A study of the economic, environmental and social impacts of a loss of grazing livestock in the East of England

Phase 2
FINAL REPORT

A report prepared by

PACEC

on behalf of

Natural England

PACEC

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X1 Introduction

X1.1 Public and Corporate Economic Consultants (PACEC), in collaboration with the Department of Land Economy of the University of Cambridge, was commissioned in February 2006 by the East of England office of the Countryside Agency (CA), with the regional offices of English Nature (EN) and the Rural Development Service (RDS) of the Department for Environment, Food and Rural Affairs (Defra) (now combined as Natural England) to undertake a study into the environmental, economic and social impacts of the decline in the red meat[1] and dairy industries in the East of England region[2]. The study is timely, given the increasing recognition within the region of the adverse effects resulting from significant reductions in grazing livestock numbers.

X1.2 It is hoped that this report, which details the second phase of work undertaken for the project and assesses the economic and social impacts resulting from changes in the red meat and dairy industries in the East of England, will raise awareness of the scale and the nature of the economic and social benefits which stand to be lost if the numbers of grazing livestock in the region continue to fall.

X1.3 PACEC undertook a major survey of farmers, land managers, graziers and associated businesses in the Eastern region using a suite of questionnaires. The surveys were designed to:

- address a number of research questions relating to changes in grazing and the resulting economic and social impacts; and
- to calibrate a customised input-output model designed specifically for the industry in the East of England, in order to estimate baseline jobs and Gross Value Added (GVA) (direct and indirect) supported by the industry in the region.

X1.4 The grossing up of sample based estimates was facilitated by evidence obtained from Defra's June Agricultural Census, the Farm Business Survey for the East of England and the Annual Business Survey. This baseline assessment formed the basis for projections over 5 and 10 years.

X2 The Grazing of Cattle and Sheep in the East of England today

X2.1 Today a total of 217,000 cattle (188,000 beef and 29,000 dairy) and 345,000 sheep are grazed in the East of England[3].

[1] The term 'Red Meat' in this review refers to beef, veal, mutton and lamb only.

[2] Eastern England is the UK Government region comprising the counties of Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk and unitary authorities of Luton, Peterborough, Southend-on-Sea and Thurrock.

[3] 2005 figures

X2.2 In the last 15 years the region has witnessed declines in the numbers of cattle and sheep. In particular, the number of number of dairy cows in the region has dropped dramatically from 67,000 in 1990 down to 29,000 by 2005 and the number of dairy holdings in the region has fallen by 54% in the same period. In some cases, dairy farmers have switched to farming beef cattle, where the capital investment required is lower. Nevertheless, numbers of beef cattle in the region have also fallen, largely as a result of declining average numbers of beef cows per holding possibly resulting from the CAP reform's change in the subsidies system, which no longer rewards larger sizes of herd.

X2.3 While sheep numbers are also down on 1990 figures, largely due to Foot and Mouth disease in 2001, the number of sheep holdings in the East has risen in recent years as the trend for 'hobby farming'[4] has increased.

X2.4 While the region is now regarded as a predominantly arable area and the numbers of livestock are down on previous years, the economic contribution of livestock production in the region is not insignificant. Managing this livestock supports 13,410 jobs (FTEs), of which 4,290 are directly associated with the grazing activity. These 4,290 represent 9% of all those employed in agriculture in the region. Furthermore, this activity generates (directly and indirectly) £395 million total GVA for the region's economy. The £64 million directly supported represents 0.8% of all GVA generated by agriculture in the UK as a whole.

X2.5 However, the economic contribution made by grazing cattle and sheep in the region is threatened by continued pressures on incomes and rising costs:

- Low product prices were one of the three most frequently cited constraints relating to grazing sheep / cattle listed by farmers, land managers and graziers (cited by 46% of respondents) and the East's dairy industry, which once dominated Suffolk's economy, is now particularly vulnerable to the persistence of low milk prices.
- Furthermore, the availability of cheap imports is a major challenge for farmers – indeed over half of current UK beef imports are from Ireland and 20% from Brazil and Argentina where prices per kg of cattle are around a third of those in the EU.
- Cost pressures include the costs of boundary maintenance and public liability (listed as constraints by 47% and 29% of our sample of farmers, land managers and graziers in the region respectively), as well as compliance with increasing amounts of regulation and rising input prices.
- In addition, beef cattle and sheep farmers in the East are also suffering as a result of the UK-wide closure of local abattoirs. Without access to a local abattoir, livestock farmers either transport their animals great distances (an average of 37 miles in our farmers' survey), resulting in significant haulage costs and potential livestock weight loss (caused as a result of animal stress), as well as having implications for the environment; or they risk going out of business.

X2.6 The livestock production industry in the UK is currently experiencing difficulties recruiting skilled labour. Lantra reports that the livestock production sector lacks

[4] People keep a small flock of sheep for interest rather than commercial purposes.

people qualified at NVQ/SVQ levels 3 and above. Just as significant are the recruitment difficulties stemming from a poor perception of the industry or lack of interest in livestock farming work.

X2.7 There is a danger that many skills pertinent to the production of beef and dairy cattle and sheep may be lost to future generations as existing farmers reach retirement and choose to sell or contract their land in the absence of a willing son or daughter to enter the farming business. A relatively high proportion of livestock farmers are over the age of 60 (47% in our survey), and this was especially true of farmers with smaller holdings, where typically the stock is managed by the owner-manager alone.

X2.8 If these smaller plots cease to be grazed, in addition to the economic implications there are also environmental implications. As the volume of locally-produced meat falls, this will necessitate increased transportation of meat from other regions and abroad, and thus an increase in food miles and implications for climate change. Where the land is formerly recognised for its environmental contribution (such as land designated as SSSI) there is a danger that a lack of grazing will mean the land falls into an irreversibly unfavourable condition[5].

X3 The Future of Cattle and Sheep Grazing in the East of England

X3.1 The range and complexity of factors which have the potential to have an impact on the red meat and dairy industries in the future make it difficult to predict the industries' futures with certainly. However, taking into consideration past trends and anticipated future movements of key supply and demand-side drivers of change (such as prices, policies, consumer preferences and climate change) we have endeavoured to estimate the future economic impacts of cattle and sheep grazing in the East region.

Table X1 Future numbers of cattle and sheep in the East of England

	Number of livestock in the East of England		
	2005[6]	2011	2016
Beef Cattle[7]	188,000	161,000	169,000
Dairy Cattle	29,000	27,000	24,000
Sheep	345,000	360,000	361,000

Source: PACEC

[5] The environmental impacts arising from a decline in the number of cattle and sheep grazed in the region will be detailed in the third phase of under grazing research.

[6] Source: Agricultural Census, 2005, Defra

[7] This is the total number of cattle, minus the number of dairy cattle.

Table X2 Current and predicted changes in jobs and GVA supported by grazing cattle and sheep in the East of England

	2005	2011	2016
Total jobs (FTE)	13,410	12,110	12,120
Total GVA (£m)	395	363	367

Source: PACEC

X3.2 By 2011 it is forecast that beef and dairy cattle numbers in the region will have fallen, and with them, the number of jobs supported by dairy farming and cattle grazing. The predicted rise in sheep numbers in the region is likely to bring about a rise in indirect employment, as direct employment declines due to productivity improvements. However, overall, total jobs in cattle and sheep farming in 2011 are estimated to fall to 12,110, with the largest drop coming from beef farming. The successful redeployment of labour from the livestock industry will depend on the age and qualifications of farmers leaving the industry. Older farmers may choose to work part time, diversify or retire rather than change career.

X3.3 Similarly, total GVA supported by cattle and sheep grazing is forecast to fall to £363 million by 2011, as large drops in GVA from dairy and beef farming outweigh any increases from sheep farming.

X3.4 By 2016, beef farming is predicted to show some recovery, while dairy farming continues to decline steadily. Coupled with a forecast decline in sheep employment, total jobs supported by cattle and sheep grazing are likely to remain at similar levels to 2011 – 12,120 in total. In the same year, the GVA supported is predicted to rise compared to 2011 figures to £367 million, due to the small recovery in beef production, but not to return to 2005 levels.

X4 The Social Impacts of Grazing Sheep and Cattle

X4.1 Generally, grazed landscapes are regarded as having positive impacts for society, including the provision of a local, visible link with food production; the attraction of visitors to rural areas; and the enhancement of valuable recreational spaces. These positive attributes were cited by a wide variety of survey respondents, including non-farmers and non-users of the countryside. However, despite the recognition that grazed landscapes can provide benefits, few have acted on and promoted direct linkages.

X4.2 There is recognition amongst both schools and farmers that locally grazed landscapes and the sourcing of locally produced food provides valuable links between food production and consumption. However, in practice, not all schools and farmers take steps to promote these links.

- Fewer than half the numbers of farmers, land managers and graziers we interviewed (46%) believed they played a part in bettering the public's (including children's) understanding of the origins of meat and meat products and made the link between grazing/farming and food consumption.

- At one extreme, some schools are demonstrating the use of local grazing by making regular visits to farms or grazed land, having contact with local farmers and sourcing their food locally. At the other extreme, children may not see any animals grazing locally; they may not eat red meat and would not know where their food has come from.

X4.3 Grazed landscapes can benefit tourism in the same way that tourism can aid the livestock industry. Many farmers' diversified businesses rely on the grazing of cattle and sheep and equally, many cattle and sheep producers rely on tourism to supplement their farming income. While tourism bodies in the Eastern region recognise the importance of tourism and believe that grazed landscapes might have tourism benefits, few tourism organisations take steps to record the areas of grazed land in their area or have initiatives in place to raise awareness of land used for the grazing of cattle and sheep. Nor do many tourism associations and local authorities currently take steps to encourage the consumption of locally reared red meat produce.

X4.4 Land owners and managers as well as users of the land (e.g. walkers) recognise the recreational and health benefits which grazed land can offer and very few believe the grazing of cattle and sheep hinders public access - over half of walkers we spoke to (29 out of 52) like to see sheep and cattle on the land while they are walking.

1 Introduction

1.1 Background

1.1.1 Public and Corporate Economic Consultants (PACEC), in collaboration with the Department of Land Economy of the University of Cambridge, was commissioned in February 2006 by the East of England office of the Countryside Agency (CA), with the regional offices of English Nature (EN) and the Rural Development Service (RDS) of the Department for Environment, Food and Rural Affairs (Defra) (now combined as Natural England) to undertake a study into the environmental, economic and social impacts of the decline in the red meat[8] and dairy industries in the East of England region[9]. The study is timely, given the increasing recognition within the region of the adverse effects resulting from significant reductions in grazing livestock numbers.

1.1.2 Livestock in the East region has declined significantly in the past decade, with cattle falling from 293,000 in 1995 to 221,000 in 2005 and sheep from 475,000 to 346,000 over the same period. Linked to the decline of the livestock industry in the East of England, there is a widespread regional concern over the lack of appropriate grazing management for sites of ecological and landscape interest, once they are no longer needed for animal use. The Rural Development Service (RDS) has led a programme of activity to address the issue and in early 2005 the RDS, English Nature and the Countryside Agency (now combined as Natural England) came together in a formal partnership in the "Undergrazing Project". The project aims to secure a sustainable source of grazing animals to maintain sites of environmental interest by promoting the recovery of appropriate livestock farming in the regional and addressing the wider implications of the decline of the red meat industry.

1.1.3 The central concern behind the commissioning of the research is whether the recent decline in the numbers of cattle and sheep in the region will continue and will push the industry below a minimum sustainable threshold size; therefore having damaging consequences for the region. These consequences may include:

- Reduction of farmers involved in livestock husbandry with associated declines in direct and indirect employment
- An unsustainable thinning of local supply chains upstream and downstream of livestock producers
- An inability for important conservation areas to maintain their ecology for important wildlife species
- Changes in the visual qualities of landscapes and vistas
- Changes to social structures in rural communities
- Damage to countryside related tourist and leisure industries in the region.

[8] The term 'Red Meat' in this review refers to beef, veal, mutton and lamb only. It does not include pork or bacon meat; nor poultry classed as 'white meat'.

[9] Eastern England is the UK Government region comprising the counties of Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk and unitary authorities of Luton, Peterborough, Southend-on-Sea and Thurrock.

1.2 Aims and Objectives of the Study

1.2.1 The main aim of the study is to provide the Natural England partners with evidence about the environmental, social and economic impact of the decline of the red meat and dairy industries in the East of England region in order to demonstrate the significance of the issue to key regional partners and fora.

1.2.2 A parallel aim is to identify a methodology which can be used more generally by Natural England at a regional and sub regional level to provide evidence of the wider impact of social, economic or environmental trends or activities.

1.2.3 Additionally, a further aim of the project is to propose a methodology that can be used in the future to demonstrate the wider impact of other issues of interest to the Natural England partners at a regional level.

1.2.4 Specific objectives of the project are:

1. To quantify and predict future trends in the scale of the red meat industry in the East of England over the next 5 to 10 years and to quantify and value the direct and indirect environmental, social and economic impacts of this trend. This should include a consideration of
   - Employment opportunities and quality
   - Social infrastructure e.g. social isolation
   - The regional and local economy, i.e. the importance of grazed landscapes in attracting businesses, in-migrants and visitors
   - Quality of life in the region, including
     - Measure the positive effects from grazed habitats and landscapes, such as recreation and the cultural importance of livestock in the countryside
     - Assess the negative impacts of traffic congestion and air pollution resulting from importation of milk products and red meat from outside the region.
   - The natural resources of the region, e.g. the health or the regional Biodiversity Action Plan habitats and species, water resources, sustainable soil management.
   - Environmental awareness e.g. Opportunities for people to understand the connection between their consumer habits and the countryside around them; and the opportunity for children to understand where their food comes from
   - Any other impacts identified through the study.
2. To estimate the minimum amount of land that needs to be grazed, and the number of animals needed to graze it, in order to keep SSSI and BAP habitats in favourable condition and to retain the quality of countryside character in eastern England. To estimate the current shortfall increasing levels
3. To suggest a few key indicators for Natural England to measure the impact of it under grazing project, and to establish baseline data for these indicators.
4. To assess the strengths and weaknesses of different methodologies used today to measure the social and economic value of the environment.
5. To suggest a methodology which Natural England could use to quantify and value the direct and indirect environmental, social and economic impacts of environmentally significant trends to regional and sub region of scale in the future. For example to enable Natural England to monitor and evaluate the

impacts of positive management of the landscape character overtime, or the impacts of factors which are causing environmental deterioration.

1.3 Report Content

1.3.1 This report, which details the second phase of work undertaken for the project, assesses the economic and social impacts resulting from changes in the red meat and dairy industries in the East of England.

1.3.2 Following this introduction, the report comprises the following chapters:

2 Approach and Methodology

3 Cattle and Sheep Grazing in the East of England: a discussion of the occurrence and structure of the industry in the region

4 Jobs and Gross Value Added (GVA) supported by grazing sheep and cattle in the East of England

5 Drivers of Change for the Red Meat and Dairy Industries, including:
- supply-side and demand-side factors

6 The Future of the Red Meat and Dairy Industries in the East of England, including:
- an estimate of the number of jobs and GVA supported by the grazing of cattle and sheep in 2011 and 2016 under a 'baseline' scenario

7 Cattle and Sheep Grazing Occupations; including consideration of the changing lifestyle of a livestock farmer and implications for recruitment and redeployment

8 The Social Impacts of changing Red Meat and Dairy Industries in the East of England, including:
- a An assessment of the value of sheep and cattle grazing in helping people reconnect with the countryside
- b An assessment of the importance of grazed landscapes in attracting tourism and businesses
- c A qualitative assessment of the value of grazed landscapes in the provision of quality recreational opportunities

9 Conclusions from phase 2 research and recommendations for phase 3

1.4 Acknowledgements

1.4.1 PACEC and the Department of Land Economy, University of Cambridge would like to thank all those who contributed to this report, including Bedfordshire and Cambridgeshire Wildlife Trust; Beckhithe Farms Ltd; The Brecks Tourism Partnership; The British Cattle Movement Service; British Cattle Veterinary Association; British Grassland Society; British Meat Producers Association; The Broads Authority; Country Land and Business Association; Countryside Agency; Defra Animal Movement Licensing Department; East Anglian Foodlink; East of England Development Agency; East of England Tourist Board; English Beef and Lamb Executive; English Nature; Essex Wildlife Trust; The Farming and Statistics Team, Defra; Farming and Wildlife Advisory Group; The Game Conservancy; Graham Tucker; The Grazing Animals Project; Hertfordshire and Middlesex Wildlife Trust; Holkham Estate; John Scrimshaw; The Kennel Club; Lantra; Livestock Auctioneers Association; Meat and Livestock Commission; National Beef Association; National Farmers Union; National Federation of Meat and Food Traders; The National Trust; Norfolk Rural Business Advice Service; Norfolk Wildlife Trust; Rare Breeds Survival Trust; Red Meat Industry Forum; Royal Society for the Protection of Birds; John Squirrel and Ben Lang of the Rural Business Unit, University of Cambridge; Rural Development Service, Defra; Royal Society for the Protection of Birds; State Veterinary Service; Suffolk Agricultural Association; Suffolk County Council; Suffolk Wildlife Trust; Tastes of Anglia; Welney Wildlife and Wetland Trust; Woolley & Company.

Source: PACEC

2 Approach and Methodology

2.1 Introduction

2.1.1 This chapter sets out the main elements of our approach to the impact assessment of changes in the red meat and dairy industries in the East of England. For the purposes of this study, the term 'Red Meat' refers to beef, veal, mutton and lamb only. It does not include pork or bacon meat; nor poultry classed as 'white meat'. The East of England is the UK Government region comprising the counties of Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk and unitary authorities of Luton, Peterborough, Southend-on-Sea and Thurrock.

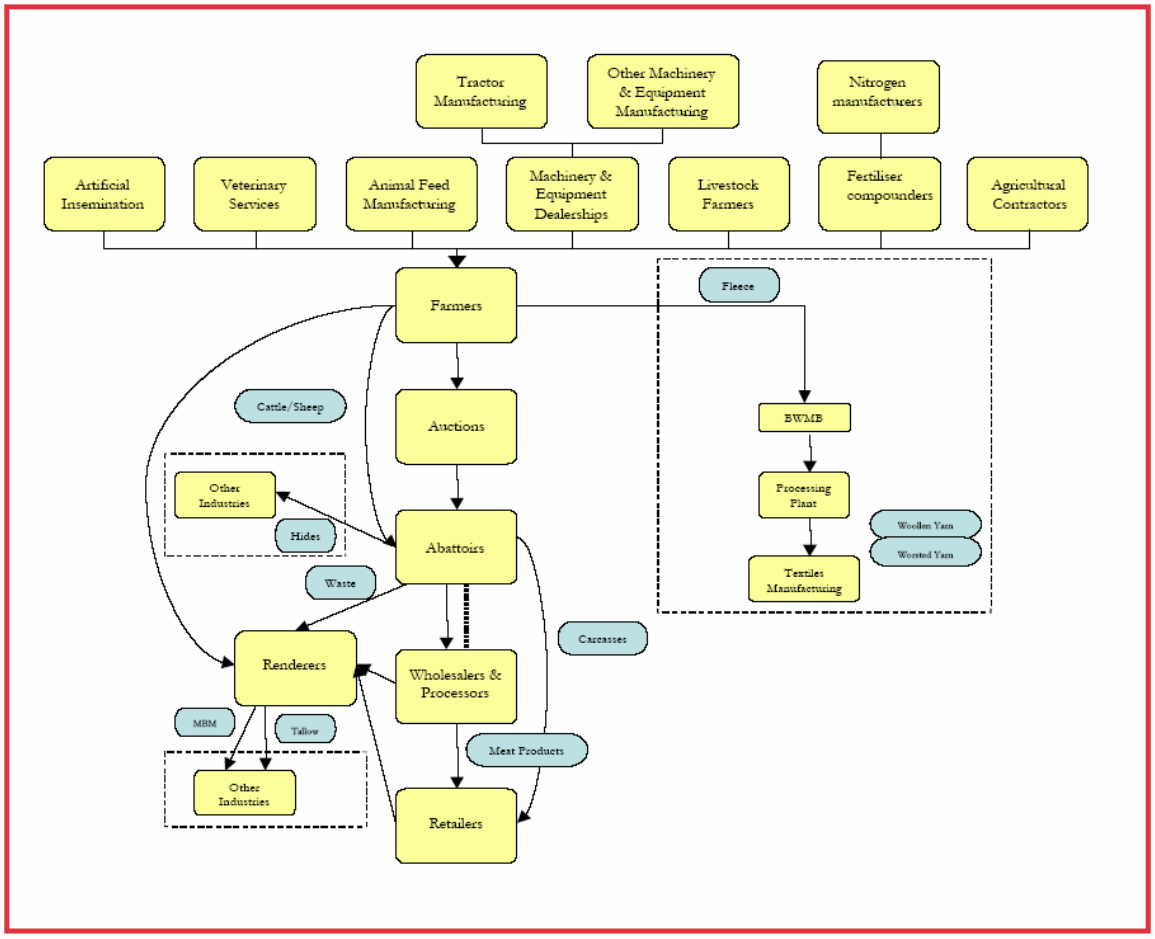
2.2 Conceptual Framework

2.2.1 The cattle and sheep industries are made up of a network of companies which are summarised in Figure 2.1 below. The industry is split into **upstream** industries, which are the input industries into the livestock production phase, and **downstream** industries, which come from the livestock production phase.

- **Upstream industries** include agricultural suppliers of feed, veterinary products, machinery, and farm consumables.
- **Livestock production** is undertaken by farmers all over the UK.
- **Downstream industries** are split as follows:
  - a **Primary processing** occurs at abattoirs, cutting plants and minced meat and meat preparation plants. Farmers may supply directly to abattoirs, or supply via auctions. As only 55% of the carcass is used for human consumption[10], the rest is collected and disposed of by renderers. Fleeces are sold via the British Wool Marketing Board to processing plants, who then sell on to textile manufacturers.
  - b **Secondary processing** involves wholesalers and processors who prepare and pack meats for distribution.
  - c **Distribution** is the movement to meat wholesalers, traditional butchers, independent grocers and direct sale outlets. Some distribution will be in the form of exports.
  - d **Retailing** occurs at the end of the process, to individual households, restaurants and caterers.

[10] Source: *Modelling the Impact of CAP Reform on the Agricultural Supply Chain,* Frontier Economics Ltd, 2005

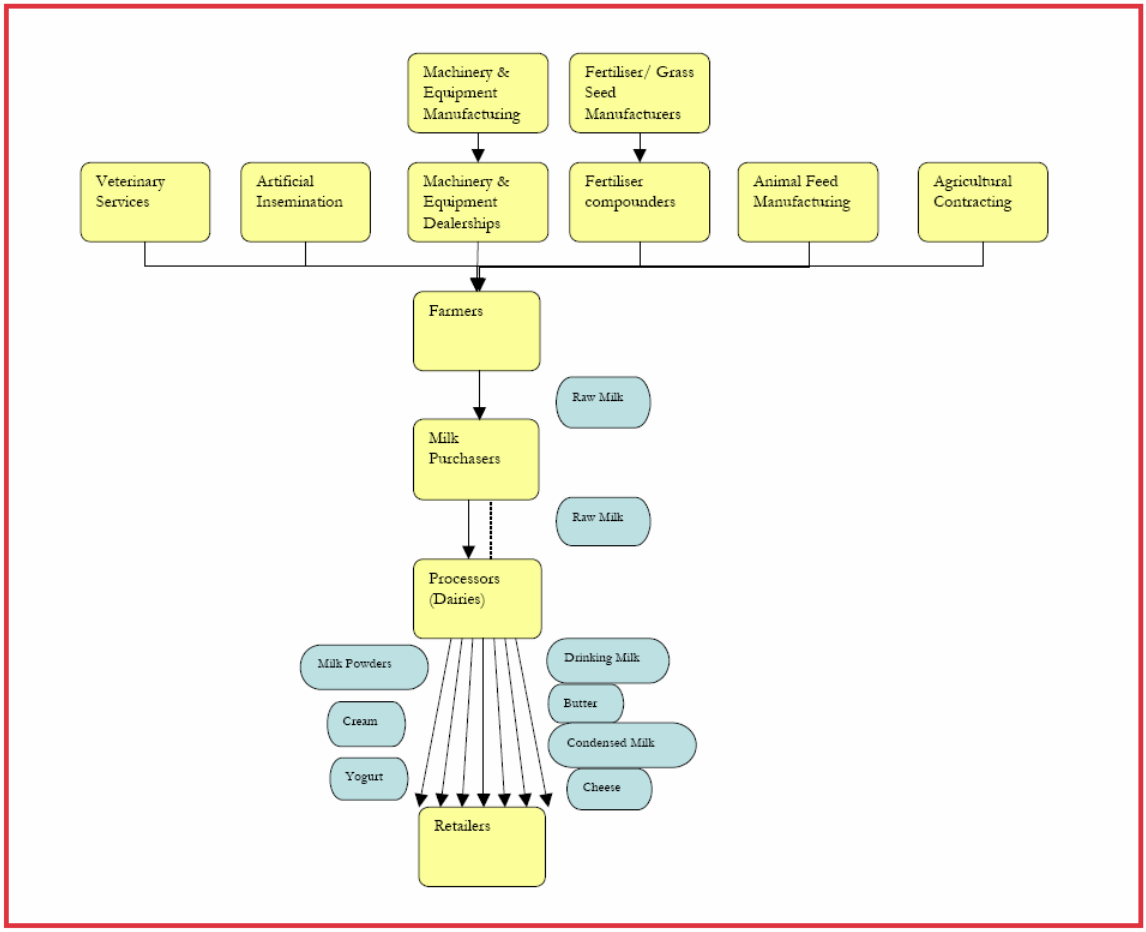
Figure 2.1 The cattle and sheep supply chain



Source: Frontier Economics, Various

2.2.2 The equivalent supply chain for the dairy industry is shown in Figure 2.2 below.

Figure 2.2 The dairy supply chain



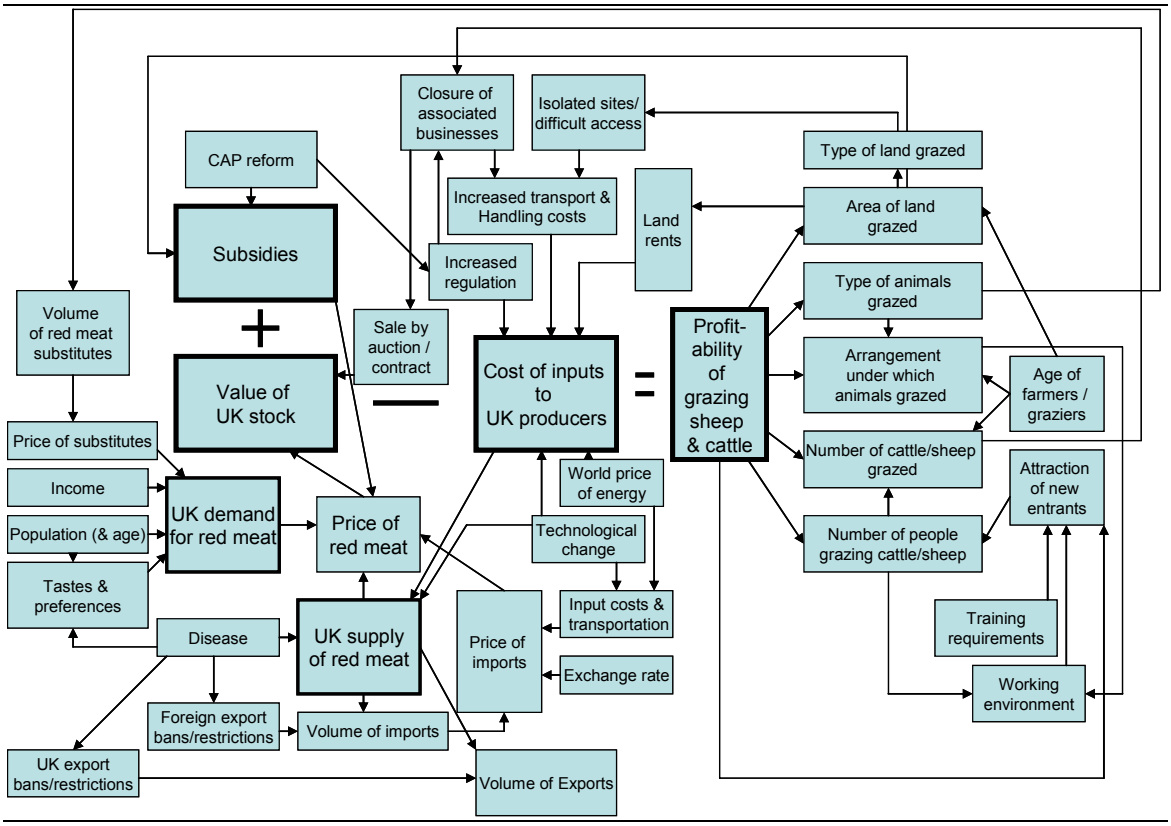
Frontier Economics, Various

2.2.3 Taking the red meat and dairy industries together as one industry (beef and dairy cattle and sheep), one can map a number of forces at work on the industry. The way in which these forces interact with one another and how the industry responds to them is illustrated by Figure 2.3 below.

2.2.4 These forces (or 'drivers') impact on the value of UK stock, either through UK demand for red meat or UK supply of red meat, and the cost of inputs to UK producers. Chapter 5 looks at past and future drivers of the red meat and dairy industries in more detail. Central to the future of the industries is the profitability of grazing sheep and cattle, (determined by the value of stock and the cost of inputs), though we acknowledge that it is not uncommon for farmers to continue farming at a loss in the short term for a number of reasons. For example, they may be close to retirement, they may supplement their farming income by other sources of income and/or they may anticipate higher returns in the future. Furthermore, hidden costs, such as family labour, may be overlooked by farmers when calculating net margins on their output. When these hidden costs are taken into account, the majority of livestock producers in England were found to make significant losses[11].

