than in previous decades, due to college training and more exposure in the media. Environmental behavioural change was set in place a generation ago and reinforced with the stewardship schemes. It was unclear whether any changes in behaviour should be attributed to Cross Compliance or to other reasons, for example the usage of nitrogen is down this year, but is this due to the Cross Compliance regulations or the inflation of nitrogen costs? Farmers are not always clear about the environmental benefits of the Cross Compliance action.

**Effectiveness**

The general view was that Cross Compliance has been effective in raising awareness of the legislative requirements and in amalgamating the rules into one place. However, it was felt that this has been done in a negative way which has not raised awareness of the potential environmental benefits of all the conditions and which has generated bad feeling and anxiety amongst many farmers. It could have been far more effective if different mechanisms had been employed which emphasised the purpose of the conditions and gave more tailored, supporting advice and a more considered, educational approach to enforcement, working with existing networks of advisors and helping farmers to learn how to comply effectively.

One view was that Cross Compliance has made a simple thing, i.e. meeting basic farming standards, far more complicated and confusing; as the following quote illustrates.

“I think that Cross Compliance for me is a benefit overall, but it is a hell of a roundabout way to get to it” (Peterborough workshop).

**Value for Money**

Cross Compliance might achieve better value for money by using a different approach to advice which actively engages with farmers, bringing them on board so that they may do more than they need to do, in order to meet the basic Cross Compliance standards. At the moment there is a danger of farmers not understanding the environmental or welfare messages. For them Cross Compliance is something to adhere to in order to obtain their Single Payment.
“If you ask a farmer what Cross Compliance means to him, it will be a way of getting his money. I’m sure the environmental benefits or impact or cost or whatever would come later in the conversation” (Peterborough workshop).

Side Effects

A specific concern was that one side effect of increased paperwork and bureaucracy may be a reduction in livestock numbers, particularly in the dairy sector and, in the areas in the East of England where livestock are not common, leading to further landscape homogeneity and loss of cultural heritage, with impacts on employment and scope for adding value to products.

Another side effect of Cross Compliance has been the reinforcement of the negative image between the Government and the farming industry. This has accentuated the “them and “us” feeling and the view that the Government is working against rather than with the farming industry. While it is debatable if the perception would be any different in the absence of Cross Compliance, the comments emphasis the need to promote the public benefits of adherence to standards and link clearly to the role of farmers in providing these.
Appendix 10: Technical Advisory Panel (TAP) Interviews

The Technical Advisory Panel (TAP) provides technical advice through the Momenta advice contract to Defra. There are three members of the panel, each with different expertise. They assist in interpretation of Cross Compliance rules and feeding back farmers’ views and queries to enable rapid build-up of the FAQ service. They also train advisers and answer telephone queries.

Each member of the panel also co-ordinates the provision of advice in one Government Office Region, between them covering the Eastern, South East and East Midlands regions. In this role they negotiate the advice programme with the Natural England regional adviser, stakeholders and county advisers, and then organise events such as workshops, farm walks and contributions to third party events for that year.

Methods

The three TAP advisers were contacted by telephone and asked if they would agree to be interviewed. All agreed, and dates were arranged. A briefing note and list of questions were sent by email in advance of the interviews (see Appendix 3). The interviews were conducted separately, face-to-face at pre-arranged venues. Responses were recorded on pre-prepared record sheets, which were then converted to a transcript of each interview. This was sent to each adviser with any areas of uncertainty highlighted, and they were asked to check that the transcript was a correct record. The transcripts were then summarised to produce the report below.

Impact of Cross Compliance Standards

Two felt that there were too many conditions, and that they should be more focussed, the other thought that the balance was about right. Two thought that grouping conditions would be a good idea, but one did not think it would make much difference. One suggested that renumbering in a more logical order would also help to improve clarity.

For each Cross Compliance requirement, interviewees were asked to give their views on the potential impact of removing the requirement from the list, and where appropriate to give their reasons for their assessment. Impacts were classed as one of three categories: none, limited or significant. Where impacts were considered to be significant, a further set of supplementary questions were asked relating to that specific requirement. Each interviewee provided answers to the supplementary questions for several conditions, but the specific conditions varied according to which ones the respondent considered to be most significant. Conditions classed in the three categories ‘animal identification’, ‘control of animal diseases’ and ‘animal welfare’ were considered together within categories, as little difference was perceived between them in terms of their effects.