[11] According to EBLEX Business Pointers 2005/2006

Figure 2.3 The Red Meat Industry



Source: PACEC

2.2.5 When a farmer chooses to change his production as a result of changes in profitability, there are a number of possible consequences, listed on the right of the diagram. While some farmers may decide to leave the industry, having an impact on the number of people involved in and the total land use for grazing sheep and cattle in the region, others may choose to alter the number or type of animals they graze, the amount of land grazed, or the arrangement under which grazing takes place. All of these consequences have economic, environmental and social impacts for the East of England.

2.3 Research Programme

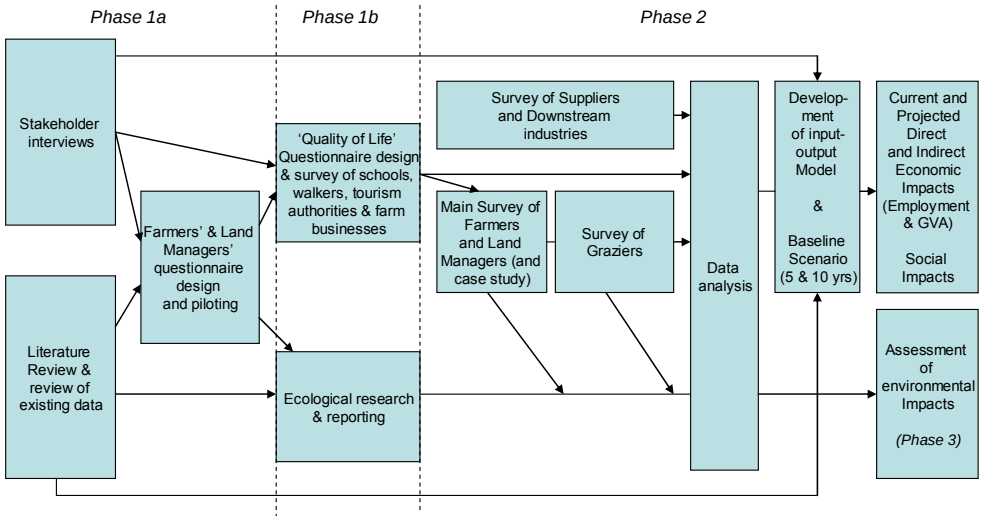
2.3.1 In order to carry out the aims and objectives of the study, we carried out an integrated programme of research which incorporated:

- **Desk research** including the development of an appropriate conceptual framework for the empirical analysis, the assembly of relevant existing secondary data and a review of the literature pertaining to the aims and objectives of the study. This review also included an assessment of both policy (e.g. CAP reform) and non-policy changes impact on the industry.
- **Primary research** involving the collection of data to support the quantification of the economic, social and environmental impacts of the decline of the red meat industry.
- **Forecasting and modelling research** to estimate the current and future economic contribution of the red meat industry to the economy of the East

region. This involved use of input/output analysis to estimate indirect economic effects falling on the East region.

2.3.2 The research programme undertaken is illustrated in Figure 2.4 below.

Figure 2.4 Research Programme



Source: PACEC

2.3.3 The initial stakeholder interviews[12] and review of existing literature[13] and data have informed the development of the conceptual framework (above), the design of survey questionnaires and the development of the input-output model and baseline scenario.

2.3.4 The data received from the suite of questionnaires was fed into this model, designed specifically for the industry in the East of England, in order to estimate baseline jobs and Gross Value Added (GVA) (direct and indirect) supported by the industry in the region. The grossing up of sample-based estimates was facilitated by evidence obtained from Defra's June Agricultural Census, the Farm Business Survey for the East of England and the Annual Business Survey. This baseline assessment forms the basis for projections over 5 and 10 years.

2.3.5 At the same time, the surveys have revealed respondents' views of the social impacts of grazing sheep and cattle and considered the environmental impacts surrounding the grazing of sheep and cattle in the region. Information regarding the social impacts of a changing red meat industry will be presented in chapter 8 of this report. The environmental findings will be used in phase 3, alongside existing research on this topic and related data, in order to present the current and projected ecological implications of a decline in the red meat industry and to provide estimates of future minimum grazing requirements across the region if land, including SSSI land, is to remain in good environmental condition.

[12] The list of stakeholders interviewed can be found in Appendix A

[13] A full bibliography for the literature consulted can be found in Appendix B

2.3.6 In addition to data collected using survey designed specifically for the study, data has also been used from the following sources:

- Defra June Agricultural Census
- Rural Business Unit, University of Cambridge
- Meat and Livestock Commission (MLC)
- Farmers' Weekly
- Office for National Statistics (ONS)
- Defra National Food Survey
- English Beef and Lamb Executive (EBLEX)
- Annual Business Inquiry

2.3.7 The aims and objectives and methodologies of the individual surveys and a breakdown of the number of respondents who completed the questionnaire (in full or part or the prompt version) are outlined in sections 2.4 to 2.6 below. This is followed in section 2.7 by a description of the economic model and baseline scenario used to generate estimates of current and projected jobs and GVA supported by grazing in the Eastern region.

2.4 Survey of Farmers, Land Managers and Graziers

2.4.1 The survey of farmers, land managers, and graziers in the Eastern region was designed to collect primary data, with the following aims:

- to provide site-specific information surrounding land which is grazed in the East of England in order to complement the more general information on the red meat and dairy industries and grazing in the region gathered from stakeholder interviews and a literature review
- to back up published data which is currently available for the East of England
- to make comparisons between different types of land under different types of management in the region

2.4.2 More specifically, the objectives of the survey were:

a to explore the current situation surrounding areas of grazed land in the region, looking at:
   - the nature of land which is grazed, including the type of grass and extent to which grazed land is covered by a conservation designation;
   - the current grazing patterns, including stocking rates, the ownership of livestock and any management constraints;
   - details surrounding livestock businesses, including purchases made from suppliers and income received from downstream businesses for the sale of livestock and associated products; and
   - farmers' and graziers' current and anticipated needs, and details regarding the movement and marketing of their livestock

b to quantify and predict future trends in the red meat industry in the East of England over the next 5-10 years, including potential changes in land use.

c to predict and value (where appropriate) the direct and indirect environmental, social and economic impacts of these trends, including consideration of:

- employment opportunities and quality (direct impacts)
- the impacts on suppliers to farm businesses in the red meat industry and downstream industries (indirect impacts)
- environmental impacts
- the impacts on visitors and the local community

2.4.3 The design of the two questionnaires (graziers were asked a separate set of questions) was informed by the stakeholder interviews, literature review, a pilot version of the farmers' and land managers' questionnaire[14] and the quality of life surveys.

Survey of Farmers and Land Managers

Sampling and Data Collection

2.4.4 A sample of farmers and land managers were identified using a list of National Farmers Union members. The members were identified as being resident in the region and having or had either grassland or livestock on their land or as having responsibility for some proportion of SSSI land.

2.4.5 It was decided that farmers and land managers would be best placed to complete a questionnaire if it was posted to them, to allow them to fill in the questionnaire out of office hours. In order to fill in detailed accounting information, it is also useful for respondents to have easy access to their accounts.

2.4.6 The questionnaire (found in full in Appendix C) was sent to 1,914 farmers/land managers in the region. Respondents were asked to complete a selection of core questions (to take no more than 15 minutes) if they had limited time. If farmers completed all questions, they were automatically entered into a prize draw to win £200. The respondent was incentivised in this way because of the relatively short time scale for the return of questionnaire and because farmers in the area were known to be suffering from survey fatigue. The option to complete only the core questions was designed to boost the response rate and to ensure that in cases where farmers would not have completed the full questionnaire, key statistics were still received.

2.4.7 In 100 cases, farmers/land managers were prompted by telephone to encourage them to complete the questionnaire. If they were unwilling to complete the postal questionnaire, they were asked to answer just 15 short questions on the phone.

2.4.8 The questionnaires were complemented by detailed discussions with two farmers in the region (one small scale and one large scale producer). These case studies were

[14] The pilot questionnaire was completed by 17 respondents as part of phase 1 of our research

used to inform the interpretation of survey findings and the modelling of the red meat industry.

Response Rates

2.4.9 Of the 1,914 questionnaires sent to farmers and land managers, we received 323 completed questionnaires (89 in full, 234 in part). A further 130 farmers reported that they did not manage any grassland. The overall survey response rate of those with grassland was 17% (323 / 1,914) which was considered positive given the current demands on farmers' time for completing paperwork.

2.4.10 Nevertheless, in order to boost the number of responses to questions providing key information, an additional 100 farmers/land managers were contacted by telephone, of which 98 completed the set of key questions asked by the telephone prompter.

Survey of Graziers

Sampling and Data Collection

2.4.11 The identification of graziers in the region proved to be more difficult, given that there is no common membership organisation for graziers. Instead, a sample of graziers was obtained using a number of different means. These are summarized in Table 2.1 below. It is important to note that not all members of the National Beef Association or contacts supplied by the State Veterinary Service were graziers and it was not possible to identify those that were from the lists supplied. Hence the lower response rates from these samples.

Table 2.1 Survey of Graziers

	Sample	Number Sent	Questionnaires Received
Graziers working for or known by Conservation Organisations	14	9	5
Members of the National Beef Association	105	105	11
Livestock owners identified by the State Veterinary Service	4,462	300	49
Graziers cited by farmers / land managers	0	0	0
TOTAL		*414*	*65*

Source: PACEC

2.4.12 The questionnaire was sent to graziers by post and, like that sent to farmers and land managers, contained an option to answer just a few core questions if time was limited. The questionnaire was also incentivised with a prize draw of £200. A copy of the questionnaire can be found in Appendix D.

2.4.13 Given the relatively poor response rate, graziers who had not responded were prompted by phone to complete the questionnaire and, if they were unwilling to

complete the postal questionnaire, they were asked to answer just 14 short questions on the phone.

Response Rates

2.4.14 Overall, 16% (65/414) of questionnaires sent out were returned (23 in full, 42 in part). Of those who completed these questionnaires, only 11 regarded themselves as being graziers, the remainder being land managers or farmers.

2.4.15 An additional 47 people completed the telephone prompt questions. Not all of these were graziers.

Presentation of Results

2.4.16 Results from the main survey of farmers and land managers, the farmers' prompt, the survey of graziers and the graziers' prompt have been collated and are presented together in this report as the 'PACEC survey of farmers, land managers and graziers'. In some cases the distinction between farmer and grazier was difficult to make[15] and therefore there may be some farmers classified as graziers and vice versa.

2.5 Survey of suppliers and downstream businesses

2.5.1 The purpose of the survey of suppliers and downstream industries was:

- to assess the dependency of associated businesses on locally reared livestock;
- to allow an estimate to be made of the total number of jobs and Gross Domestic Product (GDP) supported by firms supplying services and products to the cattle and sheep grazing industry in the East of England;
- to facilitate estimates to be made of the *indirect* employment and GDP generated by these direct suppliers, through their operational and capital expenditure and the subsequent spending of their wages and profits; and
- to explore the issues facing businesses associated with the grazing of sheep and cattle in the region.

Sampling and Data Collection

2.5.2 Suppliers and downstream businesses relating to the grazing of sheep and cattle were identified using a web-based search, including use of the following websites:

- Anglian Farmers Ltd;
- Farmers' Weekly Directory;
- Yellow Pages;
- MLC Export Directory.

[15] Respondents were said to be graziers when they grazed sheep/cattle on land which they did not own. In some cases the ownership of the land was not known.

2.5.3 Suppliers were chosen who covered the following categories:

- Livestock feed
- Veterinary services
- Livestock machinery and equipment
- Livestock suppliers/dealers
- Fertilizer/grass seed
- Contractors

2.5.4 Downstream businesses were chosen who covered the following categories:

- Livestock auctions
- Abattoirs
- Livestock carriers
- Wholesalers
- Processors
- Renderers (processors of unwanted animal parts)
- Retailers

2.5.5 The survey of suppliers and downstream businesses was initially conducted by telephone but when it became clear that financial information was not being divulged on the phone, a shortened, postal questionnaire was sent to the remaining contacts on the database. Copies of the two main questionnaires used for this survey can be found in Appendices E and F.

Response Rate

2.5.6 A total of 36 suppliers and 20 downstream businesses completed questionnaires.

2.6 Quality of Life Surveys

2.6.1 The quality of life surveys were designed to explore the social impacts of a loss of grazing livestock in the East of England. Representatives from the following groups were interviewed:

- Nurseries and Schools (Primary and Secondary)
- Farm Businesses (B&Bs, Farm Shops, Educational Farms, Farms open to public, etc)
- Tourism Associations / Local Authorities (Tourism/Countryside Issues/Environment departments)
- Rambling Associations and Walkers (including dog walkers)

2.6.2 Four separate questionnaires were designed to collect primary data, with the following aims:

- to explore the social impacts of a loss of grazing livestock in the East of England;

- to establish the importance placed on cattle and sheep grazing in the local area among different groups. How do different people perceive grazed landscapes' impacts on society? and
- to make comparisons between the attitudes and concerns of different types of land user and in different areas of the region.

2.6.3 More specifically, the objectives of the four questionnaires were:

a Schools:
- to examine the extent to which the grazing of sheep and cattle is covered as part of the school curriculum and to explore any linkages which schools have with the local livestock farming community; and
- to look at the consumption of lamb and beef in a sample of schools, including how the approach to catering might have changed in recent years. To focus also on the emphasis which schools place on the local sourcing of red meat products.

b Farm Businesses:
- to examine the extent to which farm businesses rely on grazed land; and
- to look at farm businesses' responses to changes in the red meat industry over recent years (e.g. more intense competition resulting from lamb/beef imports; changing consumer preferences), including the extent to which farmers/farm managers are networking / collaborating and undertaking training or seeking advice as a result of these changes.

c Tourism Associations / Local Authorities:
- to assess the importance which tourism associations / local authorities place on grazed landscapes to attract visitors to the area; and
- to look at the steps taken to use and promote local cattle and sheep grazing and local red meat produce.

d Ramblers / Walkers:
- to assess whether ramblers and walkers (with and without dogs), feel constrained by grazed landscapes; and
- to ask users of the countryside what benefits, if any, grazed landscapes offer them and society. Can seeing cattle/sheep in fields enhance their enjoyment of the countryside?

2.6.4 Questions from the quality of life questionnaires were also replicated in the main farmers' and graziers' surveys.

Sampling and Data Collection

2.6.5 The method of surveying carried out varied according to the targeted sample. It was decided that schools would be best placed to complete a questionnaire if it was posted to them, to allow them to fill in the questionnaire out of school hours. Tourism associations, local authorities, farm businesses and members of rambling associations were interviewed by telephone. A sample of walkers and dog walkers were interviewed face-to-face in four different areas across the region, given the difficulty identifying walkers any other way.

2.6.6 The schools questionnaire was sent to the head teacher of 133 primary and secondary schools and nurseries in the East of England, covering all six counties and including both public sector funded and independent. If schools completed the questionnaire, they were automatically entered into a prize draw to win a visit to a livestock farm for a group of up to 30 pupils, organised in conjunction with the National Farmers' Union. The respondent was incentivised in this way because it was anticipated that schools, especially at the busy time of the end of the school year, would not otherwise take the time to complete the questionnaire in the belief that the survey results would not benefit them directly.

2.6.7 Tourism associations, local authorities, and farm businesses were identified through a web search. Farms with accommodation were identified using the 'Farm Stay East Anglia 2006' brochure.

2.6.8 Given that there is evidence to suggest that dog walkers have different concerns and attitudes to walkers without dogs[16], the sample of walkers was designed to include both dog walkers, who might walk locally every day, and other walkers/ramblers, who might walk less frequently or travel further, or walk longer distances. Members of rambling associations operating in the region were identified through a web search and were interviewed by telephone. Other walkers were interviewed at locations which were chosen on the basis that they were known to be frequented by walkers. The locations covered different areas of the Eastern region, city fringe and rural village, and areas of land which were both grazed and not grazed. Some interviews were also conducted in a large pet shop in order to identify dog owners. The locations were as follows:

- **City fringe, Cambridgeshire, (grazed land):** interviews conducted in Ely by the river, Newnham and Granchester.
- **Rural village, Essex/Suffolk border, (grazed land):** interviews conducted in the Stour Valley, ie Dedham, Flatford Mill, Maningtree, East Bergholt and Langham.
- **Rural village, Breckland, (land not grazed):** interviews conducted in or by Thetford Forest, ie: Brandon (edge of Thetford forest), Thetford forest high lodge, North Brandon forest and Swaffam road.
- **Pet shop**, Cambridgeshire

2.6.9 Copies of the four questionnaires used can be found in Appendices G-J.

Response Rate

2.6.10 A total of 114 questionnaires were completed, broken down as follows:

- 25 Schools[17]
- 13 Farm Businesses[18]

[16] Research carried out by the Kennel Club for the Countryside Agency

[17] Unfortunately, the survey of schools received a poor response from primary schools so it is not possible to give detailed comments on the emphasis on the subjects of cattle and sheep grazing and red meat produce at this level.

- 24 Tourism Associations / Local Authorities
- 9 members of Rambling Associations and 43 Walkers (including dog walkers)

2.7 Building the Model and the Baseline Scenario for assessing the Economic Impacts

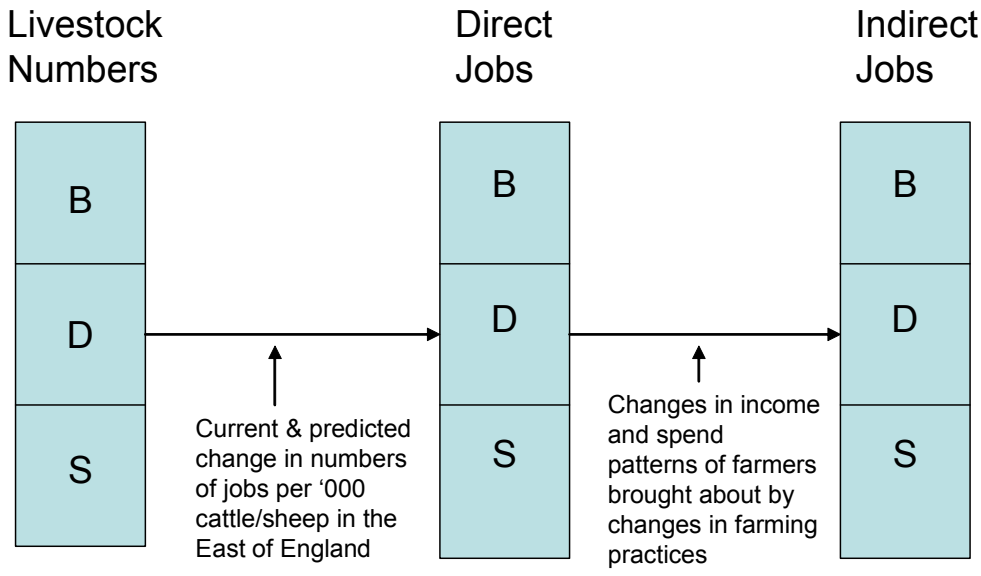
Establishing a relationship

2.7.1 In order to forecast the number of jobs and the GVA attributable to the grazing of sheep and cattle in the East of England in 5 and 10 years' time, it was necessary:

- To look first at the relationship between the number of cattle and sheep on the land and the number of direct jobs supported by this number of livestock; and then
- To consider the relationship between the number of direct jobs relative to the number of jobs supported indirectly by the industry.

2.7.2 The following diagram outlines this relationship, where B = beef cattle; D = dairy cattle and S = sheep.

Figure 2.5 Establishing a relationship



Source: PACEC

2.7.3 Total direct jobs in the East of England are ultimately determined by the production from the number of cattle and sheep in the region. The relationship between the number of direct and indirect jobs is governed by farmers' income and spend, which will change if farming practices are varied. For example, an increase in the number of months in which livestock are housed indoors will lead to increased expenditure on feed and concentrates supplied by feed manufacturers.

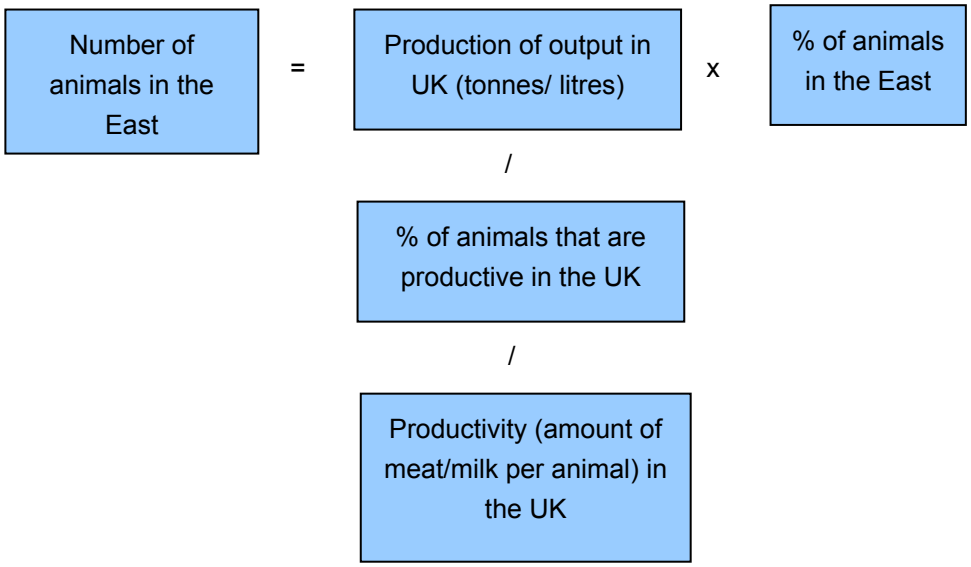
[18] When discussing results from this survey, reference will be made to 'the farm businesses surveyed' to distinguish the results from this survey from the results of the farmers and land managers' survey.

2.7.4 This section explains how data was accessed and processed in order to arrive at each of the stages in this relationship and used to produce estimates of direct and indirect jobs supported by the grazing of sheep and cattle in the East of England in future years. Key to the process is the estimation of livestock numbers in the region both today and in the future.

Estimating livestock numbers

2.7.5 Current (2005) livestock numbers in the East of England are given by the Defra June Agricultural Census. The number of livestock in the East is driven by production, encompassed in the following relationship:

Figure 2.6 Relationship between livestock and production



Source: PACEC

2.7.6 The number of animals in the East is therefore driven by production in the UK, the productive proportion of animals, their level of productivity and the proportion of animals that are in the East compared to the UK. This is all sourced from Agriculture in the UK 2005 data.

2.7.7 To get productivity data, the figures are broken down into more detailed analysis, using different types of livestock and their average weight. Taking the proportion of livestock in the different categories, each with a different average weight, gives the average productivity of beef/sheep livestock (tonnes of meat per animal).

2.7.8 The beef figures are split into:

- Steers, heifers and young bulls;
- Calves; and
- Cows and adult bulls.

2.7.9 Sheep figures are split into:

- Clean sheep and lambs; and
- Ewes and rams.

2.7.10 The milk data provides an average production of litres of milk per animal per year.

The Baseline Scenario

2.7.11 A baseline scenario has been created to assess how the red meat industry may change in the future, in terms of the number of animals required for production and the number of jobs – both direct and indirect – required to support this production. The scenario is based on the past and predicted trends of a series of key drivers for the red meat industry. Important future influences, including climate change, are also taken into account.

2.7.12 It should be noted that, in addition to the difficulties associated with predicting how certain drivers may impact the industry in the future, difficulties also arise when considering the red meat industry, as economic analysis generally works upon the assumption that rational agents are profit maximisers. Farmers, however, do not tend to be profit maximisers. For example, in considering farm income, farmers often do not take account of their own labour costs, or may prefer to remain within the industry for quality of life reasons rather than being driven by profit. It is difficult, therefore, to predict what may be the impact of, say, decoupling the CAP, when farmers do not necessarily respond to economic incentives in a way that is considered economically rational.

2.7.13 The model allows for the type and the scale of predicted impacts which form the baseline scenario to be varied according to changing assumptions about the future of the industry. Alternative scenarios for predicting future jobs and GVA will be used in phase 3.

Estimating Direct Jobs

2.7.14 The number of direct jobs supported is directly influenced by the number of livestock in the region. We calculate this using data from the PACEC surveys and Annual Business Inquiry (ABI) data.

2.7.15 The model for predicting numbers of direct jobs in future years assumes that the number of jobs required per 1,000 population (of livestock) declines by 1.0% per annum up to 2016. This is based on the assumptions that as technology improves, and also as farms start to increase in size, farmers will make use of economies of scale, and the number of people needed to support the same number of animals will be lower.

Estimating Indirect Jobs

2.7.16 No economic analysis of an industry would be complete without taking into account all wider effects (so called ‘ripple’ effects) of the transactions associated with an

activity. The 'indirect' jobs which result from these transactions can be broken down into:

- First round supplier jobs – i.e. jobs resulting from farmers, land managers and graziers making direct purchases from their suppliers (e.g. livestock feed, veterinary services)
- Supply chain jobs, made up of:
  - 'supply chain effects', i.e. linkages taking place as first round suppliers buy from other firms; and
  - 'expenditure multiplier effects', i.e. additional purchases arising from first and subsequent round suppliers spending their wages and profits which have been generated by grazing activity.
- Downstream jobs, i.e. jobs resulting from the use of processing, distribution and retailing industries associated with cattle and sheep production.

2.7.17 First round supplier jobs have been estimated using information regarding the value of farmers', land managers' and graziers' purchases and the location of their suppliers, provided by our surveys of farmers, land managers and graziers and survey of suppliers.

2.7.18 Supply chain effects have been estimated using information supplied by suppliers and downstream businesses on their own purchases from other businesses. These multiplier effects have been estimated using information regarding profits from both livestock producers and suppliers to the industry, together with data from the Office of National Statistics Input-Output tables.

2.7.19 Downstream jobs have been estimated using information regarding the value and source of farmers, land managers and graziers' income and information from downstream businesses about the value and proportion of their business coming from those grazing cattle and sheep in the East of England.

2.7.20 The relationship between direct and indirect jobs can be varied on the basis of any anticipated change in faming practices which affects the scale and nature of purchases made by those grazing cattle and sheep in the region.

2.8 Reading the data tables in this report

2.8.1 Please see Appendix L for an explanation of how the data tables in this report should be interpreted.

3 Cattle and Sheep Grazing in the East of England

3.1 Introduction

3.1.1 This chapter sets out an assessment of cattle and sheep grazing in both England and the East of England. The purpose of the chapter is to set the scene in terms of where and under what arrangements cattle and sheep grazing takes place and has changed in recent years. This provides essential building blocks for the scenario projections of later chapters.

3.1.2 In order to discover how the scale of grazing might change in the future, it is important to consider how the industry has been restructuring, looking at the recent changes in number of livestock holdings, numbers of cattle, sheep and dairy cows, and stocking rates. The documentation of past trends (particularly in the context of foot and mouth disease and BSE) helps to distinguish longer-term trends from shocks to the sector, allowing us to form a 'baseline' scenario for the future.

3.1.3 The scenario model considered later on is designed to estimate the total number of jobs supported by grazing cattle and sheep in the region. Key to this is the number of livestock grazed in the region and, more specifically, the number of livestock per holding, since direct employment on a holding is governed by the number of animals on that holding.

3.1.4 We integrate data from publicly available sources, such as the Agricultural Census and the Farm Business Survey, and from the PACEC survey of farmers, land managers and graziers. New insights into the industry that are not currently available, such as changing stocking densities, grazing arrangements and the composition of livestock on farms, can therefore be explored.

3.1.5 Our own survey data is shown in the main according to the respondent's county of residence or type of livestock grazed. However, it should be noted that within these categories the farming systems which operate (intensive versus extensive[19]) will vary across livestock holdings. Therefore, while trends may be observed for a given county or type of livestock, one must recognise that in a given county or livestock category there will also be specific differences in animal husbandry which will have financial and environmental (in terms of the grassland's intensity of use) implications.

[19] Intensive livestock production involves keeping livestock mainly indoors, often in relatively large numbers, with the aim of maximising efficiency by reducing per capita costs and the area required. In contrast, in extensive farming, a large amount of land is used to raise stock. (Definitions from Fran Blacks *Agricultural Dictionary,* 2nd Edition)

3.2 Types of Farm [20]

3.2.1 This section considers the types of farming that occur in the East of England compared to England as a whole, which will reflect particular strengths of the region and will begin to suggest what kind of farming may occur there in the future. The section goes on to consider the location of the farmland in the Eastern region, to set out where much of the activity currently occurs.

Historically strong in wool and dairy production, the East of England now has more cereals and cropping farms than the English average.

3.2.2 Mixed farming systems, as part of which lowland wildlife habitats, flower rich semi-natural grasslands, wetlands and heathlands were grazed by hardy breeds of sheep and cattle, were once integral to the East of England. Many areas prospered from the wool trade[21] and, as a result, the South of Suffolk was one of the wealthiest parts of England in the fourteenth to sixteenth centuries. However, the advent of power-driven machinery during the Industrial Revolution meant a shift of wool production from the East to the North of the country. Furthermore, when the East began to be drained, the productivity of the land was enhanced and former pastoral areas were converted to Grade 1 soils for intensive arable, vegetable and horticultural production. This included the parts of Suffolk which used to be dominated by dairy farming.

3.2.3 As grazing marshes were forced to give way to arable land, the East witnessed a loss of grazing banks, grassland and semi-natural habitats and a subsequent loss of livestock. This trend is still true today. Indeed, over the past 50 years, and as arable production has become more profitable, farmers have continued to shift from mixed farming to all-arable systems, leaving surviving remnants of these formerly widespread habitats isolated and difficult to graze. Furthermore, increasing intensification and specialisation of agriculture in the last 20 years has led to changes in crop rotations, reduction in grazing enterprises, farm amalgamation and an increase in field sizes. Now the region specializes in arable crops, for which much of the land is ideally suited, with relatively low annual rainfall and soils based on sedimentary rocks. Even where the soil is poor and thinning, cropping has replaced

[20] The farms are categorised by the predominant use that accounts for two thirds or more of their standard gross margin (SGM). If both crops and livestock account for more than a third but less than two thirds of the SGM, farms are categorised as mixed. Holdings are different, in that one farm can be many different types of holding. This is why there are more holdings in data later in the chapter.