Table 71 summarises the responses for the three TAP advisers. In general there was a high level of agreement between the advisers. Where they differed it was only between adjacent categories and even here the comments were generally similar.
Table 71: The number of TAP advisers that considered the impact of Cross Compliance conditions to be none, limited or significant

<table>
<thead>
<tr>
<th>Condition</th>
<th>None</th>
<th>Limited</th>
<th>Significant</th>
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<tbody>
<tr>
<td><strong>Soils and water</strong></td>
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<tr>
<td>GAEC 1 Soil protection review</td>
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<td>GAEC 2 Post-harvest land management</td>
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<tr>
<td>GAEC 3 Waterlogged soil</td>
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<td>GAEC 4 Burning of crop residues</td>
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<tr>
<td>SMR 2 Groundwater protection</td>
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<td>SMR 3 Sewage sludge</td>
<td>3</td>
<td></td>
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<tr>
<td>SMR 4 Nitrate Vulnerable Zones</td>
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<tr>
<td><strong>Historic &amp; landscape features</strong></td>
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<td>GAEC 7 Scheduled Monuments</td>
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<tr>
<td>GAEC 8 Public rights of way</td>
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<tr>
<td>GAEC 13 Stone walls</td>
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<td>GAEC 15 Hedgerows</td>
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<td>GAEC 16 Felling of trees</td>
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<td><strong>Habitats &amp; wildlife</strong></td>
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<td>GAEC 6 Sites of Special Scientific Interest</td>
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<td>GAEC 9 Overgrazing &amp; suppl. feeding</td>
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<td>GAEC 10 Heather &amp; grass burning*</td>
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<td>GAEC 11 Control of weeds</td>
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<td>GAEC 12 Eligible land not in production</td>
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<td>GAEC 14 Protection hedges/watercourses</td>
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<td>SMR1 Wild birds SPAs</td>
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<td><strong>Animal identification</strong></td>
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<td>SMR 7 &amp; 8 Cattle identification</td>
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<td>SMR 8a Animal ID/reg. – sheep &amp; goats</td>
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<td>SMR 9 Plant protection products</td>
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<td>SMR 10 Animal growth hormones</td>
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<td>SMR 11 Food &amp; feed law</td>
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<td>SMR 12 Prevention/control of TSEs</td>
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<td>SMR 13 Control of Foot &amp; Mouth</td>
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<td>SMR 14 Control of certain animal diseases</td>
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<td>SMR 15 Control of bluetongue</td>
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<td><strong>Animal welfare</strong></td>
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<tr>
<td>SMR 18 Welfare of farmed animals</td>
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</table>

*None of the advisers had sufficient experience of GAEC 10 to comment.

There were no instances where one adviser thought there was no impact and another thought it was significant.
Soil management and protection

All three advisers considered that the Soil Protection Review had little or no impact at present, because it is largely a box-ticking exercise, but agreed that it could be a useful measure in future if the soil management measures identified were enforced in the field. The plan should include examination of soil structure, though many farmers would need on-farm advice on how to do this. GAEC 2 and 3 were both felt by all three advisers to be ineffective, and should be combined with GAEC 1 as part of an improved soil management condition.

One adviser provided answers to the supplementary questions for GAEC 1. Although GAEC 1 had increased farmers’ perception of the issue, it was generally felt to be an unnecessary burden. Also, although they tick the boxes, many farmers don’t understand what they are doing and forms are often found to be completed incorrectly at inspection. Because it is ineffective and confusing, GAEC 1 currently has a negative effect on the perception of soil issues. A better design for the form with more explanation is needed to help with completion. Good soil management can increase yields, but concepts can be difficult to communicate on paper and field demonstrations e.g. for assessment of soil structure, are more effective.

All felt that GAEC 4 had no impact as the rules were already generally observed prior to the introduction of Cross Compliance.

Water Quality

SMR 2 was considered to have been useful in raising awareness of the issue, though one thought that policing by the Environment Agency may have had a greater impact than Cross Compliance.

All agreed that SMR 3 had no impact because the regulations are dealt with by the water companies who supply the sludge. This requirement could therefore be removed with no impact.