[21] The church in Worstead in North East Norfolk is a lasting reminder of the wool wealth and the town takes its name from the long-staple wool which was made into worsted.

sheep grazing[22]. Recreational and tourism uses now present a new pressure for agricultural land in some parts of the region[23].

3.2.4 Consequently, more farms are for cereals or crops, compared to England (see Table 3.1 below). There is also a far lower proportion of lowland grazing and dairy farms in the East compared to England. Today there are 22,900 farms in the East of England (12% of the English total), of which 2,500 are for grazing livestock (lowland) and 200 are dairy.

Table 3.1 Farms, 2005

	Eastern	England
Cereals	24%	12%
General Cropping	13%	5%
Horticulture	7%	5%
Pigs	2%	1%
Poultry	4%	3%
Dairy	1%	7%
Grazing Livestock (LFA)	0%	6%
Grazing Livestock (lowland)	11%	18%
Mixed	5%	6%
Other	33%	38%
Total Holdings	*22,900*	*195,900*

Source: Agricultural Census, 2005

3.2.5 Many arable farms still have areas of grass. This is usually for environmental reasons, such as specific habitat requirements, or amenity reasons, such as paddocks around farmsteads or parkland. Indeed, 2% of farmers, land managers and graziers we surveyed had areas of parkland. A further 6% had horse-riding on their land (and more had horses grazing)[24]. In consequence, many livestock enterprises are managed alongside arable enterprises, evidenced by 18% of the farmers, land managers and graziers we surveyed stating that their land was used for mixed (predominantly arable) production and 9% mixed (predominantly livestock) production. This can provide synergy from the availability of waste products, such as sugar beet tops, and the availability of cereal straw and land for forage crops such as stubble turnips. However, livestock enterprises also compete with arable enterprises for harvest labour (the straw harvest usually coincides with cereal harvesting), buildings, especially in the winter.

[22] For example, in the East Anglian Chalk area of the region – see: The Countryside Agency: *Countryside Character Volume 6: East of England, Character Area 87.*

[23] including the Bedfordshire Greensand Ridge and parts of Hertfordshire and Essex (The Countryside Agency: *Countryside Character Volume 6: East of England*)

[24] There is said to be a 'pony paddock culture' around settlements in the Bedfordshire and Cambridgeshire Claylands – see The Countryside Agency: *Countryside Character Volume 6: East of England, Character Area 88.*

3.2.6 The full list of farmers, land managers and graziers' land uses is given below in Table 3.2 (farmers may undertake more than one type of farming on their farm). Despite our survey being targeted at livestock farmers or farmers who own land, 'cereal' was still the most popular land use choice among our survey's respondents, with 71% of all respondents growing some cereal crops, showing the suitability of the land in the region for arable farming. While respondents in Norfolk were more likely to use their land for lowland cattle and sheep or other cropping (47% said this), those in Bedfordshire were more likely to have mixed, predominantly arable farms (38%). Bird reserves were more common on land in Suffolk (10%).

3.2.7 Other uses of land listed by respondents are presented in Appendix K (Q4B and Q4C).

Table 3.2 Please indicate what the land on your site is used for? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by location)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Cereal	71	62	73	76	77	83	69	0	n/a
Other Cropping	43	38	39	55	49	43	31	0	n/a
Lowland cattle & sheep	31	**20**	37	**47**	26	17	44	50	n/a
Mixed, predominantly arable	18	16	14	18	15	22	**38**	0	n/a
Horticulture	15	19	10	18	18	9	13	0	n/a
Other agricultural	13	19	12	10	8	9	19	0	n/a
Mixed, predominantly livestock	9	10	12	8	3	4	6	50	n/a
Sporting Shooting	9	7	8	14	3	17	0	0	n/a
Horse-riding	6	10	6	2	0	9	13	0	n/a
Nature Reserve	5	3	6	6	3	9	6	0	n/a
Fishing	4	6	4	4	3	0	0	0	n/a
Bird Reserve	3	1	**10**	4	0	0	0	0	n/a
Lowland dairy	2	1	4	6	0	0	0	0	n/a
National Park	2	1	4	4	0	0	0	0	n/a
Golf	2	1	2	2	0	4	0	50	n/a
Parkland	2	1	0	4	0	4	6	0	n/a
Water sports	1	0	0	0	0	4	6	0	n/a
Off-road quad-biking	1	1	0	0	3	0	0	0	n/a
Mountain Biking	0	0	0	0	0	0	0	50	n/a
Other	4	4	4	4	3	9	6	0	n/a
Number of respondents	*247*	*69*	*49*	*49*	*39*	*23*	*16*	*2*	*0*

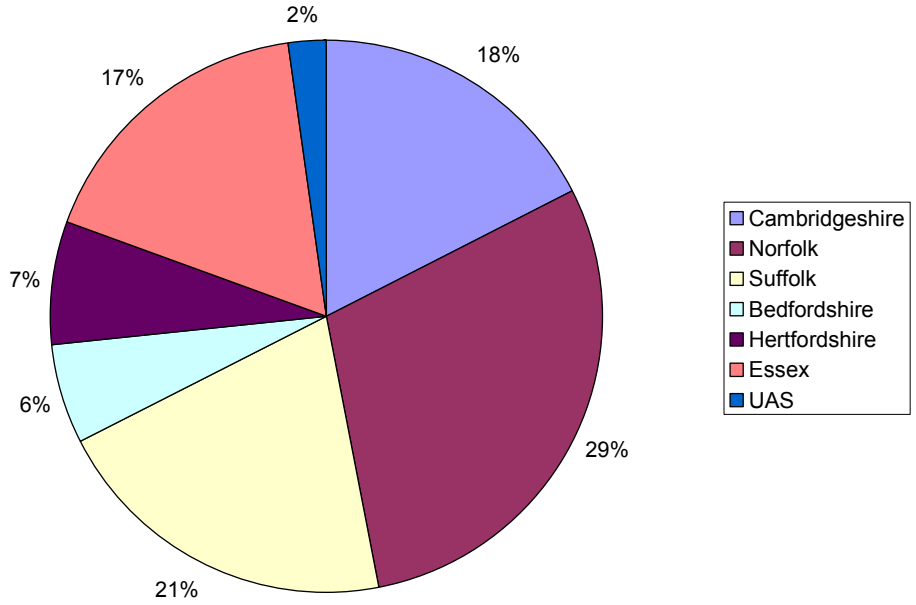
A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q4A)

Half of the East's farm land is concentrated in Norfolk and Suffolk

Present

3.2.8 With 16% of the agricultural land in England, the East of England has just under 12% of the farm holdings and generates 18% of agricultural gross output[25].

Figure 3.1 Location of farmland in the East of England, 2005



Source: Defra, Agricultural Census

3.2.9 Figure 3.1 shows the location of farmland in the East of England, split into the counties and unitary authorities[26]. The county with the most farmland is Norfolk, followed by Suffolk. There is very little farmland in the Unitary Authorities.

[25] Source: Defra Agricultural Census, Agriculture in the UK, 2003

[26] Peterborough, Southend-on-Sea, Thurrock and Luton

3.3 Types of Holdings

Panel 3.1 Types of Holding

	England	East of England[27]	% of England
• Dairy	15,000	400	2.7
• Beef	28,500	1,600	5.6
• Cattle[28]	56,100	3,000	5.4
• Sheep	50,800	2,800	5.5

3.3.2 This section sets out the number, size, types and location of holdings within the East of England. It sets out where the holdings are concentrated geographically, and how this number has changed in the past. What has caused these changes needs to be understood to give an idea of the future situation. Changes in the East of England need to be compared to those of England, to see if there are regionally-specific factors to consider.

Present

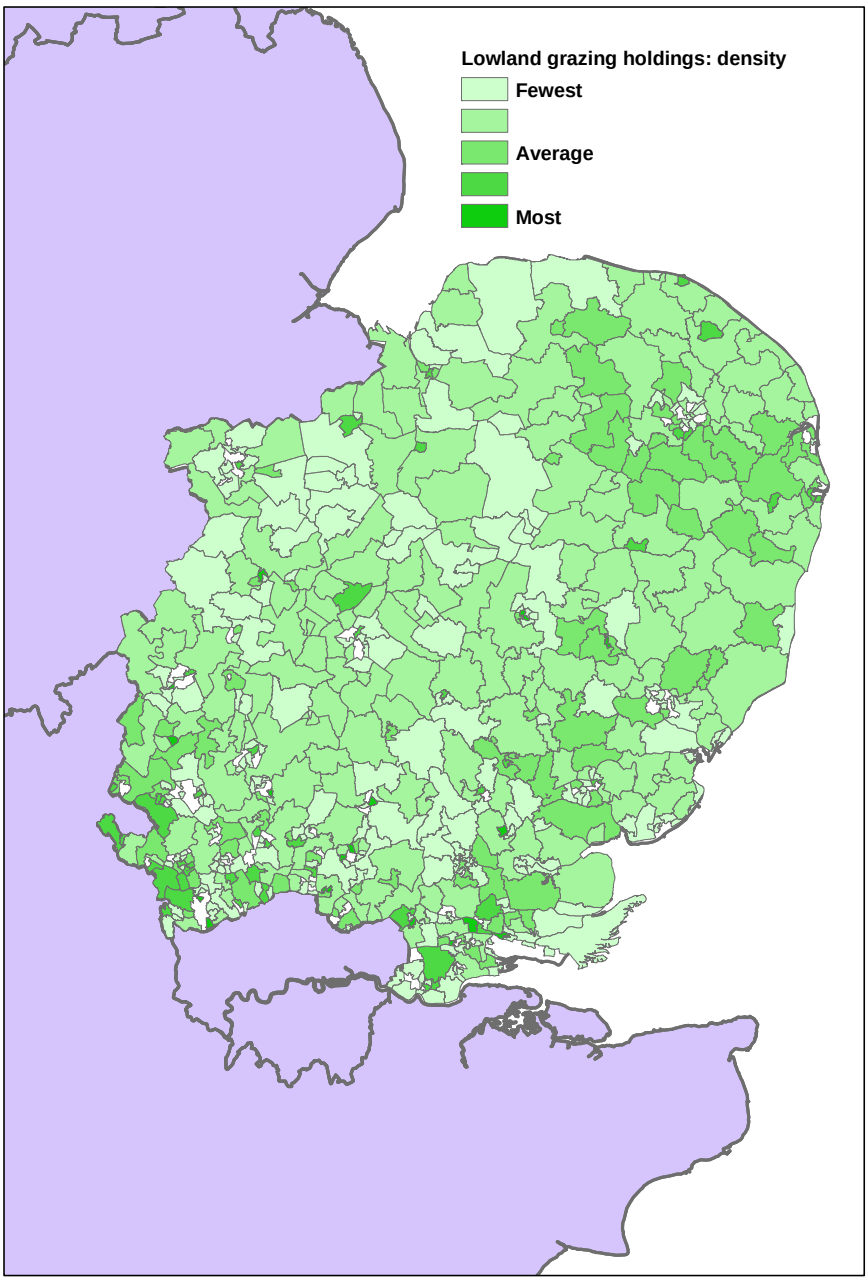
Livestock enterprises are concentrated in Norfolk, Suffolk and Essex

3.3.3 Lowland grazing holding locations are shown below. Norfolk had 35% of the beef holdings in the region and 42% of the beef population in 2004.

[27] Source: Agricultural Census, 2005

[28] 'Cattle' includes dairy, beef, breeding replacement herds and other cattle.

Figure 3.2 Location of lowland grazing holdings in the East of England, 2004



Source: Defra: June Agricultural Census; PACEC. Data has been repopulated by Defra. Locations shown are approximate, to within mSOA boundaries.

3.3.4 The concentration of livestock holdings in the counties of Essex, Norfolk and Suffolk is captured by our own survey of farmers, land managers and graziers grazing cattle or sheep in the region. 70% of respondents were located in these counties.

Table 3.3 In which county is your business situated?

	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Essex	25	22	9	23	25
Norfolk	23	29	45	25	22
Suffolk	22	23	36	28	23
Cambridgeshire	15	10	9	9	17
Hertfordshire	8	7	0	6	9
Bedfordshire	6	9	0	8	**4**
Number of respondents	*313*	*82*	*11*	*53*	*221*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q1)

3.3.5 In the following tables, the 'Mean' is the average value - all of the values added together divided by the number of values. The 'Median' is the middle value in the distribution, above and below which lie an equal number of values.

3.3.6 On average, respondents were responsible for a site of 133 hectares, but this ranged from as small as 1.2 ha to as large as 1,655 ha. The largest holdings (the 'Maximum' in the tables) were found in the counties of Essex, Norfolk and Suffolk.

Table 3.4 What is the total land area of the site for which you are responsible (e.g. total agricultural holding)? (Ha)

	Statistics of all respondents. (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Mean	133.0	109.9	144.4	175.1	116.6	133.5	117.3	17.5	n/a
Median	73.0	60.0	65.0	86.0	60.0	104.0	87.0	17.5	n/a
Min	1.2	1.2	3.0	2.0	1.6	2.0	9.0	17.5	n/a
Max	1,655.0	1,000.0	1,200.0	1,655.0	810.0	413.0	500.0	17.5	n/a
Responses	*238*	*67*	*47*	*47*	*39*	*22*	*15*	*1*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q3)

3.3.7 On average, the total area of grassland on the holding was 38 ha. On a typical holding of 73 ha (median), 21% (median of 15 ha) would typically be grassland.

Table 3.5 What is the total area of grassland you manage (in hectares)?

	Statistics of all respondents. (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Median	15.0	9.7	16.3	20.0	4.2	15.5	19.3	16.9	26.0
Mean	38.0	19.8	30.6	65.9	18.1	38.5	26.4	16.9	49.3
Min	0.0	0.0	0.0	0.0	0.0	2.0	2.0	16.2	0.0
Max	1,215.0	200.0	218.0	1,215.0	100.0	256.0	150.0	17.5	324.0
Responses	*323*	*63*	*44*	*43*	*34*	*22*	*14*	*2*	*101*

Source: PACEC Survey of farmers, land managers and graziers (Q5)

Past

Growing numbers of sheep holdings and declining numbers of cattle, beef and dairy holdings in the East of England

3.3.8 In the absence of reliable long-term data on the number of businesses carrying out livestock production, the number of holdings is taken as a proxy for the number of businesses[29].

3.3.9 The East of England currently has around 3,000 cattle[30] holdings (of which 1,600 are beef and 400 dairy) and 2,800 with sheep[31].

3.3.10 Since 1990 in England, the number of cattle holdings has declined sharply, with the number of dairy holdings almost halving and the number of beef holdings declining around 17%. The number of sheep holdings dipped slowly but increased back to 1990 levels by 2005.

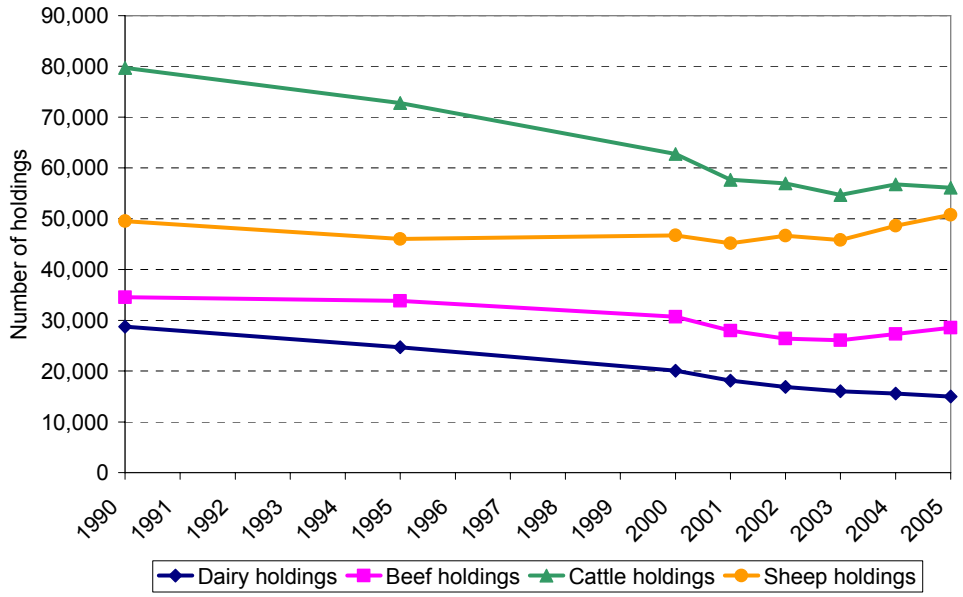
3.3.11 From this analysis, it is not clear how exactly the sector is changing, as the declining number of holdings may be reflective of various changes in the sector, including the total number of livestock and the average size of holdings. Whilst there are fewer cattle holdings overall, there may still be similar numbers of livestock in total, with more on each holding. Alternatively, there may be fewer holdings and fewer livestock, with fewer livestock on each holding.

[29] The number of holdings is larger than the number of farms, because holdings refer to an area of land, more than one of which may be part of a single farm business.

[30] 'Cattle' includes dairy, beef, breeding replacement herds and other cattle. 'Beef' holdings and 'dairy' holdings do not include numbers for breeding replacement herds and other cattle.

[31] On a given holding, there may be only one use, while on several holdings making up one farm there may be more than one use. Therefore the numbers of each type of holding in the Eastern region is greater than the numbers of each type of farm (quoted in section 2 of this chapter).

Figure 3.3 Red meat holdings in England, 1990-2005

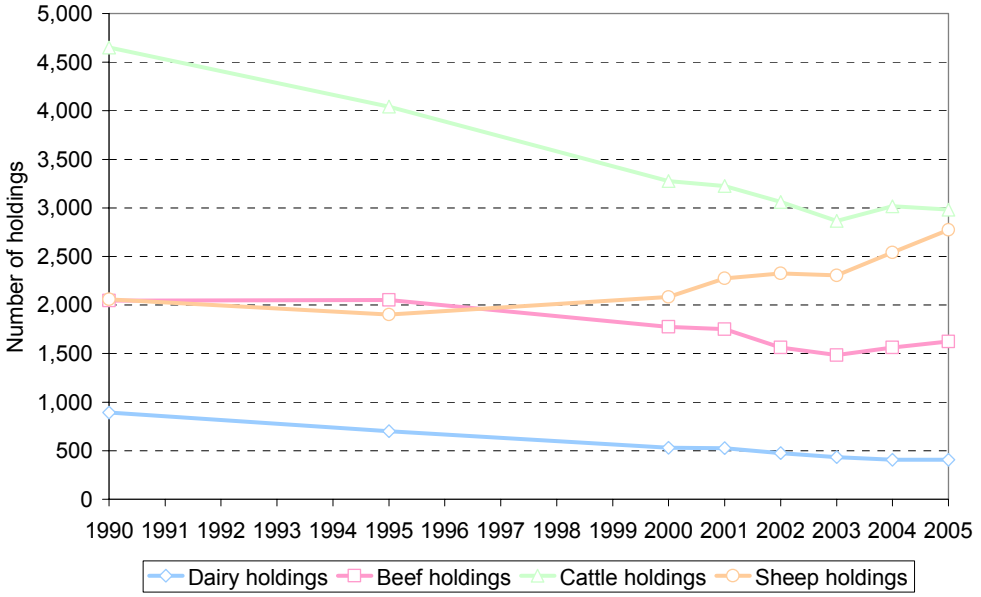


Source: Defra, June Census, 1990-2005

3.3.12 In the East of England, the number of cattle holdings has also declined sharply. Within this, the number of dairy holdings more than halved and beef holdings fell by 20%. The recent rise in beef holdings relative to dairy holdings suggests that some farmers may be switching from dairy into beef production, likely to be because of the relatively better profitability of beef.

3.3.13 The number of sheep holdings has increased, meaning there are now nearly as many sheep holdings as cattle holdings – compared to 1990 when there was over twice as many cattle holdings. This is likely to be because of growing numbers of rural in-migration, with new residents who may keep a small number of sheep on holdings that have been split up into smaller holdings.

Figure 3.4 Red meat holdings in the East of England, 1990-2005



Source: Defra, June Census

3.4 Number of Livestock

Panel 3.2 Livestock Numbers[32]

	England	East of England	% of England
• Total cattle[33]	5,527,000	220,900	4.0
• Dairy	1,300,000	28,700	2.2
• Beef	752,000	44,600	5.9
• Sheep	15,900,000	346,000	2.2

3.4.2 The number of livestock in the East of England and the changing proportions indicates the importance of the different types of farming to the region. Past change will reflect not only longer-term trends in the industry, but also one-off shocks.

Cattle numbers

Present

Cattle stock concentrations are highest in Suffolk and to the east of Norfolk

3.4.3 There are approximately 5.5 million head of cattle in England and 220.9 thousand head in the East (4% of the English total)[34]. Figure 3.5 below shows total cattle

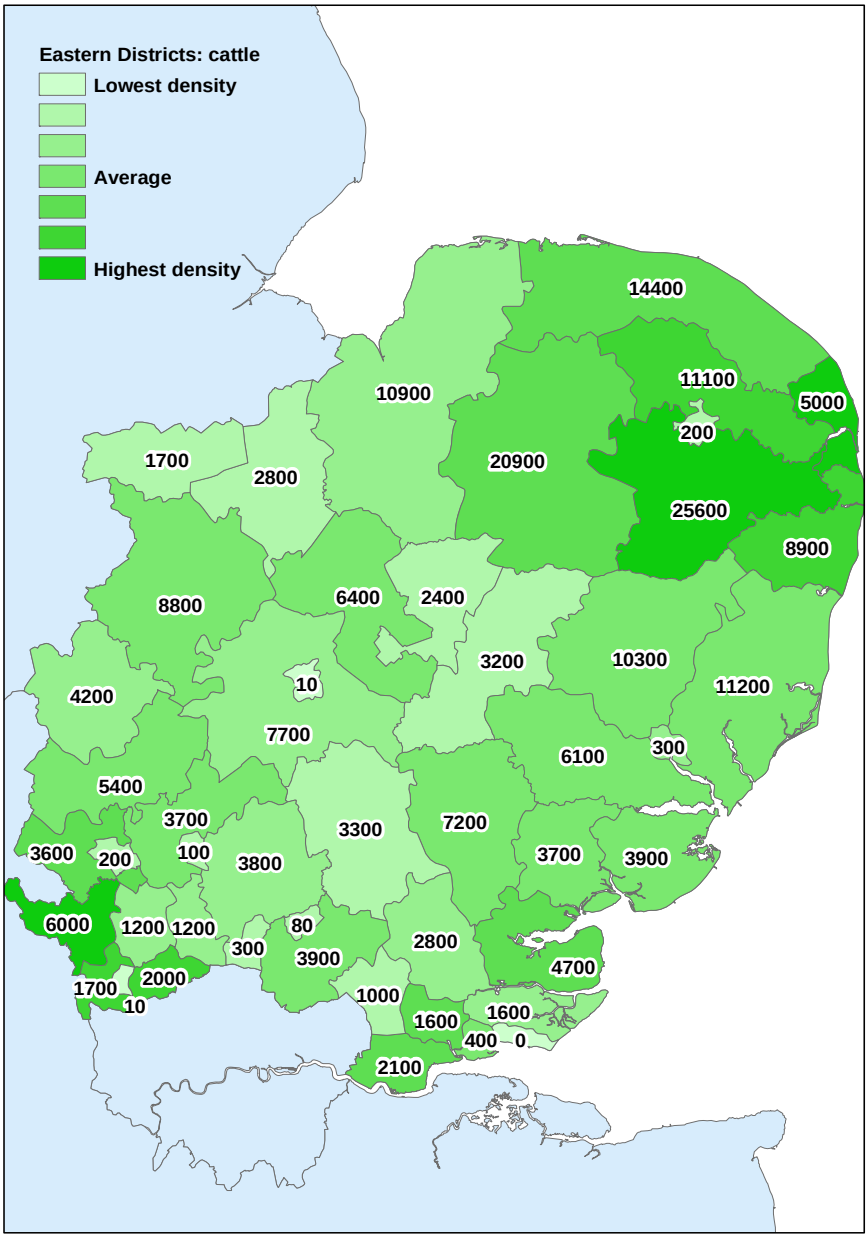
[32] Source: Agricultural Census, 2005, Defra

[33] 'Cattle' includes dairy, beef, breeding replacement herds and other cattle.

[34] Source: Agricultural Census, 2005, Defra

numbers (including dairy) in the East in 2004. As the distribution of livestock holdings suggests, concentrations of cattle are highest in Suffolk and in the east of Norfolk.

Figure 3.5 Total cattle numbers 2004



Source: Defra: June agricultural census; PACEC. Data has been repopulated by Defra and rounded. Total cattle includes beef, dairy, breeding herd and cattle under 1 year.

Present

There are twice as many dairy cows as beef in England but more beef cows than dairy in the East of England

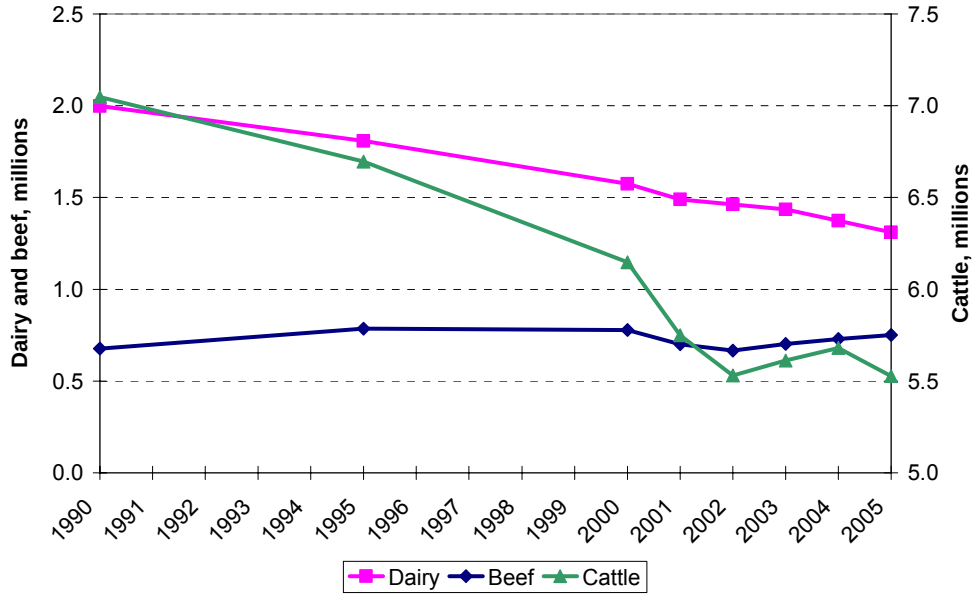
3.4.4 Figure 3.6 shows that in 2005 in England, there were almost twice as many dairy cows as beef cows. Figure 3.7 shows that in the East of England there were a third more beef cows than dairy – contrary to the relative proportions in England.

Past

There have been declining dairy numbers and steady beef numbers in England

3.4.5 Between 1990 and 2005, the number of dairy cows has declined by a third, whilst the number of beef cows has remained relatively steady. This reflects the declining profitability of dairy farming in comparison to beef farming in the country as whole.

Figure 3.6 Cattle numbers in England 1990-2005



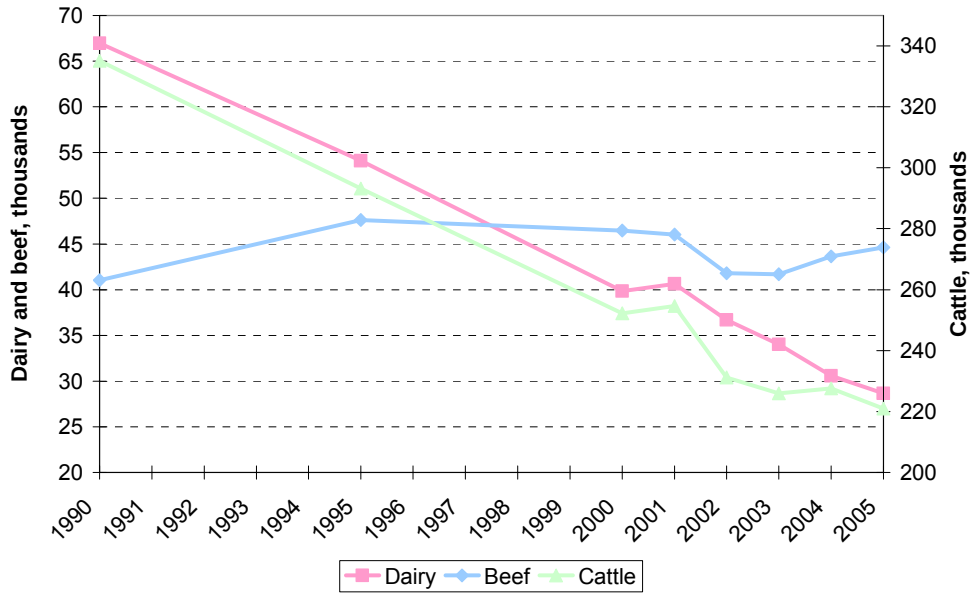
Source: Defra June Census
Note: There are different axes for cows and total cattle. They do not start at zero.

As in England, the East has had declining dairy and steady beef numbers

3.4.6 Within the East of England, the number of cattle declined at similar rates in all counties. As in England, the total cattle population has declined, with a relatively stable beef cattle population and declining number of dairy cows[35]. Again, this will be reflecting the relative profitability of the different types of farming.