SMR 4, however, was felt by all to have a major impact, and all provided answers to the supplementary questions for this condition. Opinions on the views of farmers varied; one thought that they considered it an unnecessary burden while the others thought that they did admit that there were benefits to the environment, but there were concerns that the new rules were too complicated. A number of difficulties were reported in complying with SMR 4 and the underlying regulation; these included record-keeping, a need for reduced stocking on some farms, additional manure storage requirements, the non-spreading period, restrictions on the location of manure heaps, and maximum application rates. It was thought that many will struggle with the concept of $N_{\text{max}}$.

Dairy farms on vulnerable soil types in high rainfall areas were likely to suffer the greatest problems. For some there would be significant costs especially where increased storage capacity was needed; in some cases these might be so high that the business might no longer be viable. However, there could also be savings in fertiliser use through implementation of good practice, e.g. nutrient management plans, timely spreading of manure. Better education is needed to encourage farmers to appreciate the savings that could be achieved. This is even more relevant with the increase in price of nitrogen fertiliser, and could increase farmer interest and effort to comply.

There may be some unintended side-effects of SMR 4. Manure heaps cannot be located in the same field more than one year in three, but this may force farmers to locate the heaps in other fields that are less suitable because of soil type, topography, presence of adjacent watercourses etc. It may be better to use the field with optimal characteristics, even if this means using it more frequently.

One interviewee suggested that the amount of time needed to deal with the increased volume of paperwork for this SMR alone could be 3-5 days per year and that this could be
sufficient to push some farmers to the point of non-compliance, in which case they would cease to bother about the other aspects of Cross Compliance and take the risk of suffering a penalty if inspected. The imposition of too much paperwork could therefore prove counter-productive in terms of achieving the overall aims of the scheme.

**Historic and Landscape features**

GAEC 7, 13, 16 and 17 were agreed by all to have little or no impact. One said that the public do raise queries if they see stone walls being dismantled, but instances are rare.

GAEC 8 was felt to have a significant impact, because the public are aware of farmers’ responsibilities in this area and will complain if they find that a footpath is not maintained. This is the main Cross Compliance condition that the public identify with and respond to.

Two advisers answered supplementary questions on GAEC 8. One considered that farmers were already aware of the regulations and Cross Compliance had made little difference, but the other thought that it had raised awareness of obligations with respect to PROW. Although they considered the regulations a burden most were prepared to live with them, though some disliked having the public walking over their land in principle. In general they don’t have difficulties in complying but reinstatement after cultivation can cause problems because of the short time within which this has to be done. Clear guidance from local councils on farmers’ obligations, and better communication between, and education of, farmers and the public, would help to prevent problems of non-compliance by farmers or damage by public. There are some costs in footpath maintenance, but these would apply in the absence of Cross Compliance. There are benefits to the public, but not to the farmers themselves.

Two advisers answered supplementary questions on GAEC 15. It was thought to have an effect in terms of changing behaviour; without it farmers would trim hedges in July, especially after oilseed rape harvest, on uncropped land, and by roadsides etc. There was some confusion, however, between the requirements of GAEC 15 and the ELS hedgerow prescriptions. Standardisation of cutting dates would help. The standard was considered to provide benefits in terms of improved hedges and for nesting birds.

**Habitats and Wildlife**

GAEC 5 was felt to have little or no impact in practice, as farmers rarely want to cultivate land where an EIA would need to be carried out. Furthermore, there only seems to be an issue if the sward is botanically rich; other environmental considerations do not seem to be taken into account. For example, one adviser had applied for permission to plough a grass field with pronounced ridge and furrow, and permission had been granted. However, it was pointed out that farmers find GAEC 5 confusing and it creates one of the biggest demands on the advisory panel. Thus the main impact is on the farmers in terms of their need to seek advice; the environmental impact is very small.

GAEC 6 was agreed to have little impact as farmers generally know if they have a SSSI on their land and what management is required. However, one suggested that a farmer who disagreed with the constraints applied by Natural England would be more likely to comply with them under Cross Compliance because of the risk of incurring a penalty.

GAEC 9 was also thought to have little impact, but in this case because farmers who were not compliant continued to ignore the provisions of the standard and the inspections were not effective in detecting infringements. Supplementary feeding was felt to be the main source of breaches of the condition. One adviser suggested that GAEC 9 could be included with the soil protection review.

The effect of GAEC 11 was felt to be limited, but here again it was thought that many breaches went undetected. It is difficult to police without follow-up inspections because the
requirement does not relate to the eradication of the species concerned, but to the prevention of spread. The public often do not understand this and complain about any incidences of ragwort in particular.

One adviser answered supplementary questions on GAEC 11. He felt that Cross Compliance had increased farmers’ awareness of the need to keep injurious weeds under control. They consider it to be beneficial as long as others also comply, and would therefore like to see greater enforcement. However, good control of some species, e.g. ragwort, Himalayan balsam, was difficult to achieve and it was suggested that there was a need for further research in this area. The costs of control were considered to be offset by the savings (though again this could depend on neighbours also taking action).

There was unanimous agreement that the rules for GAEC 12 are badly written and confusing. As a result the intentions of the standard are not achieved, because farmers don’t understand the rules and are not aware of the differences between GAEC 12 management requirements and those relating to the former set-aside scheme. The potential benefits of the standard are therefore not realised. Areas where there is confusion include the following:

- One-year fallow: farmers are used to rotational set-aside and spraying off with glyphosate in May, but the GAEC 12 guidance is not clear. The three herbicides identified for use in bare fallow are all limited in their effectiveness and their use in such situations is likely to exacerbate the development of herbicide resistance because of their mode of action. It is possible to comply with the standard but allow high seed return of weeds such as black-grass and sterile brome, which one adviser did not consider to be keeping the land in good agricultural and environmental condition.

- Cutting requirements are also badly worded. Presumably the intention is to prevent all the field being cut in the same year, but this is only explicitly stated for years four and five.

- The reference to grazing is also confusing; if the land is grazed surely it is in agricultural production?

Two advisers answered supplementary questions. They suggested that the rules should be re-drafted in consultation with the industry. One possibility would be to re-apply the set-aside rules, but delay the first date for application of glyphosate to 15 May (or possibly even later); research had shown that this would still allow prevention of black-grass seeding, but would increase the value for birds.

All three interviewees considered that GAEC 14 had significant impact, and answered supplementary questions. Opinions differed on farmers’ views of this standard; two advisers thought that farmers generally consider GAEC 14 an unnecessary burden unless they are environmentally aware; many see no benefit and resent the fact that other EU countries do not have this condition. However, the other interviewee thought that once educated, they see it as beneficial, and feel that the benefit justifies the cost. It was suggested that both net costs and savings are possible, depending on how the strip is managed. If managed correctly, savings could be made, but if not, there could be costs in both economic and environmental terms. Although there may be some loss of crop, the costs resulting from weed infestation, where management is sub-optimal, are probably more significant. Farmers leaving uncultivated strips for the first time have encountered problems with weeds such as cleavers and sterile brome establishing in the strips. They are confused about when they can cut the strips to control weeds.

Breaches of GAEC 14 can occur if a small section is less than the prescribed width, e.g. when ploughing along an uneven margin, and penalisation in such circumstances has caused resentment. Allowance of some leeway over such minor non-compliances has improved attitudes. Improved education on how to manage the strips and the benefits
accruing would be beneficial (though this has already been achieved to some extent by the existing advisory programme).

SMRs 1 and 5 were generally thought to have no impact. One respondent thought that SMR 1 might have some effect in terms of limiting the control of raptors on shooting estates, though the low level of penalties probably provided insufficient incentive to have much impact.

**Animal Identification**

All four animal identification SMRs were considered to have a significant impact in terms of increasing the effort to comply. Prior to Cross Compliance, most farmers did not bother with tagging. Two advisers answered supplementary questions. It was felt that Cross Compliance had significantly increased awareness and understanding of the issue, not only among farmers but also by inspectors and legislators, resulting in amendments to clarify the requirements. However, farmers consider the SMRs to be an unnecessary burden; they understand the principles of why they are needed, but think that they could be simpler.

Initially, there were difficulties with compliance caused by lack of understanding, but the new regulations are clearer and this has reduced the number of problems. The sheep rules were very complicated but had improved. Problems still occur however, e.g. some farmers still have passports for dead animals, ear tags get lost (though 28 days are allowed for replacements), and some cattle are not registered. Farmers do not always recognise the need to set up linked holdings so that they don't have to record movements between holdings belonging to the same business.

It was felt that there were significant costs, especially in terms of the time required to complete the paperwork, but these had to be accepted. One adviser felt that the system was needed for disease prevention, and that there would be benefits to the farmer in terms of disease control and to the public through food quality assurance, but another thought that it did not really produce any benefits.

One respondent suggested that the three standards should be combined into one.