[35] The temporary increase in cow numbers in 2001 is likely to be due to movement restrictions resulting from Foot and Mouth Disease (FMD). Cull cows were retained on farms and cows were kept in milk for longer prior to culling. The reduction in the number of beef cows in 2002 and 2003 may have been partly due to sales of breeding animals onto farms restocking to replace animals culled as a result of FMD control measures As movement restrictions were lifted and livestock

Figure 3.7 Cattle numbers in the East of England, 1990-2004[36]



Source: Defra June Census

Sheep Numbers

Present

Concentrations of sheep stock in the west and coastal areas of the region

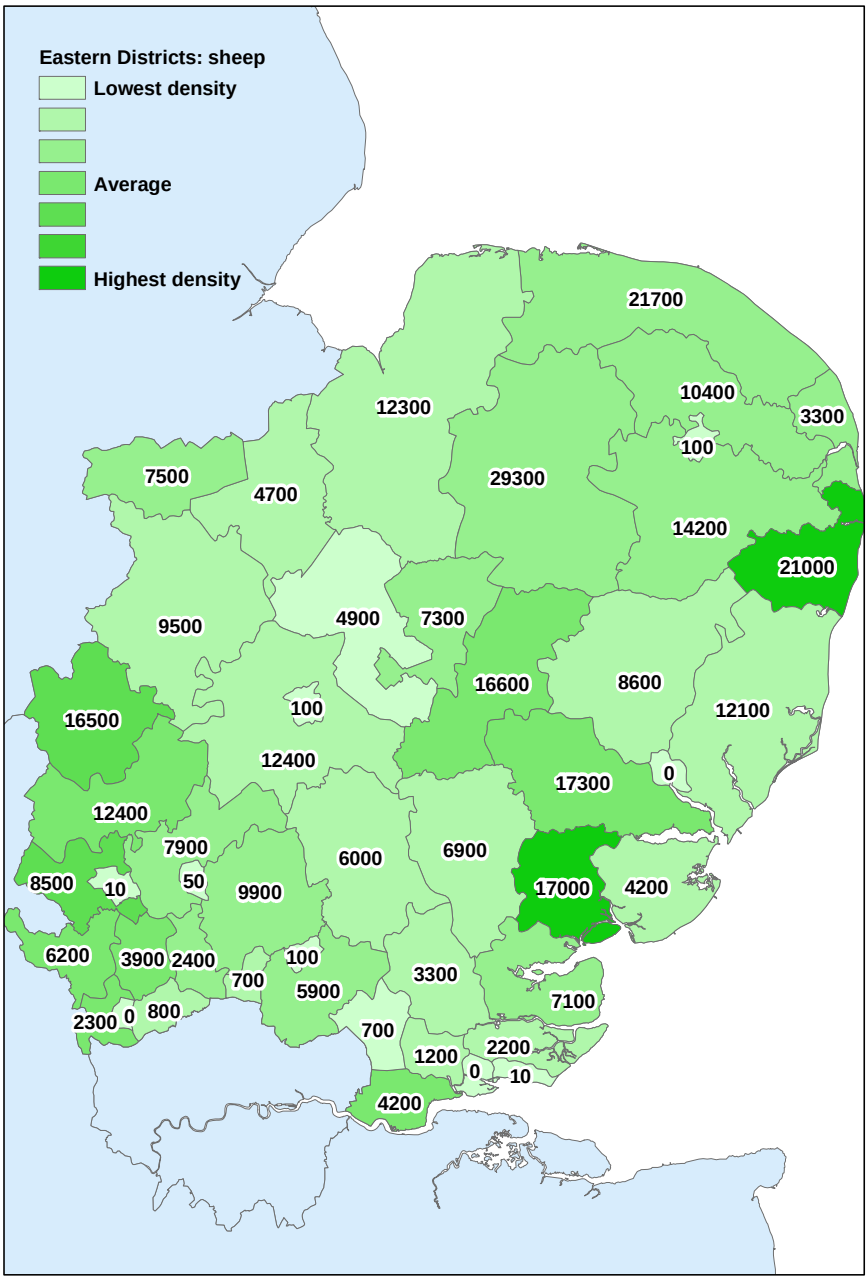
3.4.7 There are approximately 15.9 million sheep and lambs in England and 346,000 (2%) in the East of England[37]. Of these, around 346,000 were sheep, 166,000 lambs under 1 year old and 165,000 ewes. Figure 3.8 shows the location of sheep in the East of England in 2004, highlighting the concentrations of sheep towards the west of the region and pockets in coastal areas.

trading resumed, restocking farmers in the North of England and South West sought stock from the East of England.

[36] Beef reared in the East of England may have been bred in either a dairy herd or a suckler herd, and whilst many such animals will have been born and reared on the same farm, there is trade of calves and store cattle of all ages.

[37] Source: Agricultural Census, 2005, Defra

Figure 3.8 Sheep numbers 2004



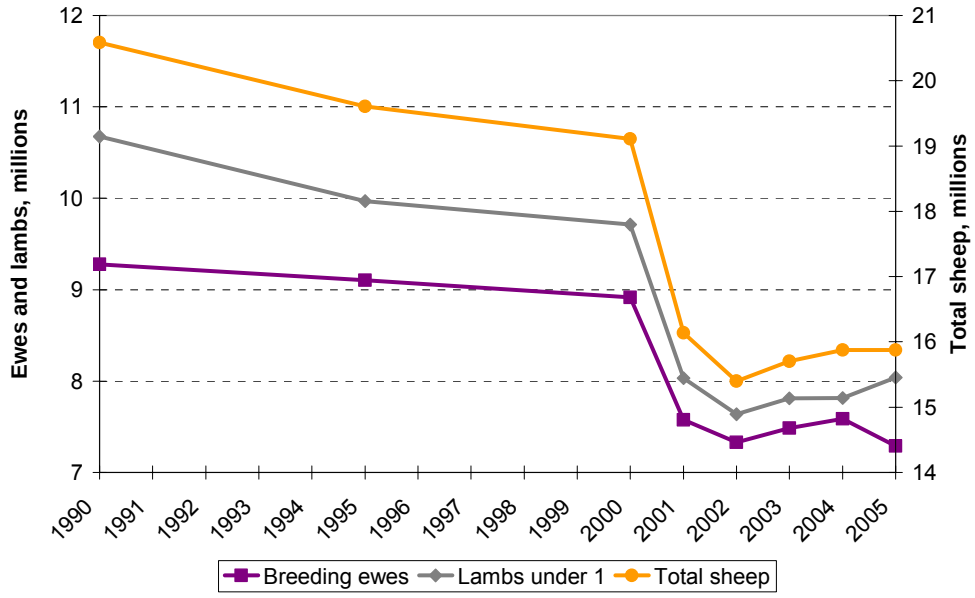
Source: Defra: June Agricultural Census; PACEC. Data has been repopulated by Defra and rounded.

Past

Dramatic drop in England's sheep population in 2000 but stable since

3.4.8 Figure 3.9 shows the population of sheep in England. The dramatic drop in the population of sheep in 2000/2 was largely due to foot and mouth disease and there has only been a modest recovery since.

Figure 3.9 Sheep numbers in England 1990-2005

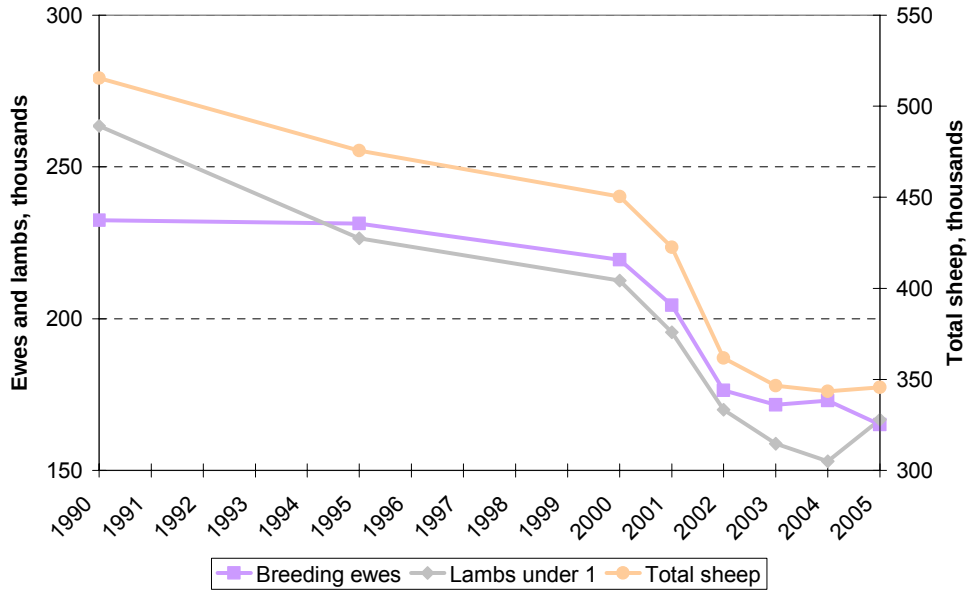


Source: Defra June Census

Dramatic drop in East sheep population in 2000 but stable since

3.4.9 Figure 3.10 shows the population of sheep in the Eastern Counties in the same period. Between 1990 and 2005, the total number of lambs under 1 fell by 37% and ewes by 29%. The total number of sheep fell by 33. As in England, Foot and Mouth Disease accelerated the decline of sheep numbers in 2001 but numbers were stabilising by 2003.

Figure 3.10 Sheep numbers in the East of England, 1990-2005



Source: Defra June Census

3.5 Number of livestock per holding

Panel 3.3 Average Livestock Numbers per Holding[38]		
	England	**East of England**
• Dairy	88	71
• Beef	26	27
• Cattle	98	74
• Sheep	313	125

Dairy

Present

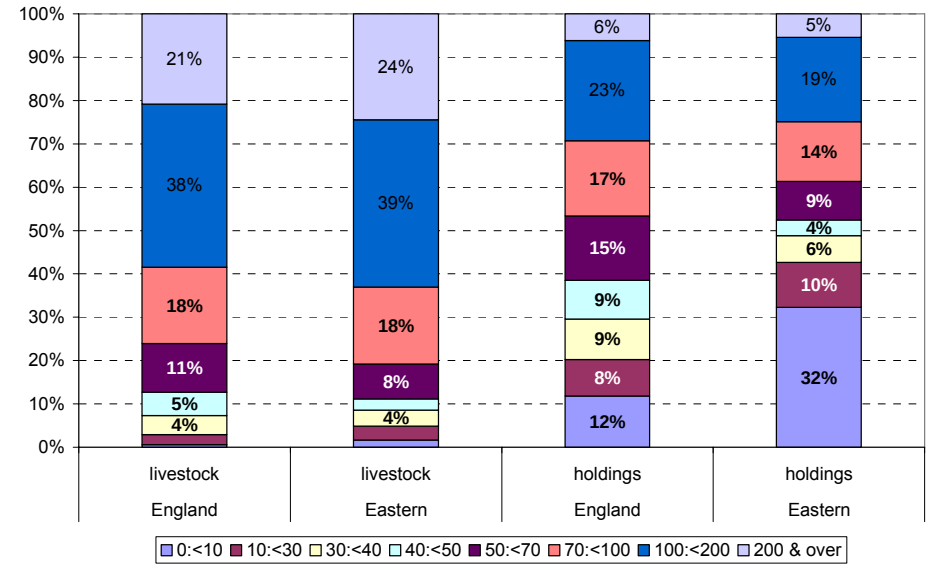
3.5.2 In 2005, the average holding in the East of England had around 71 dairy cows, compared to the average holding in England, which had around 88[39]. The chart below shows livestock and holdings data. The two bars to the left show the proportion of livestock in herds of varying sizes. For example, in England, 38% of all livestock are in herds of 100-200 cows. The two bars to the right show the proportion of holdings that have herds of varying sizes. For example, in England 23% of holdings have herds of 100-200 cows.

3.5.3 The chart shows that the East of England proportionally has slightly fewer cows in the smaller sized herds and slightly more cows in the larger sized herds. The East of England has far more holdings with 0<10 dairy cows in a herd (32%) than England (12%). However, it has similar proportions to England of the largest sized herds. There are fewer holdings with medium-sized herds compared to England (10-100 cows).

3.5.4 All of the Eastern counties have lower average numbers of dairy cattle per holding than England as a whole and have far more holdings with 0<10 dairy cows.

[38] Source: Agricultural Census 2005 – number of livestock divided by number of holdings, regardless of the size of holding.
[39] Agricultural Census data (no random sampling error as all farms in the country were surveyed)

Figure 3.11 Numbers of Dairy Cattle and Holdings by Size of Herd, 2005

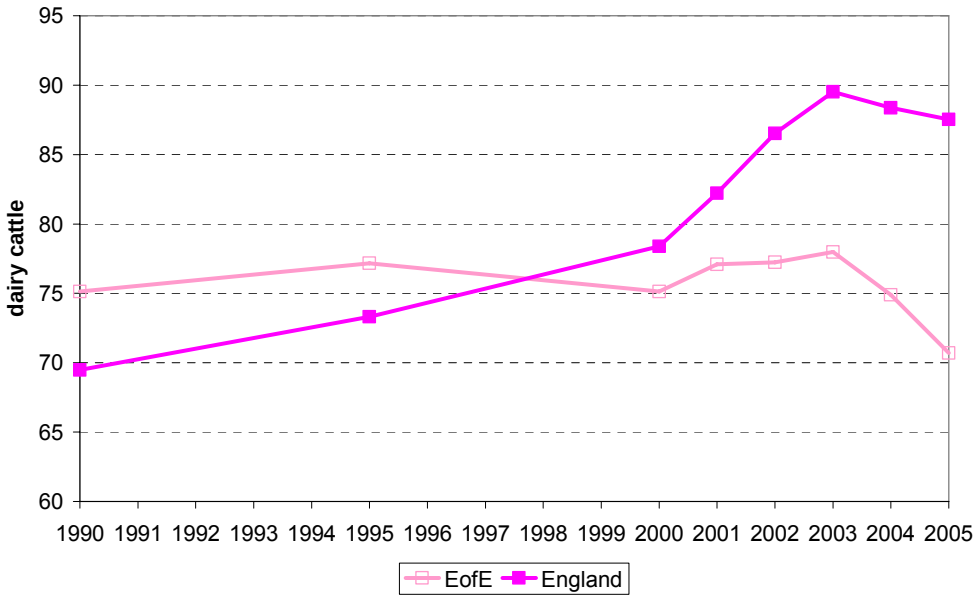


Source: Agricultural Census 2005

Past

More dairy cows per holding in England (growing since 1990) than the East (stable since 1990)

Figure 3.12 Mean number of dairy cattle per holding, 1990-2005[40]



Source: Defra June Census

3.5.5 The change in dairy cows per holding since 1990 is shown in Figure 3.12. In England, the mean number of dairy cattle increased between 1990 and 2003, with a strong

[40] Mean figure calculated using total number of dairy cattle from Census divided by total number of dairy holdings. This does not, therefore, include mixed holdings.

increase between 2000 and 2003. The increasing average size of farms allows farmers to take account of economies of scale. However, anecdotal evidence suggests farmers will reach a critical size from which they will not further increase, unless they are willing to invest in capital for the dairy herds. Once their machinery is at capacity, there are large capital investment requirements to increase the size of the herd further.

3.5.6 The mean number in the East of England remained fairly steady, around 77 dairy cattle per holding, until 2003, when it started to decline quite strongly.

3.5.7 Table 3.6 shows the change in numbers of livestock in different sizes of dairy herds. In England, there have been massive declines in the number of dairy cows in the largest sized herds (50-200 cows). Whilst there has been a small increase in the number of cows in the very largest herds (200+ cows), overall the decline in livestock has been strong (12% over 4 years). The East of England has experienced even stronger overall decline, with a drop of 29% cows. Again, declines have been strongest in the largest sized herds (50-200+ cows).

Table 3.6 Total number of dairy livestock in different sizes of herd, 2001 and 2005

Size of Herd	**Number of dairy livestock**			
England	2001	2005	Change	% change
0:< 10	7,100	7,600	500	7%
10:< 30	35,800	30,700	-5,100	-14%
30:< 40	46,000	58,100	12,100	26%
40:< 50	60,300	69,500	9,200	15%
50:< 70	170,500	147,600	-22,900	-13%
70:< 100	288,400	231,100	-57,300	-20%
100:< 200	622,400	493,500	-128,900	-21%
200 & Over	259,700	273,200	13,500	5%
Total	*1,490,200*	*1,311,400*	*-178,800*	*-12%*
East	2001	2005	Change	% change
0:< 10	410	480	70	17%
10:< 30	990	910	-80	-8%
30:< 40	1,020	1,060	40	4%
40:< 50	770	750	-20	-3%
50:< 70	2,500	2,300	-200	-8%
70:< 100	6,920	5,100	-1,820	-26%
100:< 200	19,250	11,070	-8,180	-42%
200 & Over	8,770	7,000	-1,770	-20%
Total	*40,630*	*28,670*	*-11,960*	*-29%*

Source: Defra, June Agricultural Census

3.5.8 Table 3.7 shows the changing numbers of holdings of the different sized herds. Overall in England, the number of dairy holdings has declined by 17%. The largest

declines have been in the holdings of 50-200 cows, although the number of smallest holdings has declined as well. Similar trends are shown for the East.

3.5.9 Considering the livestock and holdings data together suggests that in England, the very largest holdings are consolidating herds and increasing in size to a certain extent. The middle-sized holdings (30-50 cows) are staying similar, but the smallest sized holdings are declining. The same is true of the East of England, except there is no sign of the very largest farms consolidating. Given the decline in holdings with herds of 0-10 cows, the increase in the number of dairy cows in this size of herd does not indicate a growing number of small scale dairy holdings in the region.

Table 3.7 Total number of dairy holdings of different sized herds, 2001 and 2005

Size of Herd	**Number of dairy holdings**			
England	2001	2005	Change	Change %
0:< 10	2,200	1,800	-400	-18%
10:< 30	1,700	1,300	-400	-24%
30:< 40	1,300	1,400	100	8%
40:< 50	1,300	1,300	0	0%
50:< 70	2,800	2,200	-600	-21%
70:< 100	3,400	2,600	-800	-24%
100:< 200	4,500	3,500	-1,000	-22%
200 & Over	900	900	0	0%
Total	*18,100*	*15,000*	*-3,100*	*-17%*
East	2001	2005	Change	Change %
0:< 10	140	130	-10	-7%
10:< 30	50	40	-10	-20%
30:< 40	30	30	0	0%
40:< 50	20	20	0	0%
50:< 70	40	40	0	0%
70:< 100	80	60	-20	-25%
100:< 200	140	80	-60	-43%
200 & Over	30	20	-10	-33%
Total	*530*	*410*	*-120*	*-23%*

Source: Defra, June Agricultural Census

3.5.10 Our survey of farmers found that the average number of dairy cows across all holdings was 15. However, on those farms with only dairy cattle, the numbers were much higher, averaging 166, with the maximum number being 490 on a single dairy holding.

Table 3.8 Dairy cows:

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	0.0	0.0	150.0	0.0	0.0
Mean	14.8	11.0	166.3	1.8	18.1
Min	0.0	0.0	1.0	0.0	0.0
Max	490.0	167.0	490.0	150.0	490.0
Responses	*258*	*82*	*23*	*103*	*166*

Source: PACEC Survey of farmers, land managers and graziers (Q13D)

3.5.11 Over three quarters (32 out of 41) of those with dairy cows had seen no change in livestock numbers in the past 5 years, although those farms with dairy cows exclusively were more likely to have seen a change. A quarter of dairy farmers had seen an increase in the number of dairy cows on their holding and the same number had seen a decline.

Table 3.9 What has happened to livestock numbers in past 5 years? (please tick one)-Dairy cows.

	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Gone down	17	22	25	21	50
No Change	78	74	**50**	79	50
Gone up	5	4	25	0	0
Number of respondents	*41*	*27*	*8*	*19*	*2*

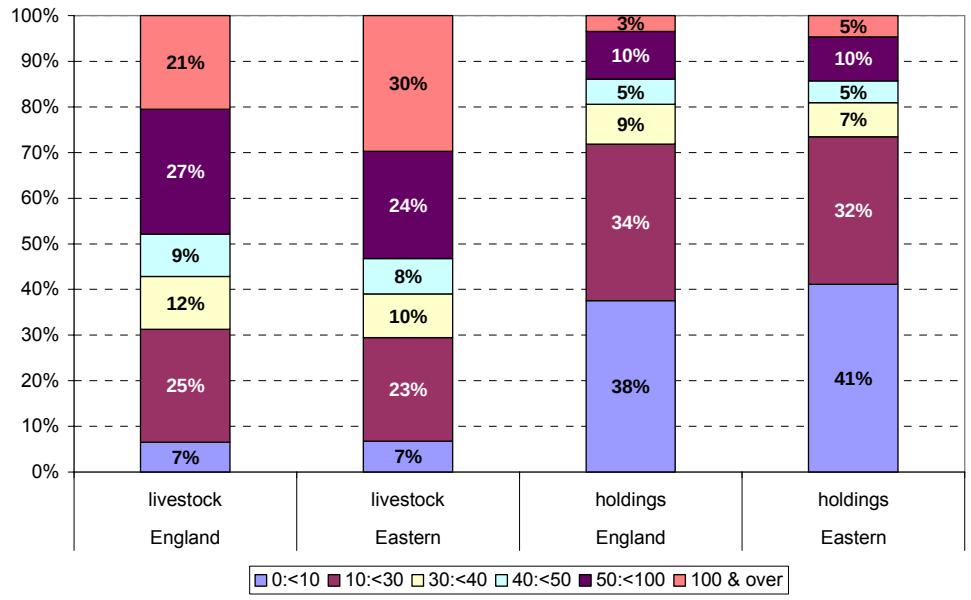
A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q13g4)

Beef

Present

3.5.12 According to the June Agricultural Census, the average number of beef cattle per holding is around 26 in England – similar to the East of England. The chart below shows that the East of England has similar proportions of the different sizes of holdings to England as a whole. However, in terms of livestock, there are more cattle in the largest sized holdings than in England (100 + beef cattle).

Figure 3.13 Numbers of Beef Cattle and Holdings by Size of Herd



Source: Agricultural Census 2005

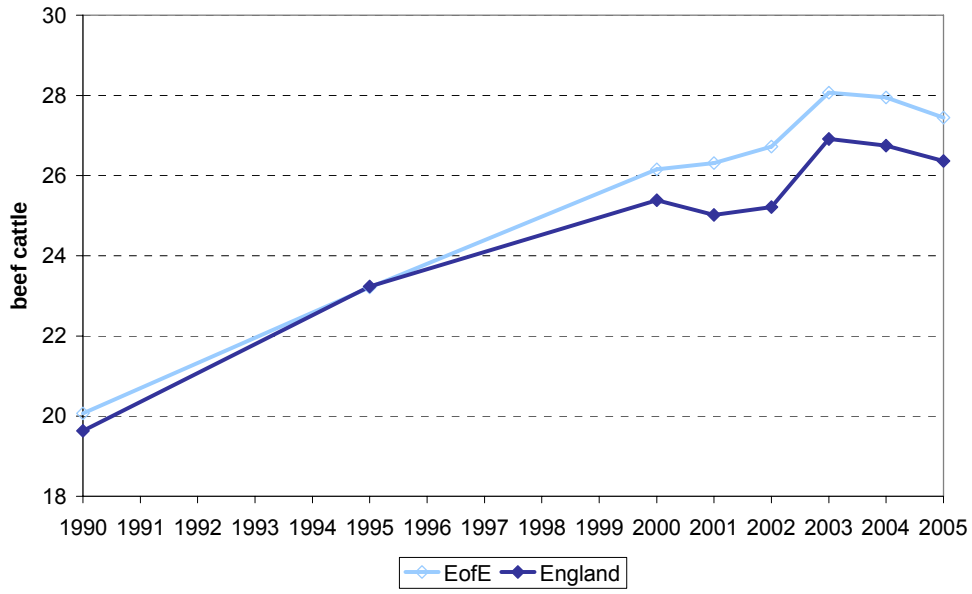
Past

Similar (and growing) numbers of beef cattle per holding in England and the East

3.5.13 The mean number of cattle per holding has increased in England since 1990 from around 20 per holding. The East of England has a similar number of cattle per holding, also increasing from around 20 in 1990. Norfolk and Hertfordshire have a higher mean number of beef cattle per holding (33) than England and the East, whilst Bedfordshire has a much lower number (23).

3.5.14 This increase in the number of cattle per holding is likely to result from efficiencies of scale; the larger a farm, the more cost-efficient it is as fixed costs are spread across more cattle. There are also economies of scale of the labour involved.

Figure 3.14 Mean number of beef cattle per holding, 1990-2005[41]



Source: Defra June Census

3.5.15 Table 3.10 shows the number of beef livestock in different sizes of herd. In England, the overall number has increased since 2001, with the largest increases in herds of 10-30 cattle, and 100+ cattle. There were small increases in the middle-sized herds, but declines in the very smallest size of herd.

3.5.16 In contrast, in the East of England overall the number of beef cattle has declined, by around 3%. The largest increases were in the very largest herds, with a 12% increase. However, there were strong declines in livestock in herds of 50-100 cattle. The very smallest sized herds declined as well, by around 13%.

[41] Mean figure calculated using total number of beef cattle from Census divided by total number of beef holdings. This does not, therefore, include mixed holdings.

Table 3.10 Total number of beef livestock in different sizes of herd, 2001 and 2005

Size of Herd	Number of beef livestock			
England	2001	2005	Change	% change
0:<10	54,200	49,100	-5,100	-9%
10:< 30	161,200	185,800	24,600	15%
30:< 40	81,000	87,200	6,200	8%
40:< 50	65,700	70,200	4,500	7%
50:< 100	196,000	205,300	9,300	5%
100 & over	142,100	154,500	12,400	9%
Total	*700,100*	*752,200*	*52,100*	*7%*
East	2001	2005	Change	% change
0:<10	3,460	3,020	-440	-13%
10:< 30	9,720	10,110	390	4%
30:< 40	4,340	4,270	-70	-2%
40:< 50	3,460	3,450	-10	0%
50:< 100	13,230	10,500	-2,730	-21%
100 & over	11,850	13,270	1,420	12%
Total	*46,050*	*44,630*	*-1,420*	*-3%*

Source: Defra June Agricultural Survey

3.5.17 Beef holdings are shown in Table 3.11. The number of holdings has increased by 2% in England, with the largest growth occurring in the number of holdings with 10-30 cattle. Only the very smallest size of holdings (0-10 cows) has declined, and there has been a large proportional growth in the very largest size of holdings (100+ cows).

3.5.18 In the East of England, there has been a decline overall in the total number of beef holdings. The largest declines have been in the very smallest holdings (0-10 cows) and 50-100 cows, which indicates that declines in beef livestock numbers have been brought about by the closure or consolidation of holdings with these sizes of herd. There has been a small increase in the number of very largest holdings. This shows there is a consolidation towards the largest size of holding in the East and movement away from the smallest holdings. This is likely to be so farmers can benefit from economies of scale of having larger herds.

Table 3.11 Total number of beef holdings of different sized herds, 2001 and 2005

Size of Herd	Number of beef holdings			
England	2001	2005	Change	% change
0:<10	12,100	10,700	-1,400	-12%
10:< 30	8,500	9,800	1,300	15%
30:< 40	2,300	2,500	200	9%
40:< 50	1,400	1,600	200	10%
50:< 100	2,800	3,000	200	8%
100 & over	900	1,000	100	12%
Total	*28,000*	*28,500*	*500*	*2%*
East				
0:<10	790	670	-120	-15%
10:< 30	510	530	20	4%
30:< 40	120	120	0	-2%
40:< 50	70	80	10	5%
50:< 100	190	160	-30	-16%
100 & over	70	80	10	7%
Total	*1,750*	*1,630*	*-120*	*-7%*

Source: Defra June Agricultural Survey

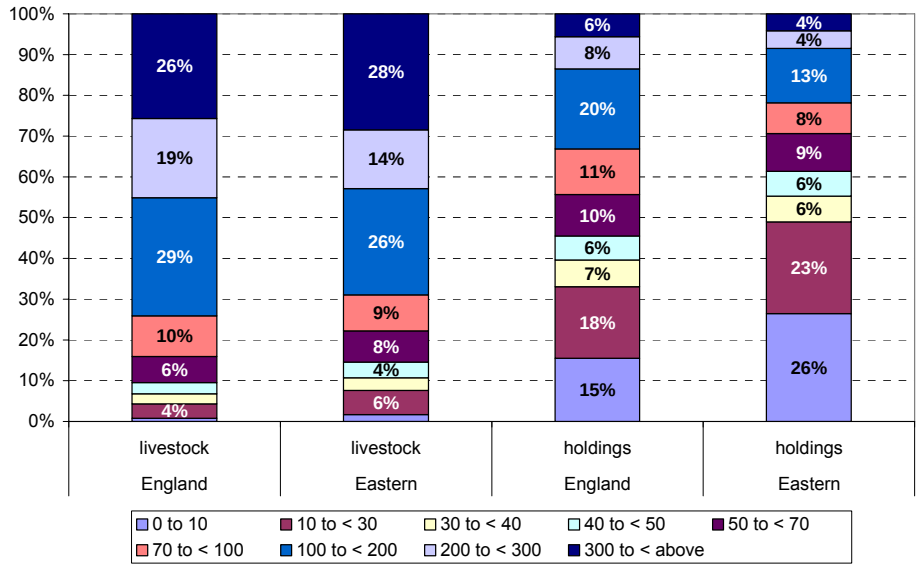
Total Cattle

Present

3.5.19 According to the June Agricultural Census, the average number of total cattle per holding is around 98 in England – much higher than the East of England, which has 74.

3.5.20 For total cattle, the East has higher proportions of holdings with the smallest sized herds than England, skewed by the number of dairy cattle in this category. Overall, however, the proportions of livestock in the different sized herds are similar in the East to England as a whole. The over-representation of livestock in the largest sized farms for beef is balanced out by the lower proportions for dairy.