**Control of chemicals, food and feedstuffs**

SMR 9 had improved the observance of correct practice with regard to pesticide application. However, most improvements were of a technical nature, such as not spraying one day after the end of the approval period, and better record-keeping. Thus the environmental impact was small. One interviewee commented that the number of inspection failures was surprising given that users should be advised by a qualified agronomist.

SMR 10 was unanimously agreed to have no impact.

SMR 11 was thought to have limited impact, mainly on record keeping. If records are well kept, there is no problem. However, the rules are confusing, and many are unsure about what they should be doing.

**Control of animal diseases**

SMRs 12, 13, 14, and 15 were considered to have no impact in practice, as most would comply anyway in the event of a disease outbreak. Where non-compliance occurs, it is more likely to be due to ignorance than the deliberate flouting of the law. One adviser suggested that these conditions could be dropped as Cross Compliance requirements, but another felt that they should be retained on the principle that anyone not observing them should not receive public money.
**Animal Welfare**

Cross Compliance has had an impact on those few who don’t look after their animals properly, though this is only a very small minority. Cross Compliance helps with enforcement because it is easier to trigger an inspection than to take an offender to court. One felt that vets would report those who were clearly in breach but allow some latitude regarding minor infringements for farmers who were struggling. Another thought that more effort should be devoted to catching those who were guilty of poor husbandry with significant effects on animal welfare.

**Additional standards to mitigate the loss of set-aside**

The advisers were asked about their views on the proposed introduction of additional standards to offset the environmental impacts of the abolition of the former set-aside requirement. Two potential standards were identified, the so-called ‘XC1’ standard proposed by Natural England, requiring a certain percentage of land to be in ‘environmental management’, with ‘top-ups’ available under ELS, and the European Commission proposal for wider buffer strips against all watercourses.

It was felt that these would be unwelcome at farm level; the general view was that ELS should replace set-aside. Farmers did not think they should be expected to do more than those in other EU member states; the rules should not be ‘gold-plated’. However, it is recognised that the industry does need to justify the receipt of SPS payments and the more benefits that are associated with Cross Compliance, the easier it is to justify the payments.

Buffer strips would be more acceptable to most farmers because they are easy to do and help with LERAPS and fulfilling pesticide application requirements. Also many watercourses already have buffer strips under ELS agreements.

In terms of environmental benefits however, the value of buffer strips is limited, and the XC1 proposals would give greater benefits. It was felt to be important to avoid undue complexity in the drafting of the new conditions.

**Implementation Issues**

**Inspection process**

The advisers felt that most farmers will make the effort to observe Cross Compliance conditions because they don’t like to feel that they are outside the law, but for the few who don’t care about this, the risk of inspection is low and the penalties an insufficient disincentive to non-compliance.

Opinions differed on the effectiveness of the targeting process. One thought that the system was good and worked well, another though it could still be improved.

One suggested that currently inspections are too detailed. A better system would be short ‘quick and dirty’ inspections to confirm intention to comply, with rigorous inspections applied where serious non-compliance is detected and severe penalties applied to those who give the industry a bad name. This would allow more inspections to be carried out and increase the risk of being detected for those who do not make the effort to comply; thus it would be a more effective use of the resources available for inspection. It was pointed out that those farmers who observe the rules resent seeing others getting away with non-compliance, and that a more effective inspection and penalty system would improve the image of Cross Compliance among the farming community in general.
Support and Advice

Workshops and especially farm walks have been found to work well and more of the same would be good. Using independent experts with farming experience increases credibility compared to, for example, Defra or RPA. Producing more booklets is of limited usefulness because many farmers don’t read them; provision of advice through events or on-farm is much more effective. One-to-one advice is particularly effective where farmers don’t understand what they need to do. For example, the approach used in the Catchment Sensitive Farming initiative is effective, but needs to be available outside the priority catchments as well. There is still a need for such advice, particularly in relation to the new NVZ rules, which will become a significant issue for farmers in the near future.

There is a small minority of farmers who do not attend events or take advantage of the advisory services on offer. One solution could be to record attendance at events and make it clear that those who do not attend will have a greater chance of being inspected.

Farmers interest would be increased if more provision was made for explaining the benefits of Cross Compliance, especially where there is potential for saving money (e.g. through good soil and nutrient management practice). Also, if data could be provided to illustrate the benefits of the requirements, this would help to improve the image of the scheme and the perception of return for the effort expended.