Figure 3.15 Numbers of Total Cattle and Holdings by Size of Herd



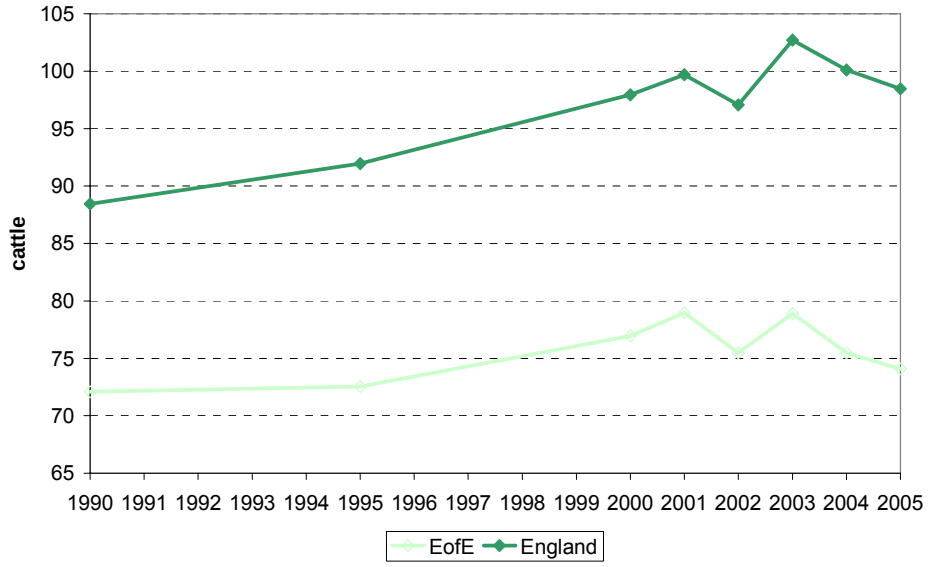
Source: Agricultural Census, 2005

Past

Growing numbers of beef cattle per holding in England and the East, but recent decline

3.5.21 Although the mean number of total cattle in England was higher than in the East, the trends have been similar, with growth between 1990 and 2003, with a temporary drop in 2002, then decline in 2004 and 2005

Figure 3.16 Mean number of total cattle per holding, 1990-2005[42]



Source: Defra June Census

3.5.22 Our survey of farmers, land managers and graziers asked respondents to state the number of cattle on their land according to the type and age of their cattle. On an average holding, there were 28 male bovine animals and heifers aged between 6 and 24 months and 7 older than 25 months.

Table 3.12 Male bovine animals & heifers aged 6 – 24 months:

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	7.0	16.0	20.0	0.0	7.0
Mean	27.6	38.8	31.4	12.9	24.4
Min	0.0	0.0	0.0	0.0	0.0
Max	1,000.0	1,000.0	100.0	140.0	120.0
Responses	*115*	*82*	*11*	*53*	*23*

Source: PACEC Survey of farmers, land managers and graziers (Q13B)

[42] Mean figure calculated using total number of beef cattle from Census divided by total number of beef holdings. This does not, therefore, include mixed holdings.

Table 3.13 Male bovine animals & heifers older than 24 months:

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	0.0	0.0	23.0	0.0	0.0
Mean	6.5	9.1	28.7	6.8	11.0
Min	0.0	0.0	0.0	0.0	0.0
Max	150.0	150.0	150.0	150.0	150.0
Responses	*115*	*82*	*11*	*53*	*23*

Source: PACEC Survey of farmers, land managers and graziers (Q13A)

3.5.23 On average, there were 20 suckler cows, and more on those holdings farming beef cattle.

Table 3.14 Suckler cows:

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	0.0	9.0	0.0	0.0	0.0
Mean	19.9	27.9	7.5	8.0	15.4
Min	0.0	0.0	0.0	0.0	0.0
Max	1,000.0	1,000.0	80.0	90.0	90.0
Responses	*115*	*82*	*11*	*53*	*23*

Source: PACEC Survey of farmers, land managers and graziers (Q13C)

3.5.24 There were on average 20 male and female bovine animals under 6 months but these numbers were much higher for dairy farmers (mean: 46).

Table 3.15 Male & female bovine animals below 6 months:

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	0.0	0.0	5.0	0.0	0.0
Mean	19.1	26.8	45.5	5.9	6.9
Min	0.0	0.0	0.0	0.0	0.0
Max	1,000.0	1,000.0	400.0	100.0	40.0
Responses	*115*	*82*	*11*	*53*	*23*

Source: PACEC Survey of farmers, land managers and graziers (Q13E)

3.5.25 Of those surveyed, there were on average 78 cattle (beef and dairy) per holding. (June Agricultural Census 2005, East of England; average total cattle per holding: 74)

Table 3.16 All cattle

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	25.0	35.0	4.0	0.0	24.0
Mean	78.2	115.3	88.3	49.1	73.3
Min	0.0	3.0	0.0	0.0	0.0
Max	3,031.0	3,031.0	560.0	600.0	700.0
Responses	*237*	*68*	*20*	*89*	*145*

Source: PACEC Survey of farmers, land managers and graziers (Q13bef)

3.5.26 When respondents were asked how the numbers of cattle on their land had changed in the past 5 years, generally most respondents had not witnessed any change in numbers over this period. However, there were some variations on the basis of the sex and age of cattle. A quarter of respondents had seen a fall in male bovines aged between 6 and 24 months and especially those with beef holdings.

Table 3.17 What has happened to livestock numbers in past 5 years? (please tick one)-Male Bovine 6 to 24 months.

	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Gone down	25	**32**	29	25	0
No Change	61	**51**	43	63	100
Gone up	13	17	29	13	0
Number of respondents	*67*	*53*	*7*	*24*	*2*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q13g2)

3.5.27 When asked to state what minimum number of cattle would be required for the area of grazing land in order to ensure grazing animals would not become uneconomical, the average number of suckler cows required was 12. Understandably, as the area of grassland managed increases, the numbers required increases.

Table 3.18 Minimum numbers of livestock: Suckler cows

	Statistics of all respondents. (by Area of Grassland managed.)						
	Total	0 to 9 Ha	10 to 19 Ha	20 to 49 Ha	50 to 99 Ha	100+ Ha	Not known
Median	0.0	0.0	2.0	0.0	20.0	25.0	0.0
Mean	12.2	1.3	6.1	6.9	27.1	31.8	16.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	100.0	6.0	20.0	28.0	50.0	80.0	100.0
Responses	*61*	*9*	*14*	*13*	*7*	*5*	*13*

Source: PACEC Survey of farmers, land managers and graziers (Q71C)

3.5.28 The minimum number of livestock (including dairy cows and sheep) required per size of grassland is shown in the table below.

Table 3.19 Minimum numbers of livestock: Total livestock

	Statistics of all respondents. (by Area of Grassland managed.)						
	Total	0 to 9 Ha	10 to 19 Ha	20 to 49 Ha	50 to 99 Ha	100+ Ha	Not known
Median	45.0	10.0	35.5	45.0	90.0	380.0	60.0
Mean	142.3	26.8	42.3	86.4	150.6	808.2	123.7
Min	0.0	0.0	8.0	5.0	20.0	40.0	1.0
Max	3,100.0	150.0	158.0	200.0	480.0	3,100.0	600.0
Responses	*60*	*9*	*14*	*13*	*7*	*5*	*12*

Source: PACEC Survey of farmers, land managers and graziers (Q71tot)

Sheep

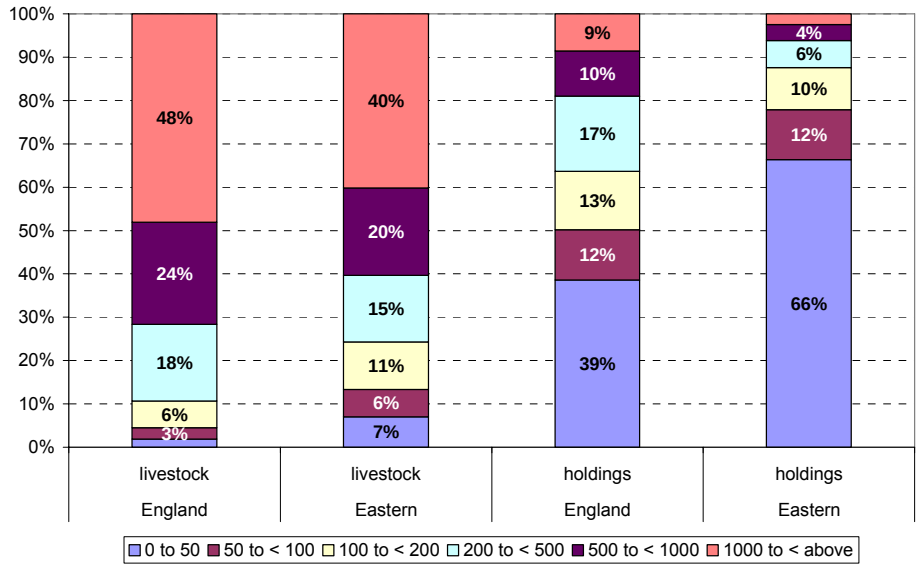
Present

3.5.29 By 2005, England had around 310 sheep per holding, compared to around 130 in the East of England[43].

3.5.30 The over-representation in the East of England of holdings with the smallest size of flock is shown clearly in the chart below. Two thirds of holdings have flocks with fewer than 50 sheep. Just 2% of holdings have flocks with more than 1000 sheep, compared to a national figure of 9%. These numbers are a lot lower in the East of England as the England figures are skewed by the very large flock sizes in the rest of the country, particularly in the North West.

[43] Source: June Agricultural Census

Figure 3.17 Numbers of Sheep and Holdings by Size of Flock



Source: Agricultural Census, 2005

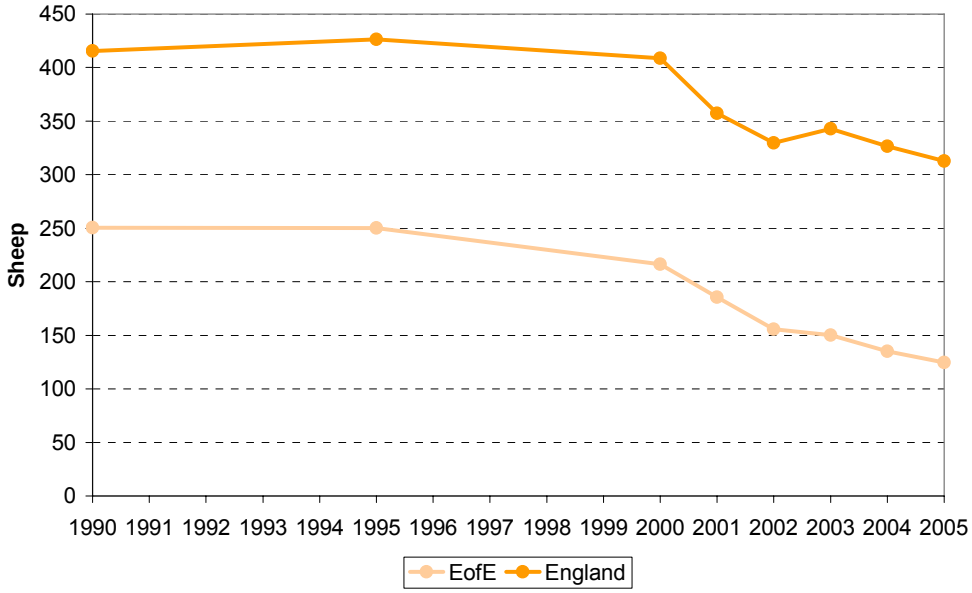
Past

Declining number of sheep per holding in the East of England and England as a whole, but much higher absolute number of sheep per holding in England

3.5.31 The sizes of holdings (in terms of sheep per holding) are shown in Figure 3.18 below. Census data shows that the average (mean) number of sheep per holding in all geographical areas has declined since 2000, following steady levels since 1990.

3.5.32 The average size of holdings may have declined due to the increase in 'hobby' farming, whereby small flocks are kept more for interest than commercial purposes. The East of England is likely to have fewer animals per holding than England as the East has fewer specific sheep farms; sheep tend to be ancillary to other uses, compared to hill-farming in the North, where there will be more sheep per holding. The introduction of the Single Payment further reduces the incentive to pack in numbers.

Figure 3.18 Mean number of sheep per holding, East of England, 1990-2005[44]



Source: Defra June Census

3.5.33 The number of sheep in different sizes of flock is shown in Table 3.20 below. In England, the number of sheep declined overall, with the largest drops occurring in the very largest flocks (500+). Increases did occur in flocks of 0-500, with the largest in 100-200 sheep flocks. In the East of England, the pattern was similar, although the drop in numbers was more pronounced, at 18% decline compared to 2% decline in England.

[44] Mean figure calculated using total number of sheep from Census divided by total number of sheep holdings. This does not, therefore, include mixed holdings.

Table 3.20 Total number of sheep livestock in different sizes of flock, 2001 and 2005

England	2001	2005	Change	% change
0:< 50	282,900	300,000	17,100	6%
50:< 100	377,600	411,000	33,400	9%
100:< 200	858,100	980,700	122,600	14%
200:< 500	2,759,000	2,808,700	49,700	2%
500:< 1000	4,072,100	3,746,300	-325,800	-8%
1000 & Over	7,789,100	7,630,700	-158,400	-2%
Total	*16,138,800*	*15,877,500*	*-261,300*	*-2%*
East	2001	2005	Change	% change
0:< 50	21,730	24,320	2,590	12%
50:< 100	18,060	21,770	3,710	21%
100:< 200	32,610	37,880	5,270	16%
200:< 500	71,480	53,190	-18,290	-26%
500:< 1000	92,890	69,670	-23,220	-25%
1000 & Over	185,730	138,800	-46,930	-25%
Total	*422,500*	*345,630*	*-76,870*	*-18%*

Source: Defra June Agricultural Survey

3.5.34 The number of holdings with sheep has grown overall in England, with the largest growth in the smallest sized flocks. There has been decline in the number of holdings with 500 or more sheep. The same is true of the East of England, where the number of holdings with the smallest sized flocks has increased by 38%. This is likely to result from increases in 'hobby' farming. This will be particularly pronounced in the East, where demand for housing is strong in parts, and farm holdings may be split for residential use, and people may choose to keep a small number of sheep.

Table 3.21 Total number of sheep holdings of different sized flocks, 2001 and 2005

England	2001	2005	Change	% change
0:< 50	15,300	19,600	4,300	28%
50:< 100	5,200	5,900	700	13%
100:< 200	6,000	6,900	900	15%
200:< 500	8,500	8,800	300	4%
500:< 1000	5,800	5,300	-500	-9%
1000 & Over	4,400	4,400	0	0%
Total	*45,200*	*50,800*	*5,600*	*12%*
East	2001	2005	Change	% change
0:< 50	1,330	1,840	510	38%
50:< 100	260	320	60	23%
100:< 200	230	270	40	17%
200:< 500	220	170	-50	-23%
500:< 1000	130	100	-30	-23%
1000 & Over	100	70	-30	-30%
Total	*2,280*	*2,770*	*490*	*21%*

Source: Defra June Agricultural Census

3.5.35 Respondents to our questionnaire had an average of 110 sheep on their holding, and a maximum of 8,000. (June Agricultural Census 2005, East of England; average total sheep per holding: 130)

Table 3.22 Sheep:

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	0.0	0.0	0.0	70.0	0.0
Mean	110.0	167.9	350.4	275.5	119.6
Min	0.0	0.0	0.0	1.0	0.0
Max	8,000.0	8,000.0	8,000.0	8,000.0	8,000.0
Responses	*258*	*82*	*23*	*103*	*166*

Source: PACEC Survey of farmers, land managers and graziers (Q13F)

3.5.36 A third (18 out of 54) of those with sheep on their land had seen numbers decline in the past five years. Respondents with only sheep on their land were more likely to have witnessed a change in livestock numbers. Just under half (15 out of 35) of exclusively sheep holdings had seen numbers on their land fall in this period.

Table 3.23 What has happened to livestock numbers in past 5 years? (please tick one)-Sheep

	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Gone down	33	**19**	25	**43**	50
No Change	52	63	50	**34**	50
Gone up	15	19	25	**23**	0
Number of respondents	*54*	*27*	*4*	*35*	*4*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q13g6)

3.5.37 When asked what minimum number of sheep would be required in order for the grassland managed to remain economically viable, on average, just over 100 sheep would be required per holding. However, clearly, larger areas of grassland demand more sheep than smaller areas, as shown by the following table.

Table 3.24 Minimum numbers of livestock: Sheep

	Statistics of all respondents. (by Area of Grassland managed.)						
	Total	0 to 9 Ha	10 to 19 Ha	20 to 49 Ha	50 to 99 Ha	100+ Ha	Not known
Median	0.0	10.0	0.0	0.0	0.0	250.0	0.0
Mean	103.9	22.2	24.6	61.5	78.6	710.0	65.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	3,000.0	150.0	150.0	200.0	300.0	3,000.0	600.0
Responses	*60*	*9*	*14*	*13*	*7*	*5*	*12*

Source: PACEC Survey of farmers, land managers and graziers (Q71F)

3.6 Stocking Rates

3.6.1 The stocking rate shows the intensity of grazing on grasslands, which is of vital importance in this study. More discussion on stocking densities will take place in phase 3 of the study when considering the environmental impacts of under grazing in the region.

3.6.2 Farmers, land managers and graziers were asked to say what had happened to stocking densities on their land in the past 5 years. For almost half of respondents (61 out of 132), stocking densities have fallen and for two fifths (51 out of 132) densities have stayed the same. Only in a small number of cases (18 out of 132) have densities risen. There were no significant differences in these results across livestock types.

Table 3.25 What has happened to stocking density over the past 5 years? (Please tick one)

	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
It has fallen	46	41	50	53	52
It has risen	14	18	10	16	10
It has stayed the same	39	41	40	31	38
Number of respondents	*132*	*80*	*10*	*51*	*42*

Source: PACEC Survey of farmers, land managers and graziers (Q14)

3.6.3 Thus it seems the current trend is towards extensifying grazing practice. Indeed, a third of respondents to our survey (35 out of 101) said that production systems had extensified in the last 5 years. Very few (just 6%) had seen production systems become more intensive, but this was more common in the county of Norfolk.

Table 3.26 Generally, how have production systems on the land which is grazed changed over the past 5 years? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
They have become more intensive	6	9	0	**14**	0	0	0	0	n/a
They have become more extensive	35	35	33	34	50	25	27	0	n/a
They have not changed	59	57	67	52	50	75	73	100	n/a
Number of respondents	*101*	*23*	*21*	*29*	*12*	*4*	*11*	*1*	*0*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q26)

3.7 Composition of livestock

3.7.1 Farmers, land managers and graziers were asked if they had made any changes to the composition of their livestock in the last 5 years in response to changes in the red meat industry. A quarter (17 out of 72) said that they had, and this was especially true of those with between 20 and 49 animals on their holding.

Table 3.27 Have you made changes to the composition of your livestock (sheep/cattle) in the last 5 years in response to changes in the red meat industry (e.g. introduction of local breeds, increase proportion of rare breeds)? (Please tick one)

	Percentage of all respondents (by total number of livestock grazed.)						
	Total	1 to 19	20 to 49	50 to 99	100 to 249	250+	Not known or no stock
Yes	24	11	**40**	0	8	45	17
No	76	89	**60**	100	92	55	83
Number of respondents	*72*	*9*	*20*	*7*	*13*	*11*	*12*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q44A)

3.7.2 Most changes were with regard to the pedigree of the breeding bull, with 3 respondents switching to Aberdeen Angus and 3 to a rare breed bull. While many changes were to increase the quality of meat, some more dramatic changes had also taken place, including a switch from dairy to beef and lamb production. It was noted that any change in the composition of a herd will take considerable time, given the time required to establish a breeding herd.

Table 3.28 Please give details of any changes to the composition of your livestock

	Percentage of all respondents (by total number of livestock grazed.)						
	Total	1 to 19	20 to 49	50 to 99	100 to 249	250+	Not known or no stock
Use Aberdeen Angus Bull instead of Continental breeds	19	0	29	n/a	0	0	100
Purchased a Rare breed bull to improve quality of meat	19	50	29	n/a	0	0	0
Starting British White cattle herd	6	0	14	n/a	0	0	0
Now raise Lambing Ewes	6	0	0	n/a	0	20	0
Increase output for shop	6	0	0	n/a	0	20	0
Change from dairy to Beef & Lamb	6	0	0	n/a	0	20	0
More cross breeding	6	0	14	n/a	0	0	0
Restrictions have forced producers to change	6	0	0	n/a	0	20	0
Changed rams based on what was available locally	6	0	0	n/a	100	0	0
Trying to improve quality of cattle purchased	6	50	0	n/a	0	0	0
Established a herd of pure bred cattle	6	0	14	n/a	0	0	0
Use of low fat meat bull	6	0	0	n/a	0	20	0
Breeding takes years to establish	6	0	14	n/a	0	0	0
Current pedigree still fetches good price	6	0	14	n/a	0	0	0
Number of respondents	*16*	*2*	*7*	*0*	*1*	*5*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q44B)

3.8 Arrangements for grazing cattle/sheep on a holding

3.8.1 Most (93 out of 133) respondents owned the cattle/sheep which they managed although land managers were less likely to own the livestock. In 34 out of 188 cases, the livestock was owned by a local farmer.

Table 3.29 Do you own the cattle/sheep? (Please tick one)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Yes I own all the cattle/sheep	70	50	85	74	75	**25**	57
Yes I own some of the cattle/sheep	7	7	8	8	0	0	0
No	23	43	8	19	25	75	43
Number of respondents	*133*	*14*	*13*	*91*	*4*	*4*	*7*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q18)

Table 3.30 Who owns the cattle/sheep which are not yours (e.g. local farmer, non-local farmer, grazier, conservation body)? (Please give details)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
I/we do	73	**0**	**0**	**0**	0	0	**96**
Local farmer	18	**86**	50	**75**	67	100	**1**
Grazier	3	29	0	14	0	0	**0**
Owned by neighbour	2	0	0	0	0	0	2
Do not graze other peoples livestock	1	14	0	0	33	0	0
Non-local farmer	1	0	0	4	0	0	0
Owned by contractors	1	0	0	0	0	0	1
Tenant owns majority	1	0	0	0	0	0	1
DEFRA	1	0	0	0	0	0	1
Wildlife trust	1	0	0	0	0	0	1
None/nothing	3	0	25	18	0	0	**0**
Don't know/don't want to say	1	0	25	0	0	0	0
Number of respondents	*188*	*7*	*4*	*28*	*3*	*2*	*144*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q21A)

3.8.2 Those respondents who owned all or some of the livestock they managed were asked under what arrangement the cattle/sheep were kept on the land. In more than half of cases (55 out of 95) the respondent owned the land, although this was less common for land conservationists. Keeping livestock on land under a formal tenancy agreement was also a popular arrangement (in 39 out of 95 cases), especially among farmers, but this was not an arrangement undertaken by any land manager.

Table 3.31 Under what arrangement(s) are *your* cattle/sheep kept on the land? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
I own the land	58	86	**10**	61	33	100	75
I graze my cattle/sheep under a tenancy agreement	41	**0**	40	**47**	33	0	25
I graze my cattle/sheep under an informal agreement	20	14	10	21	0	100	25
I graze my cattle/sheep under a licence agreement	15	0	10	17	33	0	0
Other	8	29	60	**0**	0	0	0
Number of respondents	*95*	*7*	*10*	*70*	*3*	*1*	*4*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q19A)

3.8.3 Interestingly, when respondents were asked under what arrangement the cattle/sheep which did not belong to them was kept on the land, the arrangements were more likely to be informal, with 27 out of 41 having no formal agreement and a further 10 having a licence agreement.

Table 3.32 Under what arrangement(s) are cattle/sheep (which are *not* your own) kept on the land? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
The cattle/sheep are grazed under an informal agreement	66	50	50	75	100	0	75
The cattle/sheep are grazed under a licence agreement	24	25	0	25	0	0	50
The cattle/sheep are grazed under a tenancy agreement	10	13	50	4	0	50	0
The owner of the land owns the cattle/sheep	7	13	0	8	0	0	0
Other	10	0	0	13	0	50	0
Number of respondents	*41*	*8*	*2*	*24*	*1*	*2*	*4*

Source: PACEC Survey of farmers, land managers and graziers (Q20A)

3.8.4 Farmers and land managers were asked, if the grassland is part of an agricultural holding, whether any of the cattle/sheep belonging to the farm enterprise were grazed on other people's land. A quarter of respondents (23 out of 96) said that this did occur and on average 63% of livestock from an agricultural holding were grazed elsewhere, indicating a considerable amount of stock movement between holdings.

Table 3.33 If the grassland is part of an agricultural holding, are any of the cattle/sheep belonging to the farm enterprise grazed on other people's land? (Please tick one)

	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Yes	24	28	43	18	38
No	76	72	57	82	63
Number of respondents	*96*	*60*	*7*	*33*	*16*

Source: PACEC Survey of farmers, land managers and graziers (Q23A)

Table 3.34 If 'Yes', please indicate the percentage of the total cattle/sheep grazed in this way

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Median	80.0	70.0	25.0	80.0	100.0
Mean	63.3	57.5	22.3	69.1	100.0
Min	1.5	1.5	15.0	10.0	100.0
Max	100.0	100.0	27.0	100.0	100.0
Responses	*22*	*19*	*3*	*7*	*3*

Source: PACEC Survey of farmers, land managers and graziers (Q23B)

3.8.5 Indeed, when the livestock were not on the respondents' grassland, 22 out of 116 respondents said that they moved to other grassland. More typically, in 68 out of 116 cases, cattle/sheep are housed in indoor pens. It is perhaps interesting to note that holdings in Norfolk were more likely to keep their livestock in outdoor rather than indoor pens.

Table 3.35 What happens to the cattle/sheep when they are not on the grassland you manage? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Cattle/sheep are housed in outdoor pens	11	12	**0**	**21**	18	13	0	0	n/a
Cattle/sheep are housed in indoor pens	59	64	63	**39**	82	63	64	100	n/a
They move to other grassland	19	16	22	27	0	13	18	0	n/a
Other	11	8	15	12	0	13	18	0	n/a
Number of respondents	*116*	*25*	*27*	*33*	*11*	*8*	*11*	*1*	*0*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q17A)

3.9 Constraints

3.9.1 Farmers, land managers and graziers were asked if they experienced any constraints relating to grazing sheep / cattle on their site. The most frequently cited constraints were boundary maintenance (47% or 50 out of 106) and low prices for their produce (46% or 49/106). Public liability was also a constraint for 29% of respondents (34 out of 116). A range of constraints were cited, with some more common among specific livestock. For example, handling constraints were statistically more likely for those with beef cattle or sheep, while respondents with dairy cows were more likely than others to be constrained by water availability.

Table 3.36 Do you experience any of the following constraints relating to grazing sheep/cattle on your site? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Boundary maintenance	47	51	50	53	44
Low prices for produce	46	46	70	49	49
Public liability	29	34	50	28	28
Risk / occurrence of vandalism/crime	23	24	40	26	26
Marketing constraints	22	23	30	28	**10**
Provision of water	22	23	**50**	30	21
Handling of sheep and cattle (loading facilities)	21	**28**	40	**30**	26
Poor availability of skilled labour	20	21	30	28	21
Lack of outlets for products	18	20	20	19	21
Site location	15	17	30	17	23
Public opinion (e.g. welfare concerns, vegetarianism)	14	18	20	17	13
Difficulties sourcing cattle/sheep	13	17	20	11	8
Small field sizes	12	13	30	11	13
Presence of scrub	9	11	10	4	5
No constraints	9	6	0	9	13
Poor availability of business advice/support	3	4	10	2	5
Other	8	7	0	9	3
Number of respondents	*116*	*71*	*10*	*47*	*39*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q27A)

3.10 Key Findings

Panel 3.4 Key Findings – Cattle and Sheep Grazing in the East of England

The East of England

- Historically strong in wool and dairy production, the East of England now has more cereals and cropping farms than the English average.
- The East of England is under-represented in cattle, sheep and dairy farming compared to England.
- Within the East of England, farmland is concentrated in Norfolk, Suffolk, Cambridgeshire and Essex.

Total Cattle

- 'Total cattle' includes dairy, beef, breeding replacement herds and other cattle.
- Within the East of England, livestock farming is concentrated in Norfolk, Suffolk and Essex.

- The number of cattle holdings has declined in the East of England since 1990, as have the number of livestock – although this decline has been levelling off since 2002.
- On average, there are more livestock per holding in England as a whole than in the East, at 98 cattle per holding compared to 74.

Dairy

- The East of England has around 3% of England's dairy holdings and 2% of the dairy population. The number of holdings in the East of England has have declined since 1990, by 54%, compared to a 48% drop in England.
- The East has seen a strong decline in the number of dairy cows, with numbers dropping from 67,000 in 1990 down to 29,000 by 2005. There are twice as many dairy cows as beef in England, but there are more beef cows than dairy cows in the East of England. These declines in dairy numbers are likely to result from low profitability and relatively higher profitability of other farming, such as beef.
- The mean number of dairy cows per holding in the East of England was fairly steady until 2003, after which the mean number has declined quite strongly. This compares to the trend of England as a whole, which increased strongly up to 2003, then also started to decline, but not as sharply. Increases in dairy cows per holding in England are likely to result from exploiting economies of scale up to a point, particularly for larger farmers where the machinery is already available to use and more capacity can be squeezed. Holdings with a smaller number of dairy cows to begin with, as in the East, are likely to find it harder to expand as they will need to make initial capital investments to introduce new machinery, buildings etc.
- In the PACEC survey 50% of responding dairy farmers reported a declining stocking density on their farms over the past 5 years and 40% reported no change.

Beef

- The East of England has around 5% of the beef holdings in England. The number of beef holdings has declined slightly since 1990, in line with national trends.
- The number of beef cows has remained relatively steady in England and in the East of England, overtaking the number of dairy cows. This change in proportions is likely to reflect increasing profitability of beef farming compared to dairy.
- The mean number of beef cows per holding grew sharply between 1990 and 2003, in both England and the East of England, likely reflecting the exploitation of economies of scale to improve profitability. It is easier to increase the number of beef cattle per holding than dairy cattle as the capital investment required is lower: cow sheds are relatively inexpensive in comparison to dairy equipment. However, the average number of beef cows per holding has recently started to decline, possibly resulting from the CAP reform's change in the subsidies system, which no longer rewards larger sizes of herd.
- The PACEC survey found that 41% of respondents with beef cattle have witnessed a fall in their stocking densities and 41% have not changed their stocking density in the past 5 years.
- A quarter of farmers who responded have changed the composition of their livestock in the last 5 years as a result of changes in the red meat industry, some of whom have changed towards rarer or higher values of bulls to improve the quality of meat.