Effectiveness

All the interviewees considered that Cross Compliance was a justifiable approach in that recipients of public funds should be required to observe basic standards, and that it was effective in that it was not worth giving up the Single Payment to avoid Cross Compliance. One commented that Cross Compliance could be considered the most effective piece of legislation to affect farming, in that it has only taken 2-3 years to achieve a major understanding and action (cf. previous NVZ regulation – a recent survey showed that 20% didn’t know that they were in a NVZ even though it started in 1998). It was pointed out however, that if the value of the SPS declines, the economics may be called into question, especially if the number and complexity of Cross Compliance conditions increases.

Although an element of compulsion was required to ensure compliance by the small percentage of the population who would not otherwise respond, education was also important to avoid unintentional non-compliance. It was disappointing therefore that the funding for this has declined, as it was felt that there is still a lot of confusion and misunderstanding among farmers in relation to some of the Cross Compliance conditions.

Value for Money

Advisers pointed out that the costs of the scheme were small compared to the budget for the Single Payment Scheme, and two advisers considered that the benefits justify the costs, the third saying that it was for others to comment on value for money.

Side Effects

Some specific side effects related to individual conditions have been identified above. The main general side effect predicted was that if Cross Compliance becomes too onerous or costs too great, some farmers will give up trying to comply and simply accept the risk of being inspected and suffering a penalty, either because they find the burden too great, or they calculate that the costs are greater than the penalty they would suffer. This was raised as an issue in relation to the new NVZ rules, and also the proposed new standards to mitigate the loss of set-aside.
### Appendix 11: Environmental Accounts

#### Table 72: Impacts on society (positive)

<table>
<thead>
<tr>
<th>Impact Category</th>
<th>Positive annual flows to society</th>
<th>E (£m)</th>
<th>W (£m)</th>
<th>Total (£m)</th>
<th>Scale and direction of uncertainty</th>
<th>Comment - uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape and habitats</td>
<td>Broad habitat types - non SSSIs</td>
<td>165</td>
<td>593</td>
<td>1,199</td>
<td>↑↑↑</td>
<td>Likely to be a significant underestimate as data does not include ASSI/SSSIs in Scotland and Northern Ireland. The total value of SSSIs on agricultural land could be up to £650m versus the current estimate of £260m. Data also does not include regular landscapes or reflect elevated values for ESAs, SACs, AONBs or other designated areas. Moving to Defra’s agricultural landscape types would be expected to produce higher benefits, if economic data were available.</td>
</tr>
<tr>
<td>Landscape and habitats</td>
<td>Broad habitat types - SSSIs (including farm woodland)</td>
<td>260</td>
<td>260</td>
<td>520</td>
<td>↑↑↑</td>
<td></td>
</tr>
<tr>
<td>Linear features</td>
<td>Value of length linear features</td>
<td>1.67</td>
<td>2.44</td>
<td>4.11</td>
<td>↑</td>
<td>Likely to be underestimated as recent physical data are not available.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Value of farmland bird species</td>
<td>N.a</td>
<td>N.a</td>
<td>307</td>
<td>↑↑↑</td>
<td>Farmland bird indicator is likely to underestimate total. However biodiversity is, to an extent also represented in landscapes and habitats.</td>
</tr>
<tr>
<td>Provision of waste sink</td>
<td>Benefit of avoided sewage sludge incinerated</td>
<td>34</td>
<td>35</td>
<td>69</td>
<td>↑</td>
<td>Likely to be an underestimate as disposal of biological waste other than sewage sludge is not included.</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>461</td>
<td>1,199</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 73: Impacts on other sectors

<table>
<thead>
<tr>
<th>Impact category</th>
<th>Negative annual costs to other sectors</th>
<th>E (£m)</th>
<th>W (£m)</th>
<th>Total (£m)</th>
<th>Scale and direction of uncertainty</th>
<th>Comment - uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking water</td>
<td>Removal of contaminants</td>
<td>129</td>
<td></td>
<td>129</td>
<td>↑↑↑</td>
<td>Uncertainty due to data gap as data are for England and Wales only</td>
</tr>
<tr>
<td>Pollut. incidents</td>
<td>Point source pollution events due to agriculture</td>
<td>0.27</td>
<td>0.53</td>
<td>2.1</td>
<td>↑</td>
<td>Uncertainty due to data gap as costs based on fish kills only, other ecological damage not included</td>
</tr>
<tr>
<td>Flooding</td>
<td>Apportionment of flood damage and prevention costs</td>
<td>N.a</td>
<td>N.a</td>
<td>234</td>
<td>↑↑↑</td>
<td>Uncertainty around apportionment of flooding to agriculture which is likely an underestimate as it does not include the agricultural contribution to fluvial flooding</td>
</tr>
<tr>
<td>Soil erosion</td>
<td>Apportionment of soil erosion damage costs</td>
<td>N.a</td>
<td>N.a</td>
<td>9.41</td>
<td>↑</td>
<td>Uncertainty due to data gap on road and transport damage costs.</td>
</tr>
</tbody>
</table>

214
<table>
<thead>
<tr>
<th>Impact category</th>
<th>Negative annual costs to society</th>
<th>E (£m)</th>
<th>W (£m)</th>
<th>Total (£m)</th>
<th>Scale and direction of uncertainty</th>
<th>Comment - uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivers</td>
<td>Rivers of less than 'good' quality due to agricultural diffuse pollution</td>
<td>45</td>
<td>0.81</td>
<td>62</td>
<td>??</td>
<td>Likely to be significant underestimate in light of Defra's recent work on benefits of WFD programme of measures.</td>
</tr>
<tr>
<td>Lakes</td>
<td>Eutrophication in lakes due to agricultural diffuse pollution</td>
<td>27</td>
<td></td>
<td>27</td>
<td>??</td>
<td>Data are for England and Wales only and and is therefore an underestimate. The aggregate value is not based on transparent physical or economic data and is likely to be an underestimate versus new data on benefits of WFD implementation. Likely to be significant underestimate in light of Defra's recent work on benefits of WFD programme of measures.</td>
</tr>
<tr>
<td>Bathing waters</td>
<td>Bathing waters failing to meet FIO standards</td>
<td>7.95</td>
<td>0.75</td>
<td>11.10</td>
<td>??</td>
<td>Likely to be an underestimate due to lack of data on marine eutrophication. The estimate is based on human health impacts only. Likely to be significant underestimate in light of Defra's recent work on benefits of WFD programme of measures.</td>
</tr>
<tr>
<td>Estuaries</td>
<td>Estuaries of less than 'good' quality due to agricultural diffuse pollution</td>
<td>2.51</td>
<td>N.a</td>
<td>3.01</td>
<td>??</td>
<td>Likely to be significant underestimate in light of Defra's recent work on benefits of WFD programme of measures. Also, the current method is likely to be unreliable as it is uses values for river water quality as a proxy for estuarine water bodies.</td>
</tr>
<tr>
<td>Abstraction</td>
<td>Value of water abstracted</td>
<td>37</td>
<td></td>
<td>62</td>
<td>??</td>
<td>Unit value is based on south-east England and is likely to be an overestimate for naturally wetter areas.</td>
</tr>
<tr>
<td>Agricultural waste</td>
<td>Value of waste treated off-site</td>
<td>N.a</td>
<td>N.a</td>
<td>8.10</td>
<td>??</td>
<td>The physical data are likely to be an underestimate of general waste arisings; however, the economic data may be an overestimate (£/tonne) as it is based on the composition of domestic waste.</td>
</tr>
</tbody>
</table>
## Table 74: Impacts on society (negative)

<table>
<thead>
<tr>
<th>Impact category</th>
<th>Present value costs to society of air emissions</th>
<th>E (£m)</th>
<th>W (£m)</th>
<th>Total (£m)</th>
<th>Scale and direction of uncertainty</th>
<th>Comment - uncertainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change (net of soil C storage &amp; emission)</td>
<td>Value of greenhouse gas emissions (including net C emissions from land use and land use change)</td>
<td>839</td>
<td>160</td>
<td>1,413</td>
<td>↓</td>
<td>Net emissions are likely to underestimate increases in carbon storage as they do not include additional carbon storage due to changes in other types of assets on agricultural land such as farm woodland, hedgerows, etc.</td>
</tr>
<tr>
<td>Air quality</td>
<td>Value of air quality pollutant emissions</td>
<td>434</td>
<td>68</td>
<td>656</td>
<td>↑↓</td>
<td>There is some inherent uncertainty around the methodologies used to derive the health outcomes of air emissions affecting particulate formation and air quality and the economic damage cost for ammonia. The figures used are however widely accepted and used within policy analysis.</td>
</tr>
</tbody>
</table>