Sheep

- Around 5% of England's sheep holdings are in the East of England, with around 2% of the sheep population. There are now more sheep holdings in the East of England than there were in 1990, possibly reflecting the rise in the number of holdings that are split for residential purposes, and the increase in 'hobby

farming', where people keep a small flock of sheep for interest rather than commercial purposes.

- The number of sheep declined by a third between 1990 and 2005, mainly resulting from the dramatic drop in sheep population between 2000 and 2001 caused by the Foot and Mouth cull. Numbers have not started to increase back to former levels, instead remaining steady. It is suggested anecdotally that this is because sheep were over-supplied prior to F&M and the cull has simply removed the surplus numbers.
- The mean number of sheep per holding has declined, with an increased rate of decline since 2000. This fits with the conjecture that there are more sheep holdings, of a smaller size, with fewer sheep on each holding. The PACEC survey found that 53% of responding farmers with sheep have decreased their stocking density and 31% have remained at the same stocking density in the past 5 years

4 Jobs and Gross Value Added (GVA) supported by grazing sheep and cattle in the East of England

4.1.1 This chapter looks at the total number of jobs supported by grazing cattle and sheep in the East of England and the Gross Value Added (GVA)[45] generated by grazing activity in the region. Total employment is broken down into direct and indirect employment.

4.2 Direct Employment

4.2.1 In the East of England, there were approximately 50,100 people employed in agriculture in 2005.

Table 4.1 Labour in agriculture in East of England, 2005

Farmers (full time)	10,585
Farmers (part time)	15,117
Managers (full time)	2,363
Managers (part time)	990
Male workers (full time)	8,337
Male workers (part time)	2,102
Female workers (full time)	1,357
Female workers (part time)	2,278
Casual labour	6,934
Total labour	*50,063*

Source: Defra, Agricultural Census

4.2.2 While employment in agriculture in the region is largely dominated by males, female labour accounts for 13.2% of full-time employees and 45.1% of part-time employees in the East of England.

Table 4.2 Ratio of Male : Female employees in agriculture in the East of England, 2005

	Male	Female	% Female
Employees (full time)	3,094	472	13.2%
Employees (part time)	1,300	1,066	45.1%

Source: Defra, Agricultural Census

Declining numbers in agricultural employment in East faster than in England

4.2.3 The East of England makes up around 14% of the English employment in agriculture. Within the East, Norfolk (29% of East of England labour) and Suffolk (21%) are the

[45] Gross Value Added (GVA): The standard monetary measure of the value of economic activity. Usually estimated as the sum of employment costs plus profits, but since many livestock producers run at a loss, profits of farmers, land managers and graziers have been excluded.

biggest employers, closely followed by Essex (19%) and Cambridgeshire (17%). Total labour in agriculture has declined since 1990 in the East; at 24%, this is much more than the 16% decline in England. Since 1990, agricultural employment has declined faster in all of the Eastern counties compared to England.

Table 4.3 Change in agricultural labour, 1990-2005

	1990	2005	% change
Cambridgeshire	11,894	8,649	-27%
Norfolk	20,628	14,652	-29%
Suffolk	12,931	10,621	-18%
Bedfordshire	3,801	2,704	-29%
Hertfordshire	3,789	3,047	-20%
Essex	12,021	9,576	-20%
East of England	66,305	50,063	-24
England	435,781	364,891	-16%

Source: Defra, Agricultural Census

4.2.4 We estimate that today there are a total of 4,290 FTE[46] jobs involved in the grazing of sheep and cattle in the East of England. This represents 9% of all those employed in agriculture in the region. This figure combines Annual Business Inquiry data and data from the PACEC surveys.

Employment per Holding

4.2.5 Our survey of farmers, land managers and graziers found that on average, per ten holdings, there are 5 full time and 6 part time permanent land managers or farmers as well as other full time, part time or seasonal workers. It is important to note that a greater number of workers are required for dairy holdings and they were more likely to employ a greater proportion of full time rather than part time staff.

[46] Full Time Equivalents (FTE): The number of full-time employees that could have been employed if the reported number of hours worked by part-time employees was worked by full-time employees. This statistic is calculated by dividing the "part-time hours paid" by the standard number of hours for full-time employees then adding the resulting quotient to the number of full-time employees

Table 4.4 During 2005 what was the average number of permanent full time and part time jobs involved in the grazing of the land? Also what was the number of full and part time seasonal jobs? (Mean numbers per 10 holdings)

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Land Manager/Farmer-Full time permanent	5.3	5.8	11.2	5.0	4.3
Grazier-Full time permanent	0.6	0.2	1.2	0.3	2.9
Farm/Land management help-Full time permanent	1.6	2.1	10.0	0.6	0.0
Land Manager/Farmer-Part time permanent	5.7	5.8	2.5	6.7	5.7
Grazier-Part time permanent	0.7	0.5	0.0	0.9	1.4
Farm/Land management help-Part time permanent	1.8	1.5	0.0	1.7	2.1
Land Manager/Farmer-Full time seasonal	0.3	0.3	0.0	0.6	0.7
Grazier-Full time seasonal	0.0	0.0	0.0	0.0	0.0
Farm/Land management help-Full time seasonal	0.0	0.0	0.0	0.0	0.0
Land Manager/Farmer-Part time seasonal	0.9	1.1	1.2	0.6	1.4
Grazier-Part time seasonal	1.1	1.1	1.2	0.9	0.7
Part time seasonal	1.2	1.3	0.0	2.7	0.0
Number of respondents	*95*	*61*	*8*	*33*	*14*

Source: PACEC Survey of farmers, land managers and graziers (Q31A)

4.3 Indirect Employment

4.3.1 As well as those farmers, graziers, managers and farm workers employed directly as a result of grazing cattle and sheep, grazing activity also supports a number of 'indirect' jobs as a result of direct workers' use of related goods and services. This section begins by setting out the total number of indirect jobs supported as a result of grazing cattle and sheep in the East of England.

Summary of estimated indirect jobs in the East of England

4.3.2 The numbers of FTE jobs supported in the East of England by grazing cattle and sheep in the region are set out in the following table.

Table 4.5 Jobs (FTEs) supported by sheep, dairy and beef farming in the East of England, 2005 ('000s)

	Jobs ('000s)			
	Sheep	Dairy	Beef	Total
Direct	1.38	0.47	2.44	4.29
First round suppliers	0.79	0.29	1.86	2.94
Second to nth round suppliers	0.24	0.09	0.56	0.88
Downstream	1.54	1.04	2.71	5.30
Total jobs	*3.95*	*1.89*	*7.58*	*13.41*
Direct	35%	25%	32%	32%
First round suppliers	20%	15%	25%	22%
Second to nth round suppliers	6%	5%	7%	7%
Downstream	39%	55%	36%	40%
Total	100%	100%	100%	100%

Source: PACEC

4.3.3 The total number of FTE jobs supported by grazing cattle and sheep in the East of England is 13,410, of which 9,120 are supported indirectly (13,410 – 4,290). The split between jobs for first round suppliers, second to n^{th} round suppliers and downstream industries are considered in the following sections.

First round supplier jobs

4.3.4 In the case of cattle and sheep grazing, farmers, land managers and graziers might purchase the following goods and services:

- Livestock feed
- Veterinary services
- Livestock machinery and equipment
- Livestock
- Fertiliser/grass seed
- Contracted labour

4.3.5 The number of first round supplier jobs is calculated for sheep, dairy and beef, by dividing direct costs (from the PACEC survey) by first round turnover values per job (source: UK Input/Output tables). Farmers, land managers and graziers' total operational and capital spend on grazing sheep and cattle in the region in 2005 was found to amount to £212 million. More detailed analysis of what farmers, land managers and graziers typically spend on grazing sheep and cattle can be found in the next section.

Second to n^{th} round supplier jobs

4.3.6 The number of jobs supported in the rest of the supply chain (the second to 'nth' round suppliers) is governed by the purchases made by suppliers and the spending of wages and profits.

4.3.7 The number of jobs for second to nth round suppliers is calculated using the standard regional multiplier of 1.3 (based on our analysis of our regional input-output model) on the first round supplier jobs. This assumes that 30% of the first round jobs are supported in second to nth round supplier jobs.

Downstream jobs

4.3.8 The downstream jobs are the sum of employment in downstream businesses (including, abattoirs, transport, butchers, dairy and wool processors) and are sourced from the Annual Business Inquiry (ABI). These downstream jobs are apportioned to beef/dairy/sheep roughly in proportion to the split of costs. An assumption is made that 15% of abattoir jobs can be attributed to pigs, so this is subtracted from the total ABI number of abattoir jobs.

Farmers, land managers and graziers spend

4.3.9 Farmers, land managers and graziers were asked what their total operational expenditure was for the holding in 2005 and to estimate what proportion of this was associated with the grazing of cattle and sheep. On average, across all holdings, the mean operating expenditure attributable to grazing activity on the land in 2005 was £42,700 (35% of £122,000). While the average operational spend increases with the total number of stock on the land, the proportion of spend associated with grazing does not necessarily increase with the number of animals grazed. Thus those with more livestock may also have more land dedicated to other farming activities.

Table 4.6 What was your total operational expenditure for the farm in 2005? (£000's)

	Statistics of all respondents. (by total number of livestock grazed.)						
	Total	1 to 19	20 to 49	50 to 99	100 to 249	250+	Not known or no stock
Median	50.0	26.0	12.5	56.5	80.0	200.0	41.8
Mean	121.9	87.5	28.6	52.0	151.0	248.7	127.8
Min	0.0	8.0	0.0	30.0	60.0	45.0	1.3
Max	850.0	250.0	165.0	65.0	300.0	850.0	800.0
Responses	*91*	*6*	*15*	*4*	*7*	*11*	*48*

Source: PACEC Survey of farmers, land managers and graziers (Q45)

Table 4.7 What proportion of this operational expenditure relates to the grazing of sheep and cattle? (%)

	Statistics of all respondents. (by total number of livestock grazed.)						
	Total	1 to 19	20 to 49	50 to 99	100 to 249	250+	Not known or no stock
Median	20.0	6.0	37.5	11.5	10.0	35.0	22.0
Mean	34.8	22.1	48.1	13.8	9.2	36.6	36.0
Min	0.0	0.0	2.0	2.0	2.0	2.0	0.0
Max	100.0	100.0	100.0	30.0	20.0	80.0	100.0
Responses	*131*	*6*	*16*	*4*	*7*	*10*	*88*

Source: PACEC Survey of farmers, land managers and graziers (Q46)

4.3.10 Average capital expenditure relating to the grazing of cattle and sheep for respondents in 2005 was £7,910 (35% of £22,600)[47].

Table 4.8 What was your total capital expenditure for the farm in 2005? (£000's)

	Statistics of all respondents. (by total number of livestock grazed.)						
	Total	1 to 19	20 to 49	50 to 99	100 to 249	250+	Not known or no stock
Median	7.5	37.5	4.0	3.8	20.0	23.0	6.0
Mean	22.6	66.9	17.3	11.9	53.8	52.3	14.2
Min	0.0	0.0	0.4	1.8	1.7	5.2	0.0
Max	260.0	260.0	146.0	30.0	140.0	150.0	140.0
Responses	*111*	*6*	*13*	*3*	*7*	*8*	*74*

Source: PACEC Survey of farmers, land managers and graziers (Q48)

[47] It is possible that the amount of capital expenditure attributed to cattle and sheep grazing was under-estimated by respondents in some cases – while capital items specific to cattle and sheep (such as milking equipment) would be included, items shared across all farm activities (such as vehicles) might have been excluded.

Table 4.9 What proportion of this capital expenditure relates to the grazing of sheep and cattle? (%)

	Statistics of all respondents. (by total number of livestock grazed.)						
	Total	1 to 19	20 to 49	50 to 99	100 to 249	250+	Not known or no stock
Median	10.0	0.0	100.0	0.0	10.0	59.0	10.0
Mean	34.8	0.2	62.0	10.0	32.0	51.6	32.7
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	100.0	1.0	100.0	30.0	100.0	100.0	100.0
Responses	*125*	*6*	*13*	*3*	*8*	*8*	*87*

Source: PACEC Survey of farmers, land managers and graziers (Q49)

4.3.11 Farmers, land managers and graziers were asked to give details of their items of expenditure relating specifically to cattle and sheep grazing. This question received a poor response, with many reluctant to disclose this information. However, the Farm Business Survey for the East of England carried out by the Rural Business Unit at the University of Cambridge does reveal some information about the costs of various inputs to lowland cattle and sheep producers and dairy farmers in the region. The results of the survey for 2004 are collated in Table 4.10 to Table 4.13 below.

Table 4.10 Lowland Cattle and Sheep Producers in the East of England: Mean operational expenditure on various inputs (2004)

	£
Purchased concentrate feed and fodder	7,359
Home grown concentrate feed	785
Veterinary fees and medicines	2,035
Other livestock costs	2,246
Purchased and home grown seed	202
Fertilisers	924
Crop protection	209
Other crop costs	318
Total Operating Costs	*14,079*
Based on sample size	*18*

Source: Farm Business Survey, East of England 2004

Table 4.11 Dairy Farmers in the East of England: Mean operational expenditure on various inputs (2004)

	£
Purchased concentrate feed and fodder	42,006
Home grown concentrate feed	2,823
Veterinary fees and medicines	5,984
Other livestock costs	12,315
Purchased and home grown seed	2,711
Fertilisers	5,542
Crop protection	3,073
Other crop costs	718
Total Operating Costs	*75,172*
Based on sample size	*18*

Source: Farm Business Survey, East of England 2004

4.3.12 Operating and capital costs are higher for dairy farmers than cattle and sheep producers in the region.

Table 4.12 Lowland Cattle and Sheep Producers in the East of England: Mean capital expenditure on various inputs (2004)

	£
Labour	8,336
Contract	4,280
Machinery running costs	6,284
Depreciation of machinery, glasshouses and permanent crops	5,453
Land and building inputs	12,418
Other overhead costs	6,240
Total Capital Costs	*43,011*
Based on sample size	*18*

Source: Farm Business Survey, East of England 2004

Table 4.13 Dairy Farmers in the East of England: Mean capital expenditure on various inputs (2004)

	£
Labour	31,885
Contract	9,248
Machinery running costs	14,088
Depreciation of machinery, glasshouses and permanent crops	14,780
Land and building inputs	22,397
Other overhead costs	16,716
Total Capital Costs	*109,113*
Based on sample size	*18*

Source: Farm Business Survey, East of England 2004

4.3.13 Farmers, land managers and graziers were asked whether they had access to various items without incurring a financial cost. The most likely item to be acquired at zero cost was straw (in 40 out of 48 cases) and a further 29 respondents said they had access to empty buildings free of charge. A quarter of respondents benefited from access to arable by-products and this was especially true for those in Norfolk.

Table 4.14 Are there items (including those listed above) which you have access to without incurring a financial cost? (Please tick as many as apply)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Straw	83	89	89	88	67	75	100	0	78
Empty buildings	60	56	89	50	33	75	60	100	44
Grain for feed	40	33	22	50	67	50	60	0	33
Arable by-products	25	11	0	**75**	0	25	20	0	33
Other	2	11	0	0	0	0	0	0	0
Number of respondents	*48*	*9*	*9*	*8*	*3*	*4*	*5*	*1*	*9*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q51A)

4.4 Gross Value Added (GVA)

Direct

4.4.1 The total GVA created directly by sheep, dairy and beef farming in the East of England is £64 million. This is calculated using data from the PACEC surveys and can be compared to the GVA resulting from agriculture as a whole for the UK which in 2004 was £7,905 million (£6,346 for England and Wales)[48]. The figures for the East therefore make up 0.8% of the UK total and 1.0% of the England and Wales total.

Table 4.15 GVA resulting from sheep, dairy and beef farming in the East of England, 2005, £m

	GVA (£m)			
	Sheep	Dairy	Beef	Total
Direct	17	11	36	64
First round suppliers	29	11	69	109
Second to nth round suppliers	9	3	21	33
Downstream	52	47	91	189
Total	107	72	216	395

Source: PACEC

[48] Defra (2004) *Farming Income, Agriculture and Food in the Economy*. Agriculture in the United Kingdom 2004, Chapter 2. GVA at basic prices.

Indirect

4.4.2 As with jobs, indirect GVA splits into first round suppliers, second to n^{th} round suppliers and downstream.

4.4.3 The GVA of first round suppliers is calculated by multiplying the number of first round supplier jobs by the GVA per job estimated using both the survey of suppliers and the UK Input Output tables.

4.4.4 The GVA of second to n^{th} round suppliers is calculated by multiplying the number of jobs in second to n^{th} round suppliers by the second round turnover GVA per job (source: UK Input Output tables).

4.4.5 GVA for downstream industries is calculated using GVA per job for the abattoirs, butchers, transport, dairy and wool (source: survey of downstream industries and the UK input output tables) multiplied by the number of indirect jobs of each different type.

4.4.6 The total GVA supported by grazing sheep and cattle in the East of England amounts to £395 million (all falling within the East of England).

4.5 Key Findings

Panel 4.1 Key Findings – Jobs and GVA supported by grazing activity in the East of England

- Total number of FTE jobs supported by grazing cattle and sheep in the East of England is 13,410.
- Of those jobs supported by grazing activity in the region, 4,290 are supported directly, representing 9% of all direct agricultural employment in the region.
- The remaining 9,120 jobs are supported by purchases from and between suppliers and the spending of wages and profits.
- Farmers, land managers and graziers' total operational and capital spend on grazing sheep and cattle in the region in 2005 came to £212 million.
- The total GVA supported by grazing sheep and cattle in the East of England amounts to £395 million, of which £64 million is directly supported. This £64m represents around 0.8% of all GVA resulting from agriculture in the UK as a whole.

5 Drivers of Change for the Red Meat and Dairy Industries

5.1 Introduction

5.1.1 The purpose of this chapter is to set out the key drivers of change in the red meat and dairy industries. The chapter looks both at those drivers which have and are set to continue to influence the supply of red meat/dairy products ('supply-side'), and those forces which have and are likely to continue to affect the demand for red meat/dairy products ('demand-side'). The discussion which takes place will aid the formation of a 'baseline scenario' under which jobs and GVA supported by grazing cattle and sheep in the Eastern region will be forecast for the future. The drivers and their predicted impacts are summarized at the end of this chapter in sections 5.4 and 5.5.

5.2 Supply Side

5.2.1 This first part of the chapter considers past trends and present status of drivers on the supply side of the red meat and dairy industries. We consider:

a Price to the farmer
b Change in technology
c Import prices
d Input prices
e Primary processing
f Movement of cattle/sheep for grazing
g Livestock health
h Age of farmers
i Policy
j Climate change
k Profitability

5.2.2 We then go on to consider qualitatively how the drivers may change in the future.

Price to the farmer - dairy

Present

5.2.3 The price of milk is currently around 18.5p per litre (see Table 5.1 below).

Past

Price of milk to the farmers has declined sharply since the mid-1990s to close to break-even prices

5.2.4 The farmgate price of a litre of milk has declined from over 24 pence per litre in 1995 (see Table 5.1). Since the deregulation of the milk industry in 1994, farmgate prices

have been largely driven by the commodity markets, which in turn have been driven by intervention prices. Whilst intervention prices have remained constant in Euro terms, the strong sterling has meant they have fallen in relative terms (by 5p to 6p a litre according to the Milk Development Council – 'Dairy Supply Chains 2003-4').

5.2.5 With prices at these levels, farmers need to keep costs as low as possible to make any kind of profit[49]. Indeed, many are losing money on every litre sold since the costs of production now exceed the farm gate price. As a result, smaller farms are being forced out of production, having to adopt more intensive production techniques, or becoming vulnerable to takeovers by larger farms.

Table 5.1 Price of milk per litre

	Pence per litre
1995	24.47
1996	25.02
1997	22.12
1998	19.37
1999	18.35
2000	16.93
2001	19.26
2002	17.10
2003	18.03
2004	18.47
2005	18.47

Source: Defra, Farmgate Milk Prices

5.2.6 Discussions with dairies revealed that farmers prefer to sell their milk in bulk to large scale dairies who sell to supermarkets, since economies of scale mean they get better prices. As a result, smaller dairies in the region which cannot compete on this level are becoming distributors of bottled milk. The three main milk processors (Arla UK, Dairy Crest and Wiseman) now account for 90% of total processed milk sold to grocery retailers in the UK. The number of farms has declined, whilst the volume of milk produced has remained steady.

5.2.7 Despite falling farmgate prices, the price to customers has increased in recent years and much of this increase has been retained by grocery retailers (see Table 5.2 and

[49] See *The Future of UK Dairy Farming,* Colman and Harvey, 2004. They suggest, using analysis from Manchester University, that '*15 ppl appears to be a critical minimum producer price below which there is a possibility that UK milk production will decline. Analysis at Manchester University projects declines in output if effective producer prices fall below this level, and a survey conducted in 2003 at the University of Exeter reports that many producers would quit if the price falls to this level.'* The study from the University of Exeter is part of a study of Joint Venturing in dairy farming by John Hambley and Martin Turner.

Figure 5.1)[50]. Over the last two decades, a declining proportion of people buy their milk on the doorstep, with increasing proportions buying milk at the supermarket. Retailers' power has therefore increased in comparison to the farmer[51].

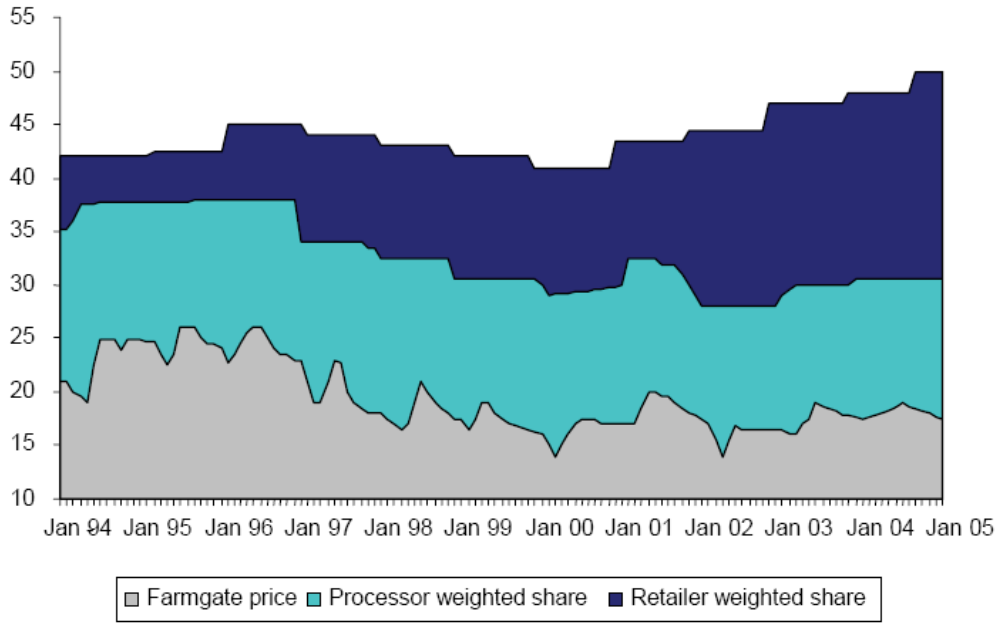
Table 5.2 Share of retail price in the milk supply chain, 2003-2005

	2003		2004		2005	
	ppl	Share %	ppl	Share %	ppl	Share %
Farmgate milk price	18.1	38.8	18.5	38.9	18.4	36.7
Operating cost and processor margin	15.6	33.5	15.9	33.5	16.1	32.1
Processing selling price	33.7		34.4		34.5	
Operating costs and retail margin	12.9	27.7	13.1	27.6	15.6	31.1
Retail price	46.6		47.5		50.1	

Source: MDC.

Source: Competition Commission

Figure 5.1 Average revenue shares in the dairy supply chain



Source: Competition Commission, MDC

Future

5.2.8 The report by Coleman and Harvey models different possible future scenarios based on responses to the CAP reforms. This suggests that by 2015, the milk output in the

[50] Note that, as this report goes to press, Tesco announced that it has increased the retail price of milk and that this increase will be passed down the supply chain to dairy farmers, thus impacting on the farmgate price (Farmers Weekly: 06/03/07). Campaigns from the dairy farming community and the public, including the Women's Institute, have played an important role in Tesco's decision and Sainsbury's was quick to follow suit.

[51] Source: Competition Commission, 2007: '*Working Paper on Supply Chain Profitability'.* Other sources with similar sentiments include Dreweatt Neate *The Decline of the Dairy Industry* and Corporate Watch *The UK Farming Crisis: Which Crisis do you Mean?*

East will range between 251 million litres (at 14.7 ppl), up to 720 million litres (at 18.0 ppl), from 614 million litres in 2007. The equivalent producer numbers are 159 to 624 (from around 624 in 2007). The report states that production in the East in particular is very vulnerable to the persistence of low milk prices. Whilst the East has the largest average herd size in the UK, the number of producers is small and may fall if prices fall. This will be compounded if milk becomes an increasingly imported commodity - a concerning reality if dairy farmers in this country continue to be forced out of business.

5.2.9 Furthermore, demands on farmers to invest in their business in readiness for new European water directives and rules governing nitrates may drive many to leave the industry.

Price to the farmer – beef/veal

Present

Price for calves is over half that for a beef/cross yearling steer

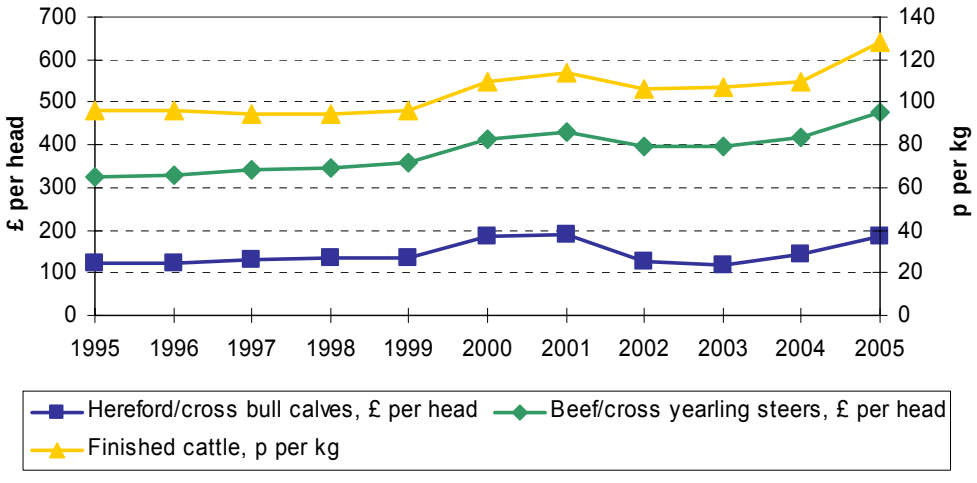
5.2.10 Prices achieved per head of cattle and sheep are an important determinant of the profitability of farm businesses. Average prices to the farmers in the UK are shown in Figure 5.2 and Figure 5.3. By 2005, the price of a Hereford/cross bull calf was £186 per head, a beef/cross yearling steer was £478 per head, and finished cattle was 128p per kg.

Past

Price to the farmer recently increased for bull calves, steers and finished cattle following a period of stability

5.2.11 The price of cattle was steady for the 1990s, increased in 2000 and 2001, dropped again and then started increasing from 2003.

Figure 5.2 Price, cattle and calves, £ per head, p per kg



Source: Defra

Note: Prices are nominal so caution must be applied in interpreting the results.

Future

5.2.12 Although the supply of beef is expected to rise in the short-term from relaxing the over-thirty months scheme in the UK (which usually lowers prices), strong levels of demand coupled with the recent reductions in South American supply are expected to keep beef prices at a relatively high level in 2006[52]. This is corroborated by the Farm Management Pocketbook, which suggests orderly marketing of finished cattle and the lifting of export ban on British beef has allowed finished cattle prices to firm up. Furthermore, with a strong EU and world demand for British beef, a weakening of prices is not expected, although the Pocketbook warns it will take time to build new markets again. Prices of calves are variable, although the Pocketbook suggests that prices have firmed, again because of the lifting of the ban on British beef and an increase in finished cattle prices.

5.2.13 The change from the Common Agricultural Policy (CAP) to Single Payments will also affect prices. The effects are difficult to predict as they pull in many directions. The changes will benefit the most efficient producers, meaning the average costs to those remaining in production is lower than previously. However, there may be lower production as farmers leave the industry, which may push up prices.

Price to farmer – mutton/lamb

Present

5.2.14 By 2005, the price to the farmer for a lamb, hogget or teg, was £30 per head, and the price per finished sheep was 250 pence per kilogram.

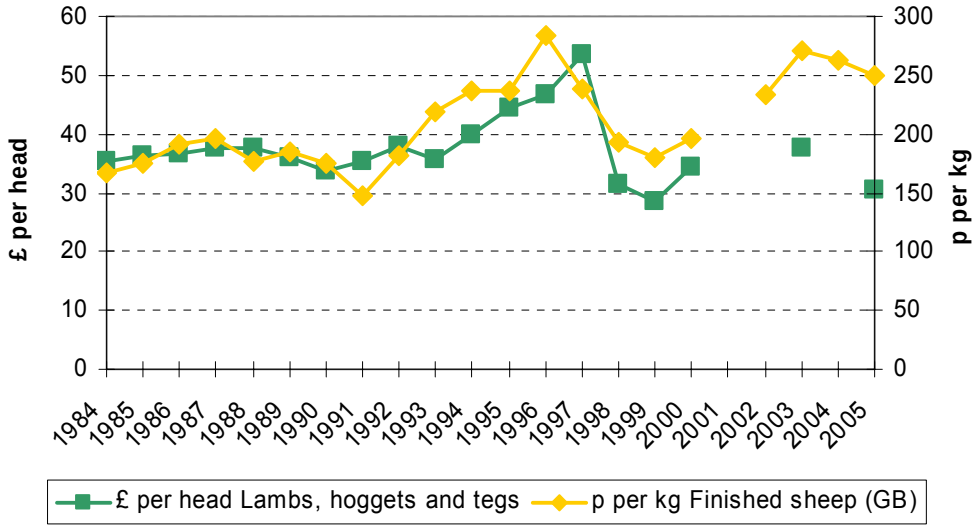
Past

Volatile sheep prices, with recent declines following recovery from foot and mouth disease lull

5.2.15 Sheep prices have been volatile since 1984, with peaks in the periods 1991-96 and 2003, but falling thereafter. Prices in 2005 were higher than the stable prices of the 1980s.

[52] Source: *UK beef supply resumes filling gap in continental shortage*, www.foodanddrinkeurope.com, 03/05/2006

Figure 5.3 Price, sheep and lambs, £ per head, p per kg



Source: Defra
Note: Some data is missing post 2000. The prices shown are nominal so caution must be used in interpreting changes.

Future

5.2.16 The Pocketbook suggests that in the short-term, prospects are for reasonably strong lamb prices as the ewe flock continues to contract and demand stays firm.

Change in technology

Future

5.2.17 Changes in technology may help farmers to increase their supply, through new technologies in animal husbandry and automation of routine tasks. Improved technology may have a greater impact on arable farmers than livestock farmers, as there is more scope for technology gains. For example, livestock farmers still need to check their livestock daily for illness. For upstream chilling industries, advanced chilling techniques provides longer storage time without any perceived loss of quality.

Imports – beef/veal

Present

Over half UK beef imports are from Ireland, with Brazil and Argentina forming almost 20% of the rest of the imports

5.2.18 The country of origin for imports to the UK (2005) is shown in the table below. Whilst the majority of British beef imports come from Ireland, a large proportion come from cost-efficient South America, with Brazilian and Argentine imports amounting to almost 20% of imports.

Table 5.3 2005 beef imports to the UK: top 5 countries, carcase weight equivalent

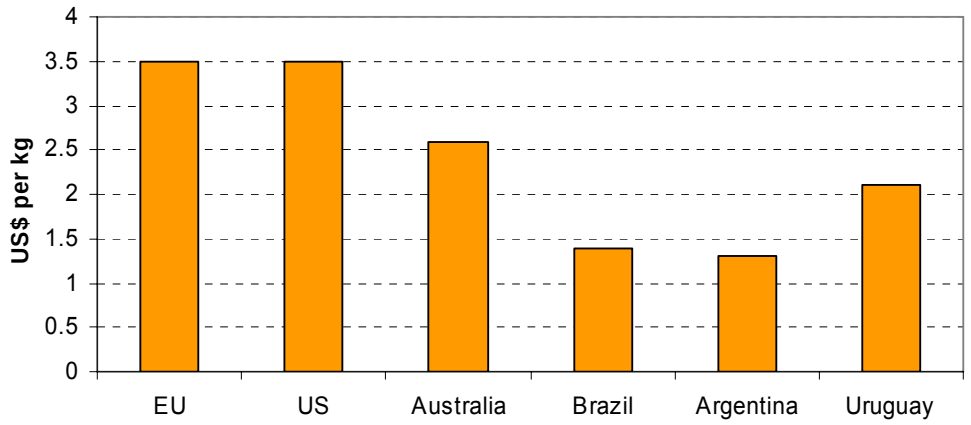
Country of origin:	'000t	%
Ireland	162.6	55.2
Brazil	41.9	14.2
Netherlands	15.8	5.4
Argentina	11.8	4.0
Germany	11.5	3.9
Other countries	50.6	17.2
Total	*294.3*	*100.0*

Source: Cattle Market Outlook, MLC Economics, July 2006

5.2.19 Imports from Brazil and Argentina currently account for almost 20% of imports to the UK. The considerable food miles involved and the carbon emissions associated with the use of air transport raise concerns regarding the impacts that these imports are having on the environment. More recently levels have been subdued: Brazilian imports were banned in the EU from October 2005 following outbreaks of FMD in several states; and in March 2006 the Argentine government suspended a large proportion of its exports for six months to stem the increase in domestic beef prices. However, the General Agreement on Tariffs and Trade gave significant access to Argentine beef by the EU and it is likely that the supply levels will resume following the recent suspension.

Current prices show EU at around $3.50 per kg of cattle, compared to around $1.40 from Brazil and $1.30 from Argentina

Figure 5.4 World cattle prices, 2004



Source: Meat and Livestock Commission, from IMS, COIMEX data

5.2.20 *What can we learn from Argentina*[53] highlights the major differences between the UK and Argentine systems of production[54]. This highlighted that Argentine farmers

[53] *What can we learn from Argentina?*, Food Chain Centre, September 2003

benefit from lower land costs and an ability to exploit economies of scale (e.g. larger fields for larger herds). However, other efficiencies are made through the systems, adding to the natural advantages gained through the countryside. Management decisions are made using a high level of financial detail. Farmers exchange and compare calculations with other farmers through a producer group run by the abattoir, acting as a single, optimised production system rather than competitors. The processing plants and systems are also efficient and modern, allowing the operators to be around a third more productive than the UK counterparts. All of these efficiencies and lower costs means Argentine production is highly competitive compared to the UK.

Past

South American production increases in importance, overtaking EU-15 and US production

5.2.21 The increase in Brazilian exports is shown in Table 5.4 below, rising from 6% of world exports in 1990/92 to 23% by 2004. The EU-15 have dropped to just 6% of world exports, down from 20%, as has the USA, from 11% to 3%.

Table 5.4 Major beef exporters, 1990/92 and 2004 (%)

	1990/92	2004
Australia	20	21
USA	11	3
Canada	7	5
Brazil	6	23
EU-15	20	6
India	0	6
New Zealand	8	8
Argentina	7	9
Uruguay	3	6
Ukraine	0	2

Source: Meat and Livestock Commission, from IMS, ICONE data

Imports – mutton/lamb

Present

5.2.22 The country of origin for lamb imports is quite different to cattle, with 65% coming from New Zealand and 11% from Australia. Input costs are lower compared to the UK, with an estimate that New Zealand producers produce lamb at less than half the cost than in the EU[55]. For example, sheep can graze outdoors all year round,

[54] This considers just farmers who are focussed on UK catering and had developed their methods to succeed in this market.

[55] Source: *Competitiveness in Irish Sheep Production,* L. Connolly, 1999 (Sheep Production Department, Teagasc Research Centre)

requiring little supplement in terms of feed. Throughput is also much higher per labour unit. New Zealand has also benefited from its island location and quarantine laws, meaning their stocks have never suffered from FMD or BSE[56].

Lamb imports are dominated by New Zealand (65% of UK imports)

Table 5.5 2005 lamb imports: top 5 countries

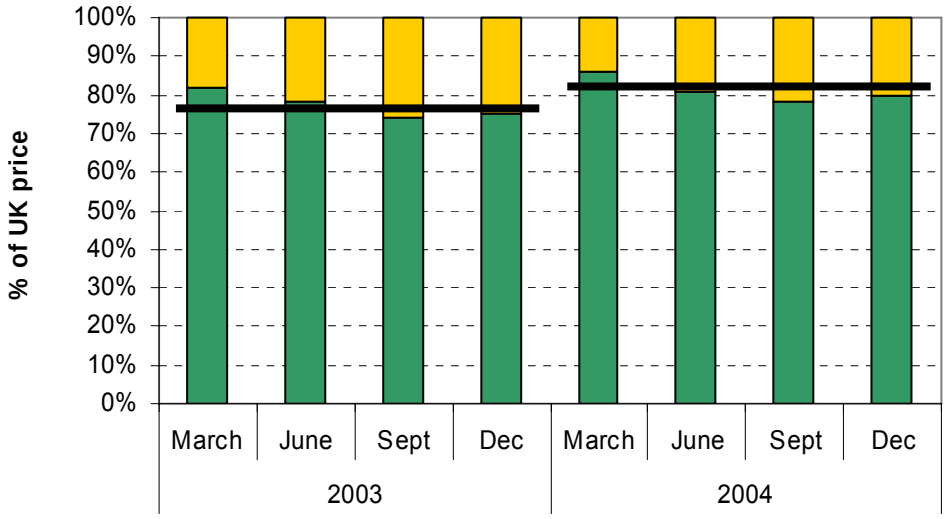
Country of origin:	'000t	%
New Zealand	79.4	64.5
Australia	13.4	10.9
Netherlands	9.7	7.9
Ireland	8.4	6.8
Spain	2.4	2.0
Other countries	9.8	8.0
Total	*123.1*	*100.0*

Source: Meat and Livestock Commission, 2006

New Zealand prices are consistently around 80% of UK prices

5.2.23 The chart below shows the price of New Zealand lamb compared to UK prices. In 2003 and 2004, the New Zealand cost has fluctuated at around 80% of the UK price. The lower price helps to explain the dominance of New Zealand lamb in British imports.

Figure 5.5 New Zealand lamb prices as % of UK price, 2003 and 2004



Source: Meat and Livestock Commission, 2005

5.2.24 All of the exporting countries, however, with the exception of Ireland, have to transport their goods a long distance and travel costs may be high, particularly with

[56] Source: www.newzealandlamb.org

rising oil prices. The reliance on air travel is concerning, given the environmental costs associated with this mode of transport.

Future

5.2.25 For both beef/veal and sheep/lambs, factors that affect the future levels of imports include the exchange rate, oil costs, improvements in efficiencies and quality of production systems of EU accession states, and the growth of developing countries.

- Increasing oil costs will increase transportation costs and increase import prices. This may have the effect of reducing the levels of imports and the prices increase.
- A strong (weak) pound will keep the relative cost of imports low (high) and exports relatively more (less) expensive.
- Improvements in the efficiencies and quality of production systems in farming industries of EU accession states will introduce greater levels of output and greater elements of import competition to British meat producers (see Asken, 2001). Poland in particular is cited as having a great potential for increases in output. Exports from these countries will also benefit from meeting EU animal welfare standards and guarantees to customers of adherence to EU environmental regulations.
- As developing economies grow, labour prices will increase. The cost of production for these countries will increase, thereby increasing domestic prices. The price of UK domestic supply will appear comparatively cheaper than previously.

Cost of inputs

Present

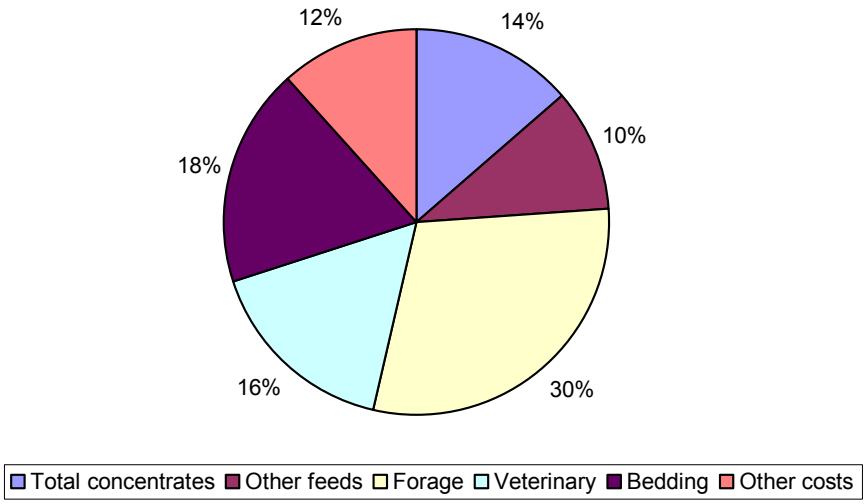
5.2.26 There are many inputs into the production of livestock, including veterinary services, animal feed manufacturing, machinery and equipment manufacturing. In 2005/06, the cost for lowland sucklers was £117 per cow, LFA sucklers was £118 per cow, lowland ewe was £22 per ewe and LFA ewe was £18 per ewe[57]. However, different breeds of livestock will have different input requirements. For example, the Red Poll suckler cows can be over wintered outside (saving money on winter housing) and cope well on extensive grazing. The choice of livestock depends on a number of factors and, in addition to input requirements, breeds will also be chosen on the basis of site characteristics, conservation objectives, quality of meat and financial return.

Forage costs and total concentrates are the most expensive inputs for lowland sucklers

5.2.27 In 2005/06, forage costs were the most expensive for lowland cattle, followed by bedding.

[57] Source: Farmers' Weekly, Eblex Business Pointers 2006. These values are for the average performance per animal, based on samples of 49 (lowland sucklers), 41 (LFA sucklers), 49 (lowland breeding stock ewes) and 45 (LFA breeding stock ewes).

Figure 5.6 Variable costs of lowland sucklers, 2003/04

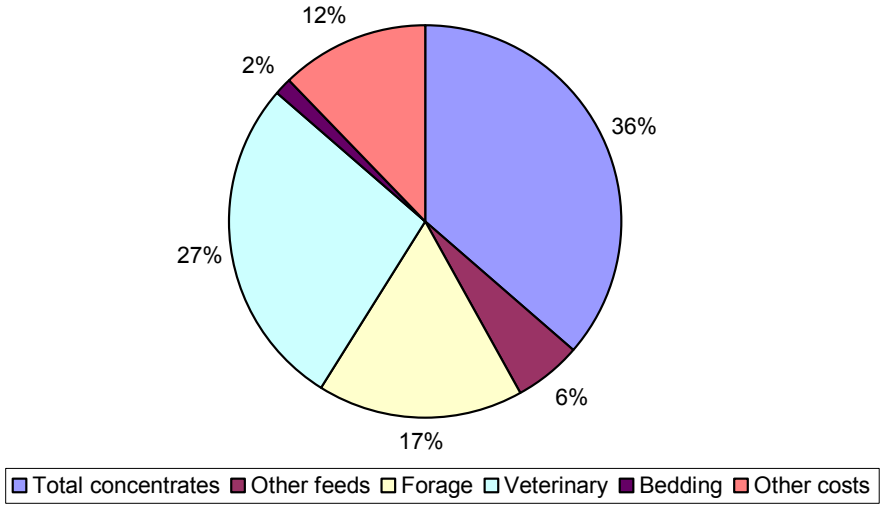


Source: Farmers Weekly, November 2006

Total concentrates are the most expensive inputs for sheep

5.2.28 For sheep, the most expensive input by far – also more than for lowland sucklers – is the total concentrates costs.

Figure 5.7 Variable costs of lowland breeding flocks (sheep), 2003/04

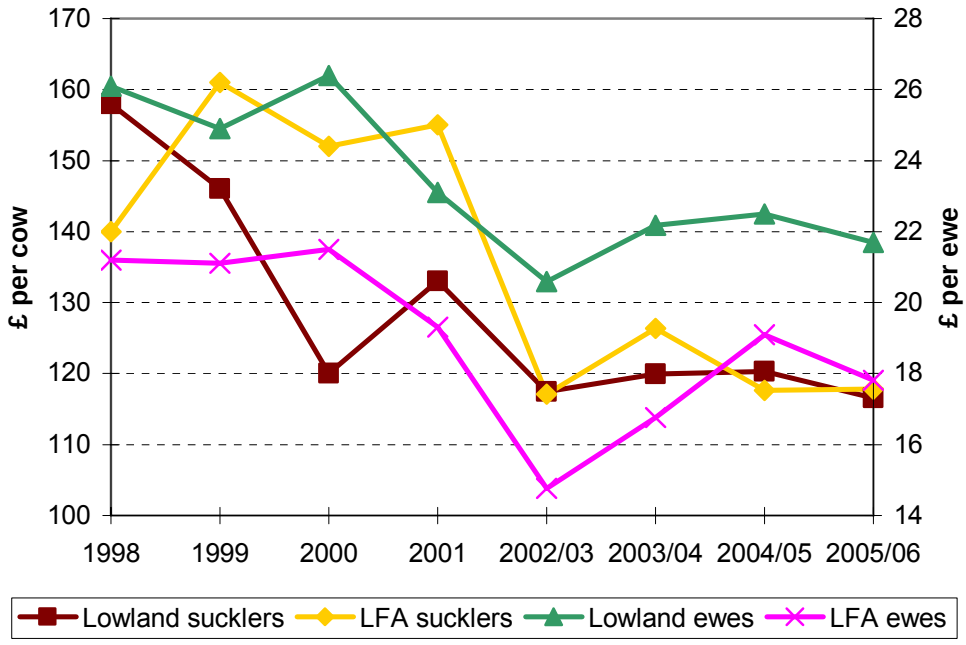


Source: Farmers Weekly, November 2006

Past

5.2.29 Variable costs of inputs have declined since 1998, with lowland ewes dropping in price from £26 per ewe to £22 per ewe. Lowland suckler costs have dropped from £160 per cow down to around £117 per cow.

Figure 5.8 Variable costs of inputs, 1998-2006



Source: Farmers Weekly, November 2006

Future

5.2.30 Any increase in price of these inputs would increase the price to the livestock producer and make production less profitable.

5.2.31 Given the very small net margins of profit associated with beef/veal and sheep/lambs (see section on the profitability of farming below), it is likely that even small changes in input prices will have a strong effect on profitability of firms and the consequent level of supply. For example, energy costs will impact suppliers. A progressive rise in the price of oil and oil-based products used by British agriculture will put a cost pressure on agricultural products that have a high level of oil-based inputs: machine, fertiliser and chemical intensive products.

5.2.32 Wheat and barley world costs are also increasing substantially (£86 per week in October 2006 – 36% higher than in October 2005[58]). If this continues – which it may well do given the transferral of some agricultural land to bio-fuel in many countries - concentrates are likely to increase in price. Furthermore, anecdotal evidence suggests that traditional manufacturers of livestock feed are diversifying into pet feed and in some cases giving up livestock feed altogether. Thus livestock feed may have to travel longer distances to reach farmers in the Eastern region.

[58] Source: *Farming and Food Brief,* October 2006, Defra

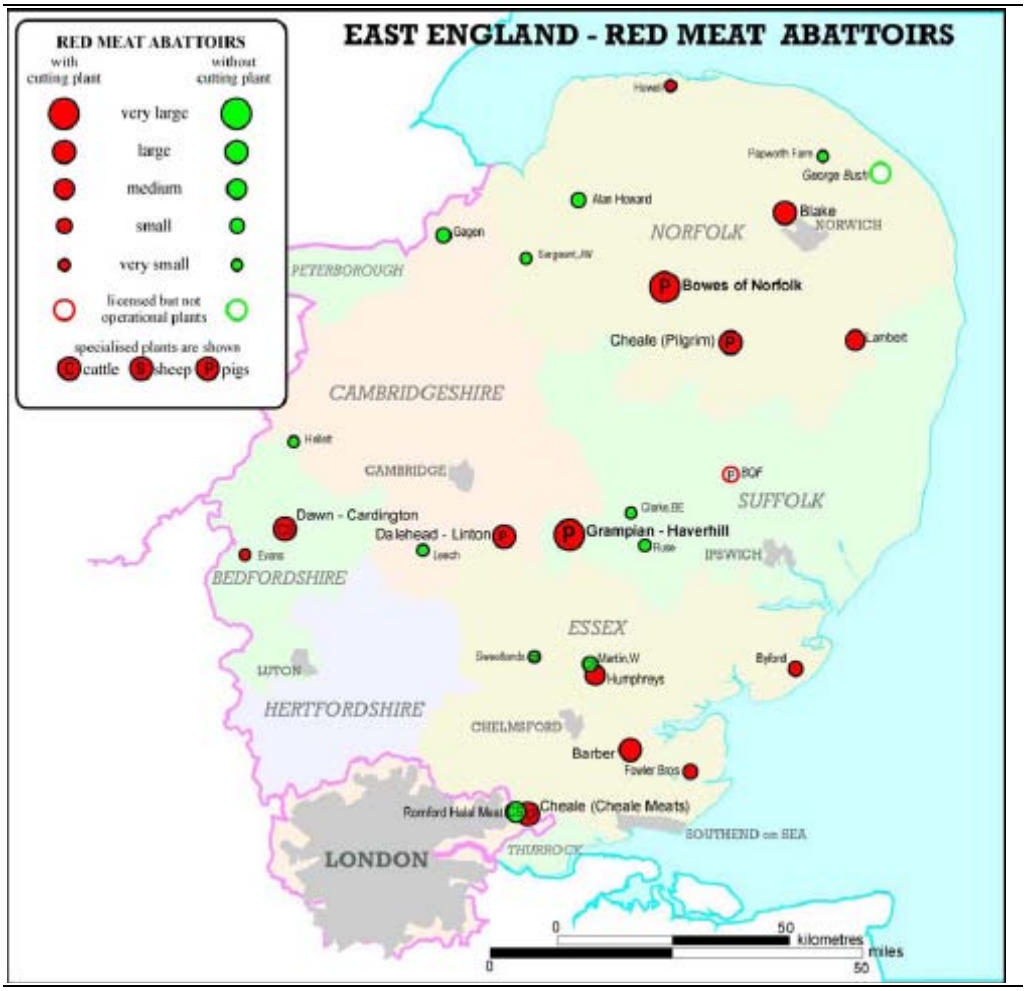
Primary Processing

Abattoirs

5.2.33 Abattoirs form part of the primary processing stage of downstream industries. The number of abattoirs is somewhat limited in the East of England region. Some of the businesses are very small and may not survive in the future, especially those without an associated cutting plant. Others are specialised by category of animal or a large proportion of their capacity is controlled by supermarkets. The map below is suggestive of the long lorry miles that animals often have to travel for slaughter.

5.2.34 Farmers prefer to send their cattle to the nearest possible abattoirs to minimise haulage costs and stress to the animal (which reduces the weight of the cattle). However, those with supermarket contracts or strict brand criteria may be limited to using specific abattoirs which demand that the farmer sends his animals greater distances. Very few farms find it profitable to slaughter animals on their farms.

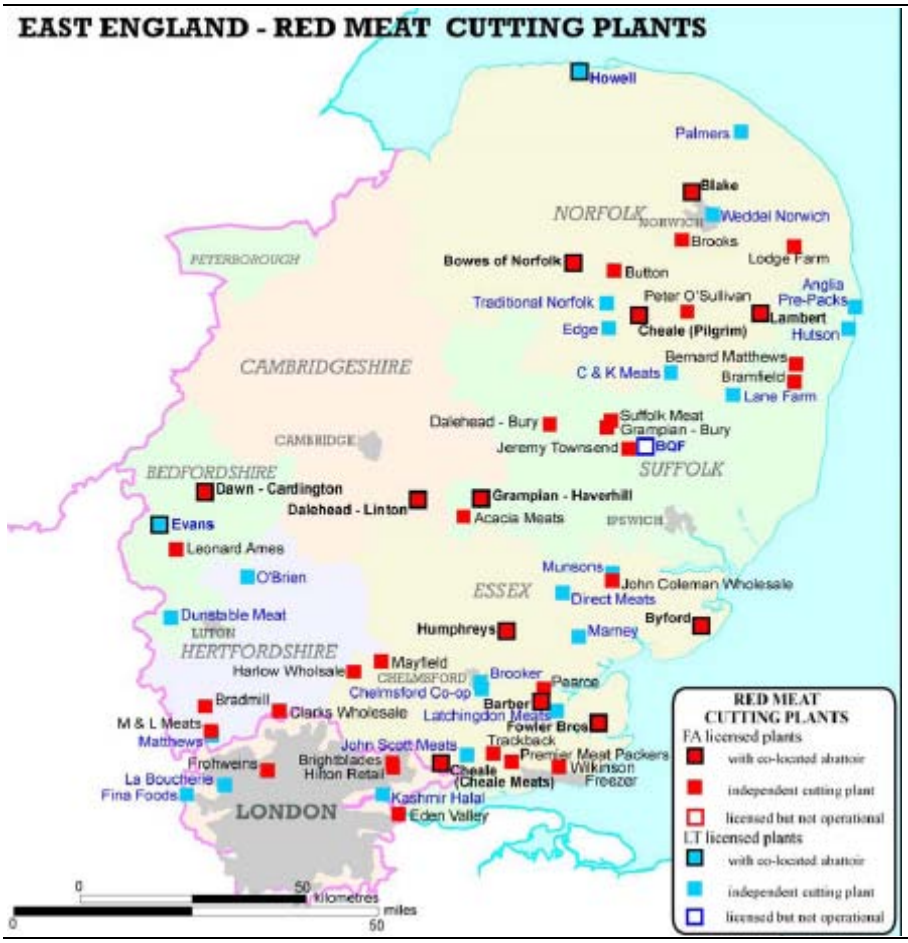
Figure 5.9 East of England – red meat abattoirs



Source: Defra presentation, 2005

5.2.35 As Figure 5.10 shows, there is a wider variety of red meat cutting plants in the region, but most of these plants will be buying in carcase meat from all over the United Kingdom, and in many cases from abroad.

Figure 5.10 East of England – red meat cutting plants



Source: Defra presentation 2005

5.2.36 Given that haulage can represent a significant cost to livestock producers, we asked survey respondents to give the name of the abattoir which they typically use and to state which county it is in and how many miles away from their holding. The results are staggering.

5.2.37 Save for those respondents in Norfolk and Essex who, for the most part, used abattoirs in the same county, it is clear from Table 5.6 that many farmers are using abattoirs in a different county. On average, livestock producers travel 37 miles to an abattoir and as far as 300 miles in one case. This is not surprising when the list of abattoirs used by those resident in the East of England includes locations as far away as Devon, Yorkshire and Northumberland[59]. For more detail of the abattoirs used by respondents across the region, please see Appendix K.

[59] One farmer responding to our survey said it was 'a disgrace that sheep are regularly transported from the East of England to abattoirs as far away as South Wales and Cornwall'.

Table 5.6 Please state the county in which the abattoir that you or your grazier normally use is located

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Norfolk	30	**0**	29	**82**	0	0	0	n/a	45
Essex	26	**90**	14	**0**	0	20	0	n/a	27
Bedfordshire	8	0	0	0	0	40	40	n/a	0
Suffolk	8	0	29	9	0	0	0	n/a	9
Lincolnshire	4	0	0	0	25	0	0	n/a	9
Northumberland	4	10	0	0	25	0	0	n/a	0
Buckinghamshire	2	0	0	0	0	0	20	n/a	0
Cambridgeshire	2	0	0	0	25	0	0	n/a	0
Derbyshire	2	0	14	0	0	0	0	n/a	0
Devon	2	0	0	0	0	20	0	n/a	0
Dorset	2	0	0	0	0	0	20	n/a	0
Hampshire	2	0	0	9	0	0	0	n/a	0
Northamptonshire	2	0	0	0	0	20	0	n/a	0
Oxfordshire	2	0	0	0	0	0	20	n/a	0
Warwickshire	2	0	0	0	25	0	0	n/a	0
Yorkshire	2	0	0	0	0	0	0	n/a	9
Merioneth/Meirionnydd	2	0	14	0	0	0	0	n/a	0
Number of respondents	*53*	*10*	*7*	*11*	*4*	*5*	*5*	*0*	*11*
Margin of error	*13*	*31*	*37*	*30*	*49*	*44*	*44*		*30*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q38B)

Table 5.7 Please state how many miles away this abattoir is from the grazed land which you manage

	Statistics of all respondents. (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Median	20.0	12.0	25.0	20.0	70.0	17.0	15.0	35.0	25.0
Mean	37.4	15.9	39.3	46.0	68.3	76.2	17.8	35.0	31.6
Min	2.0	2.0	6.0	12.0	35.0	8.0	3.0	35.0	8.0
Max	300.0	40.0	200.0	200.0	100.0	300.0	40.0	35.0	80.0
Responses	*61*	*11*	*11*	*12*	*3*	*5*	*5*	*1*	*13*
Margin of error (%)	*13*	*30*	*30*	*28*	*57*	*44*	*44*	*98*	*27*

Source: PACEC Survey of farmers, land managers and graziers (Q38C)

5.2.38 One cattle breeder we spoke to is going out of business because it costs him £500 to kill each animal over 30 months. This is because the closure of small abattoirs means he must transport his cattle 120 miles, return home to wait while the animals are processed and then return to collect them with a refrigerated van, in accordance

with new health and safely legislation. The greater distances required to transport animals to abattoirs was held in part to blame for the spread of BSE in the BSE inquiry[60].

The numbers of abattoirs and cattle markets are declining

5.2.39 The number of abattoirs in the UK has declined substantially since the 1970s. This has mainly been fuelled by the requirement for heavy capital investment to upgrade abattoirs to conform to higher hygiene standards. In the 1970s it was Government policy to close small abattoirs and create larger ones and a small number of abattoirs now account for the majority of slaughters (the largest ten account for 37% of cattle slaughters and 44% of sheep slaughters[61]). Anecdotal evidence suggests that the smaller abattoirs have found it increasingly difficult to cope with the paperwork and regulations required by legislation and are being forced to close down[62]. Organisations, including the Soil Association, are now campaigning to save the remaining small-scale abattoirs.

Table 5.8 Number of Abattoirs in the UK

	1972	1984	1995	1998
Abattoirs	*1,600*	*1,000*	*500*	*450*

Source: The British Conundrum, International Marketing and Meat Quality

5.2.40 The number of cattle markets has also decreased in the past decade. Anecdotal evidence from interviews found that many cattle markets have closed in the East of England, but those surviving are increasing in size.

5.2.41 There is an issue that as local facilities close and farmers are forced to travel further to abattoirs and auctions, the costs of transporting livestock may prove prohibitive.

Increasing demand for traceable meat led to consolidation of supply chains and formation of farm producer groups

5.2.42 Supermarket retailers are increasingly buying directly from meat processors rather than go via a meat wholesaler. The traditionally important role of the meat wholesaler is therefore diminishing and indeed, when speaking to wholesalers in the region, we found that many dealt mainly or solely with frozen imported meat. Products may be delivered directly by abattoirs or processors to supermarkets' central warehousing systems.

5.2.43 An increased emphasis on 'own label' products (by consumers following health scares and resulting from the 1990 Food Safety Act) has led to the emergence of exclusive suppliers to supermarkets and more condensed supply chains. Health scares have led people to demand more knowledge about the source of their food, leading to 'traceable' food. Supermarkets need assurance of the quality of supplies.

[60] http://www.bseinquiry.gov.uk/pdf/volume12/Chapter4.pdf

[61] Source: Meat and Livestock Commission, July 2006

[62] Source: Small Abattoir Federation website

This has led to competition between supply chains rather than competition between individual firms.

5.2.44 Farmers have also started to form producer groups where members agree, for example, to specific production methods. This makes it easier to signal to retailers the standardised quality of the product they are receiving. The Farm Practices Survey 2005 shows that around 15% of lowland cattle and sheep farmers are either members of farmer controlled businesses or are customers of them; the equivalent figure for dairy farmers is 43%.

Movement of cattle/sheep for grazing

Future

5.2.45 Our survey results show that farmers, land managers and graziers may be willing to travel greater distances to graze their livestock in the future. On average, the number of miles over which cattle/sheep would be moved doubles from 4.5 to 9 miles. Some respondents said that they would be willing to travel up to 100 miles to graze their animals.

5.2.46 This has obvious implications for costs and the environment.

Table 5.9 Over what distance do you typically move your cattle/sheep for grazing purposes? (Please enter number of Miles)

	Statistics of all respondents. (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Median	1.5	1.3	1.8	2.5	2.0	3.5	2.0	0.0	1.0
Mean	4.5	3.7	4.4	4.9	3.6	6.3	3.3	0.0	4.7
Min	0.0	0.0	0.0	0.0	0.0	2.0	0.5	0.0	0.0
Max	60.0	17.0	30.0	30.0	15.0	16.0	10.0	0.0	60.0
Responses	*122*	*14*	*12*	*14*	*7*	*4*	*5*	*1*	*65*

Source: PACEC Survey of farmers, land managers and graziers (Q24)

Table 5.10 Over what distance would you be willing to move your cattle/sheep for grazing purposes? (Please enter number of Miles)

	Statistics of all respondents. (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Median	3.0	1.0	5.0	5.0	5.0	10.0	5.0	0.0	2.0
Mean	9.0	3.3	16.2	10.9	6.7	40.0	5.7	0.0	7.5
Min	0.0	0.0	0.0	0.0	0.1	10.0	0.5	0.0	0.0
Max	100.0	10.0	100.0	50.0	20.0	100.0	15.0	0.0	100.0
Responses	*111*	*10*	*10*	*12*	*7*	*3*	*5*	*1*	*63*

Source: PACEC Survey of farmers, land managers and graziers (Q25)

5.2.47 Concerns among consumers regarding 'food miles' and the environmental impacts of transporting food across the country have lead to an increasing drive for local produce and our survey results do show that some producers are marketing their red meat products on the basis that they are locally produced. Over a third (31 out of 81) respondents have changed the way in which they market their products as a result of changes in the industry in the last 5 years. A third (19 out of 60) now market their produce as being produced locally.

Table 5.11 Have changes in the red meat industry in recent years changed the way in which you market red meat products from animals grazed on your site? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Yes	38	25	38	33	56	25	20	0	53
No	37	58	38	22	22	75	20	100	37
Not applicable	25	17	23	**44**	22	0	60	0	11
Number of respondents	*81*	*12*	*13*	*18*	*9*	*4*	*5*	*1*	*19*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q39)

Table 5.12 Which of the following do you currently use to promote your produce? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Products are not actively marketed	40	44	55	20	40	25	33	100	41
Meat produced locally	32	44	18	40	60	0	33	0	29
Own brand	18	33	9	30	20	0	33	0	12
Produce from rare breeds	15	22	9	20	0	0	0	0	24
Produce from breeds specific to local area	7	0	0	20	20	0	0	0	6
Organic produce	5	11	0	0	0	25	33	0	0
Other	18	0	36	10	0	50	0	0	24
Number of respondents	*60*	*9*	*11*	*10*	*5*	*4*	*3*	*1*	*17*

Source: PACEC Survey of farmers, land managers and graziers (Q40A)

Livestock health problems

Livestock health problems resulted in lower supply in the 1990s

Past

5.2.48 A number of livestock health problems have occurred over the past couple of decades, causing supply to decline as animals had to be slaughtered and could not be consumed.

5.2.49 Bovine Spongiform Encephalopathy (BSE), and the ensuing legislative arrangements designed to keep infected meat out of the food chain, caused a decline in beef profitability through the 1990s. The Over Thirty Months Scheme (OTMS) prevented the sale of cull cows and other animals exceeding the age of thirty months in the food chain. A fixed rate of compensation was available and the animals were incinerated.

5.2.50 In 2001, Foot and Mouth Disease (FMD) caused considerable problems, due to the presence of movement restrictions and the related requirement to observe strict arrangements for biosecurity. Sales of beef cattle were restricted. Some farmers in the East of England received income from the Livestock Welfare Disposal scheme (LWDS) as they were unable to accommodate stock on their farms. As movement restrictions were lifted and livestock trading resumed, restocking farmers in the North of England and South West sought stock from the East of England. Exports of British beef were banned by trading partners in Europe and elsewhere in the world, compensated only by reduced supply of domestic beef.

5.2.51 The incidence of Tuberculosis (TB) continues to increase. To date, the incidence of the disease has been much lower in the East of England than in other parts of England, including the focus of infection in the South West. Dairy producers in the East of England may have derived some benefit from the presence of the disease in the South West as it provides a market opportunity for the supply of dairy heifers.

Future

5.2.52 Livestock health problems are difficult to predict and it is uncertain how they will affect supply levels in the future. However, the improved levels of production-quality hygiene should serve to make the occurrence of such problems less frequent, although it will be impossible to rule out another outbreak of disease, given the adaptive capacity of bacteria to drugs.

Age of farmers by size/type of holding

Present

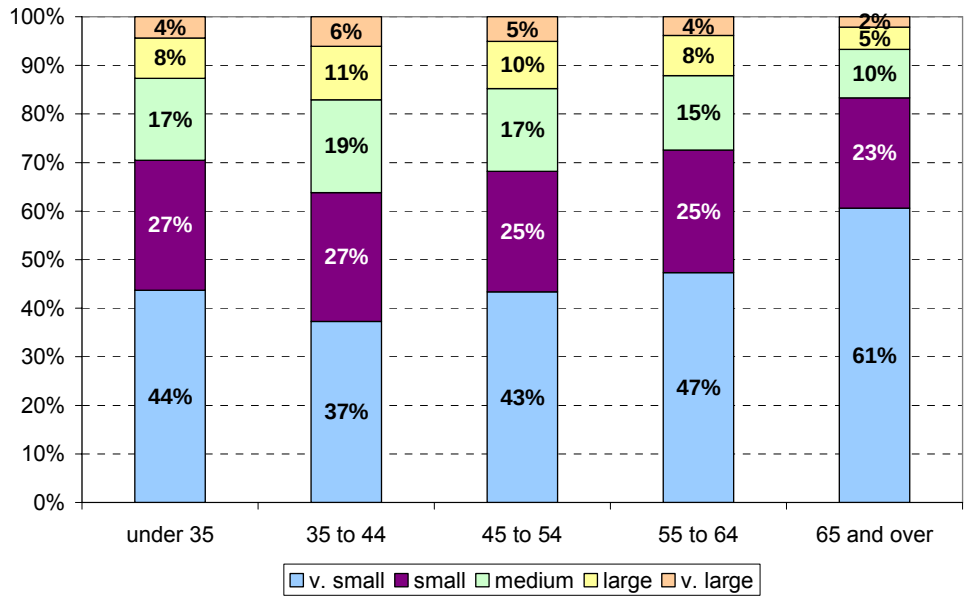
Median age of farmers is 57

5.2.53 In 2003, the average age of a farmer was 57. Of 270,000 farmers in the UK, 29% were 65 or over, 29% were 55-64, 24% were 45-4, 15% were 35-44 and just 3% were under 35. However, interpretation of the numbers needs to be made carefully. In fact, 61% of the oldest group of farmers (65+) occupy the smallest size of farm (8 ESUs[63] or fewer). Only 2% of them are on the largest sized farms. This means the median age of farmers is skewed by the large number of older farmers on small farms. This trend has implications for the smaller, more isolated plots of grazing land. If the farmers responsible for these areas are near retirement and the size and access

[63] ESU stands for European Size Unit, where one ESU is equal to 1,200 units of Standard Gross Margin (SGM), measured in ECUs or Euros.

issues associated with these plots deter future generations or other farmers from grazing them, then these smaller, but often environmentally significant areas, may be left to scrub.

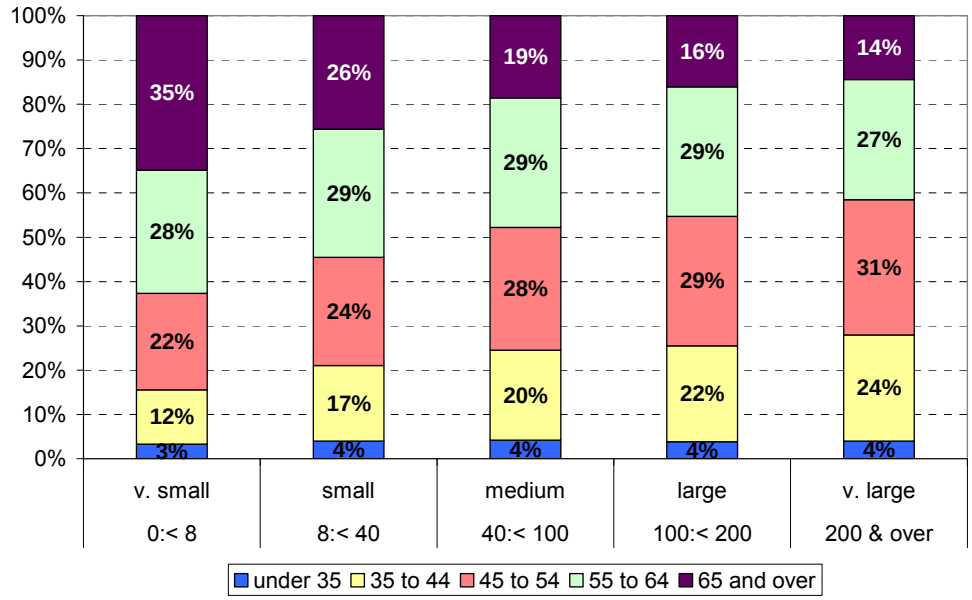
Figure 5.11 Holders' age by farm size, 2005



Source: EC Farm Structure Survey: Holdings in the UK, 2005

5.2.54 The bulk of production (from the largest farms) tends to be undertaken by the farmers aged between 35 and 64.

Figure 5.12 Farm size by holders' age, 2005

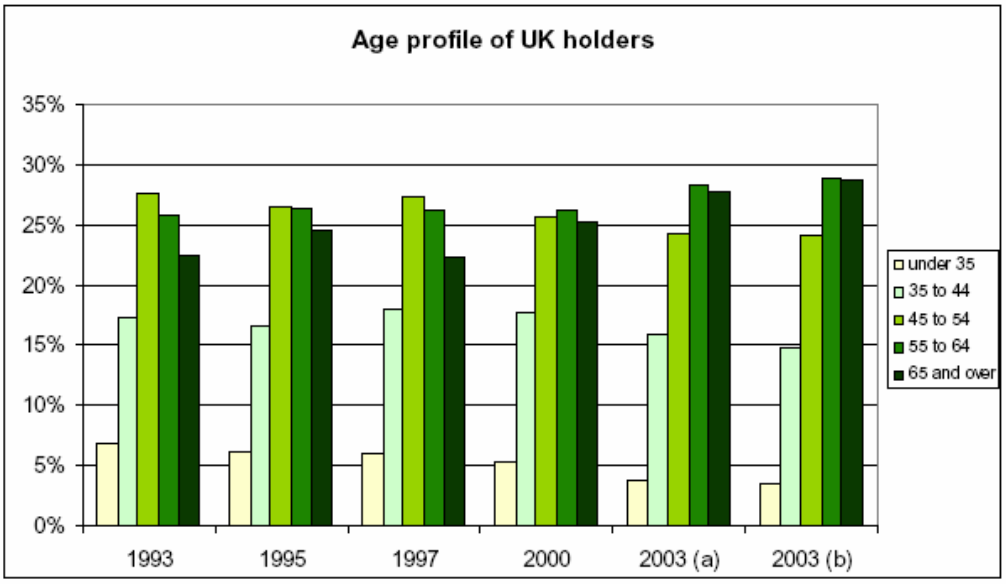


Source: EC Farm Structure Survey: Holders in the UK, 2005

Past

5.2.55 The average age of farmers has been increasing since 1993. The chart below shows that even in the past 10 years, the proportion of farmers over 55 has increased from 49% to around 56%. Only 3% of farmers are now younger than 35 (compared to 7% previously).

Figure 5.13 Age profile of UK Farm Holders



Source: EC Farm Structure Survey: Holders in the UK, 2005

5.2.56 The median age of farmers on different sized farms is shown below, increasing from 54 to 57 in just ten years.

Table 5.13 Median age of farmers

	1993	2003	% change
Up to 8 ESU	56	60	7
8 ESU up to 40 ESU	55	57	4
40 ESU up to 100 ESU	52	54	4
100 ESU up to 200 ESU	51	53	4
200 ESU and over	51	52	2
All holdings	*54*	*57*	*5*

Source: EC Farm Structure Survey: Holders in the UK, 2005

Future

5.2.57 The increasing average age of farmers and lack of younger farmers coming through suggests that farming may tend towards fewer, but larger and more efficient farms, with an increased use of contractors. Whilst the *level* of production may not change if fewer farmers take more land, the *intensity* of production may change, and the average size of cattle and dairy farms is likely to continue to increase.

Policy

Present

5.2.58 Policy affects levels of supply by encouraging or discouraging certain types of production, via regulations about standards for production, transportation, environmental status of land used etc.

5.2.59 The following areas of British government policy have a direct bearing on the development of the red meat industry in the East of England region, principally through their cost implications for the producers.

- Common Agricultural Policy (CAP) reforms
- Policies in respect of animal welfare and transport
- Food hygiene policies on the farm and downstream
- Health and safety at work policies covering employees
- Area based environmental designations and protections
- Wildlife designations and protections
- Environmental policies in respect of waste, nutrient enrichment, run-offs and dead animals[64]
- Other international policies

[64] The Norfolk Arable Land Management Initiative (NALMI) was one of the Countryside Agency LMIs between 1999 and 2004. The initiative piloted "Integrated Whole Farm Planning" with the objective of reducing the environmental impact of arable farming to facilitate a transition to a sustainable system of land management while at the same time relating the farming production system to a wider integrated rural development perspective.

Future

Common Agricultural Policy reform to be the most influential policy driving change in supply of red meat in the coming years

5.2.60 Current and future changes in the rearing of cattle and sheep in the United Kingdom are dominated by the reaction of both livestock and non-livestock farmers to the reforms in the CAP. The process of reaction is still working its way through. Whilst the recent Agricultural Census data is an imperfect guide to the path to be taken over the next five to ten years within the industry, work has been undertaken on modelling changes and on seeking attitudes of farmers to the CAP changes in particular.

5.2.61 Under an agreement between member states in 2003, the subsidies paid to farmers in the EU under Common Agricultural Policy, the CAP, were 'decoupled' from 2005 from levels of output to a system based on area payments. This effectively means livestock farmers no longer receive a payment directly connected to the size of their herds or flocks, but instead receive a 'Single Payment', based on what was produced by farmers between 2000 and 2002, expressed on a £ per hectare basis. Within England, the method of payment is 'dynamic hybrid' or 'delayed flat-rate' i.e. for each of the 7 transition years to 2012, the farmers are paid decreasingly according to historic payments and increasing according to regional average payments. To qualify for the payments, farmers have to be farming 'eligible land' and also satisfy cross compliance. This latter means farmers have to comply with EU standards covering the environment, animal welfare and public health. Qualifying land has to be maintained in a good agricultural and environmental condition. There is some variation allowable between member states.

Resulting price changes are ambiguous – some drivers will increase and some will decrease prices

5.2.62 A 2005 analysis by Defra has concluded that the reforms will benefit the British economy overall as well as offering savings to the British taxpayer. More directly, the reforms are seen as helping farmers by improving the market orientation of their businesses and reducing many of the bureaucratic rules associated with production subsidies. In general, agricultural prices are expected to increase, by about 5% of the total income from farming. The impacts on consumers are expected to be broadly neutral. Some prices will fall as a result of business restructuring and efficiency improvements. Other prices will rise, perhaps as a result of lower levels of production. In the case of red meat, however, the impact on consumers will be very much tied to the relative prices of imports and exports as much as by changing domestic livestock carcase and processed meat prices.

Numbers of livestock may decrease

5.2.63 A financial modelling exercise, undertaken by ADAS (2002) for Defra to consider the potential impact on beef and sheep farming of decoupling, used data from the Farm Business Survey of 1999/2000 and 2000/2001. Representative farm models were used, based on occupiers' net income, with an assumed 20% price rise for livestock

from the then level. Also, they made the strong assumption that the decoupling payments would equate with the level of payments received from current stocking and cropping, with reduced livestock numbers of 50% and 75%.

5.2.64 The results suggested that for lowland cattle and sheep farmers there is a considerable variation in potential impact, dependent upon:

- The size of the farm
- The level of rearing performance achieved
- The resulting livestock prices, higher prices reducing the incentive to de-stock
- The resulting cereal prices (for farmers switching part of their grass to arable)
- The incentive to finish cattle indoors is strong where grass may be released to arable.

5.2.65 Finishing cattle indoors and moves to zero grazing may be more attractive to farmers in the East where they rely on feed produced by arable farms (e.g. forage maize). While this may promote livestock production in the East, use of these production systems does not combat the issue of under grazing.

This is corroborated by survey evidence

5.2.66 A large April 2004 opinion survey of cattle and sheep enterprises in England undertaken by ADAS on behalf of English Nature (ADAS, 2005), asking about intentions in the face of the CAP reforms, came to the following key conclusions:

- Changes in number of suckler cows would be a fall of 12%, dairy cows a fall of 9%, finishing beef a fall of 12%, breeding ewes a fall of 4% and little change for finishing lambs.
- The predicted falls might increase with greater understanding of the reforms, and would result in a smaller proportion of cattle than sheep.
- An overall fall in the stocking rate of 0.15 livestock units per hectare.
- Younger farmers farm more intensively but they are more likely to reduce dairy cows and the grazing intensity of cattle.
- Owners predicted a larger change than tenants, while organic farmers predicted a slight increase in numbers.

5.2.67 Future changes in the stocking rate in the grazing areas of the East of England may have a significant impact on the total number of animals. Financially for livestock producers, the issue of intensive versus extensive seems to be finely balanced at the present time, as recent survey evidence found even the top third of intensive farmers struggled to make a profit and the average for extensive farmers was a loss[65].

[65] For example, the EBLEX sample of 190 mixed and spcialist livestock farms across England found that in 2005/05 the average gross margin per head from intensive cattle finishing was £162.90 and an average net margin of £68.31. Without the per capita subsidy this represented a loss. Even the top one third of producers struggled to break even without the subsidy. In contrast, the top one third of the extensive cattle finishers in the sample made a small profit without the subsidy element, although the average figure for all 64 producers was a loss. The extensive producers had lower feed and forage costs (EBLEX, 2005b).

5.2.68 A further consequence of the move to an area based subsidy may be that smaller livestock farmers, especially the more elderly, decide to sell their livestock and live on the subsidy, undertaking the minimum required level of environmental management on their land, while using the buildings for other purposes and renting their land opportunistically for grazing crops. This contention is supported by findings in the ADAS (2005) survey. Also, farmers with clear succession plans are less likely to reduce livestock numbers.

5.2.69 In our own survey, farmers, land managers and graziers were asked whether they planned to make any changes in response to the Single Farm Payment and the phasing out of area-based payments in relation to the area of grassland that they managed. A quarter said that they did.

Table 5.14 Have you or do you plan to make any changes in response to the Single Farm Payment (SFP) and the phasing out of area-based payments (if applicable) in relation to the area of grassland that you manage? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Yes	25	17	33	10	11	40	29	0	**42**
No	75	83	67	90	89	60	71	100	**58**
Number of respondents	*99*	*18*	*15*	*20*	*9*	*5*	*7*	*1*	*24*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q74A)

5.2.70 There was no significant difference in response according to the respondent's age.

Table 5.15 Have you or do you plan to make any changes in response to the Single Farm Payment (SFP) and the phasing out of area-based payments (if applicable) in relation to the area of grassland that you manage? (Please tick one)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Yes	26	n/a	15	29	28	25
No	74	n/a	85	71	73	75
Number of respondents	*100*	*0*	*13*	*35*	*40*	*12*

Source: PACEC Survey of farmers, land managers and graziers (Q74A)

5.2.71 Details of the changes they propose to make are listed in Table 5.16 and Table 5.17 below. Generally, with a couple of exceptions, farmers plan to reduce livestock numbers on their land and to extensify production. In a couple of cases, the SFP will force them to sell the land or to retire from farming.

Table 5.16 If 'Yes', please give details

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
No change	62	0	**0**	0	0	0	0	n/a	**69**
Reduction in Use of cattle due to acreage not headage	4	0	0	0	0	0	0	n/a	5
Less grazing	3	0	0	0	0	0	0	n/a	3
Reduce number of stock	3	0	0	0	0	0	0	n/a	3
Less intensive grazing	3	50	33	0	0	0	50	n/a	0
Helps to pay for fencing and general maintenance	2	0	0	0	0	0	0	n/a	2
Motivated to look after grassland more environmentally	2	0	0	0	0	0	0	n/a	2
Increase the size of the herd	2	0	0	0	0	0	0	n/a	2
Seek rent reductions	2	0	0	0	0	0	0	n/a	2
Gave up grazing land with management restrictions	2	0	67	0	0	0	0	n/a	0
Go into contract farming arrangement	2	0	0	0	0	100	0	n/a	0
Increase stocking rate	2	0	0	0	0	0	50	n/a	1
Low prices mean less animals kept	1	0	0	0	0	0	0	n/a	1
Less cattle	1	0	0	0	0	0	0	n/a	1
Makes less money	1	0	0	0	0	0	0	n/a	1
Now use previously set aside land for permanent pasture	1	0	0	0	0	0	0	n/a	1
Restricted near river due to nitrate sensitive zone	1	0	0	0	0	0	0	n/a	1
Payment for topping grass near nitrate sensitive zone	1	0	0	0	0	0	0	n/a	1
Some grass more intensive, less benefit to environment	1	0	0	0	0	0	0	n/a	1
Reduced costs	1	0	0	0	0	0	0	n/a	1
Less use of fertilisers/spraying	1	0	0	0	0	0	0	n/a	1
Late Payment causes problems	1	0	0	0	0	0	0	n/a	1
Put hills into temporary grass to prevent run-off	1	0	0	0	0	0	0	n/a	1
Registered more land to get more payment	1	0	0	0	0	0	0	n/a	1
Countryside stewardship scheme effects	1	0	0	0	0	0	0	n/a	1
Seek compensation for 'bad' areas	1	0	0	0	0	0	0	n/a	1
Give up land	1	0	0	0	0	0	0	n/a	1
Sell cattle	1	0	0	0	0	0	0	n/a	1
Reduction in suckler cows or sell weaned calves earlier	1	50	0	0	0	0	0	n/a	0
Reduce cattle numbers	1	0	0	50	0	0	0	n/a	0
Retire	1	0	0	0	50	0	0	n/a	0
Make all arable land permanent grassland and top	1	0	0	50	0	0	0	n/a	0

Don't know/don't want to say	2	0	0	0	50	0	0	n/a	1
Number of respondents	*117*	*2*	*3*	*2*	*2*	*2*	*2*	*0*	*104*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q74B)

Table 5.17 If 'Yes', please give details

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
No change	62	n/a	0	**0**	**0**	**75**
Reduction in Use of cattle due to acreage not headage	4	n/a	0	0	0	5
Less grazing	3	n/a	0	0	0	3
Reduce number of stock	3	n/a	0	22	10	0
Less intensive grazing	3	n/a	0	22	10	0
Go into contract farming arrangement	3	n/a	0	22	10	0
Helps to pay for fencing and general maintenance	2	n/a	0	0	0	2
Motivated to look after grassland more environmentally	2	n/a	0	0	0	2
Increase the size of the herd	2	n/a	0	11	10	0
Seek rent reductions	2	n/a	50	0	10	0
Gave up grazing land with management restrictions	2	n/a	50	0	10	0
Increase stocking rate	2	n/a	0	11	10	0
Low prices mean less animals kept	1	n/a	0	0	0	1
Less cattle	1	n/a	0	0	0	1
Makes less money	1	n/a	0	0	0	1
Now use previously set aside land for permanent pasture	1	n/a	0	0	0	1
Restricted near river due to nitrate sensitive zone	1	n/a	0	0	0	1
Payment for topping grass near nitrate sensitive zone	1	n/a	0	0	0	1
Some grass more intensive, less benefit to environment	1	n/a	0	0	0	1
Reduced costs	1	n/a	0	0	0	1
Less use of fertilisers/spraying	1	n/a	0	0	0	1
Late Payment causes problems	1	n/a	0	0	0	1
Put hills into temporary grass to prevent run-off	1	n/a	0	0	0	1
Registered more land to get more payment	1	n/a	0	0	0	1
Countryside stewardship scheme effects	1	n/a	0	0	0	1
Seek compensation for 'bad' areas	1	n/a	0	11	0	0
Give up land	1	n/a	50	0	0	0
Sell cattle	1	n/a	0	0	10	0
Reduction in suckler cows or sell weaned calves earlier	1	n/a	0	0	10	0
Reduce cattle numbers	1	n/a	0	0	0	1
Retire	1	n/a	0	0	0	1
Make all arable land permanent grassland and top	1	n/a	0	0	10	0

Don't know/don't want to say	2	n/a	0	11	0	1
Number of respondents	*117*	*0*	*2*	*9*	*10*	*96*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q74B)

5.2.72 When asked what effect the gradual reduction in the SFP would have on them (see Table 5.18 and Table 5.19), respondents tended to raise concerns over finances, saying that the financial loss would have to be made up by either better market prices or alternative aid, or the environment, believing that reduced funding will impact negatively on the state of the landscape. Farmers, land managers and graziers in the 30-44 age group were more likely to anticipate impacts from the gradual reduction in the SFP.

Table 5.18 What effect will the gradual reduction in the level of the SFP you receive have on the area of grassland you manage? (Please give details)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
May make beef/sheep unviable	6	0	8	8	17	25	0	n/a	0
Look for other sources of income	6	0	17	8	0	25	0	n/a	0
Will become overgrown with weeds/ragwort	3	0	0	0	17	25	0	n/a	0
Will look a mess	3	0	0	0	17	25	0	n/a	0
Very little	3	9	0	0	0	0	25	n/a	0
Reduce inputs	3	9	0	8	0	0	0	n/a	0
Get landlord to realize they must pay for grazing	3	9	8	0	0	0	0	n/a	0
Expect SFP to increase slightly	3	0	17	0	0	0	0	n/a	0
Will have to cut back	3	0	0	0	0	0	0	n/a	12
Will hopefully be made up by the market	3	0	0	0	0	0	0	n/a	12
Reduce numbers	3	0	0	0	0	0	0	n/a	12
Apply for more environmental schemes	3	0	0	0	0	0	0	n/a	12
Depends on environmental support	1	9	0	0	0	0	0	n/a	0
Increase importance of market prices and cost of production	1	9	0	0	0	0	0	n/a	0
Like a frog in a saucepan on a stove	1	9	0	0	0	0	0	n/a	0
Management constraints imposed by SFP	1	0	8	0	0	0	0	n/a	0
Plough where we can	1	0	0	0	0	0	25	n/a	0
Retire sooner	1	0	0	0	17	0	0	n/a	0
Higher management cost	1	0	8	0	0	0	0	n/a	0
Reduce it	1	0	0	8	0	0	0	n/a	0
Financial ruin	1	0	0	0	0	0	0	n/a	6
Expect landowners to be more responsible for water	1	0	0	0	0	0	0	n/a	6
The end of us keeping cattle/sheep	1	0	0	0	0	0	0	n/a	6
Not renew F.B.T.	1	0	0	0	0	0	0	n/a	6
None/Nothing	43	45	42	62	67	25	50	n/a	24
Don't know/don't want to say	3	0	0	8	0	0	0	n/a	6
Number of respondents	*67*	*11*	*12*	*13*	*6*	*4*	*4*	*0*	*17*

Source: PACEC Survey of farmers, land managers and graziers (Q75A)

Table 5.19 What effect will the gradual reduction in the level of the SFP you receive have on the area of grassland you manage? (Please give details)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
May make beef/sheep unviable	6	n/a	10	12	0	0
Look for other sources of income	6	n/a	20	4	4	0
Will become overgrown with weeds/ragwort	3	n/a	0	4	0	17
Will look a mess	3	n/a	0	4	0	17
Very little	3	n/a	10	4	0	0
Reduce inputs	3	n/a	0	0	4	17
Get landlord to realize they must pay for grazing	3	n/a	0	0	8	0
Expect SFP to increase slightly	3	n/a	10	0	4	0
Will have to cut back	3	n/a	0	4	4	0
Will hopefully be made up by the market	3	n/a	0	0	8	0
Reduce numbers	3	n/a	10	4	0	0
Apply for more environmental schemes	3	n/a	10	0	4	0
Depends on environmental support	1	n/a	0	0	4	0
Increase importance of market prices and cost of production	1	n/a	0	4	0	0
Like a frog in a saucepan on a stove	1	n/a	0	4	0	0
Management constraints imposed by SFP	1	n/a	10	0	0	0
Plough were we can	1	n/a	0	0	4	0
Retire sooner	1	n/a	0	0	0	17
Higher management cost	1	n/a	0	0	4	0
Reduce it	1	n/a	10	0	0	0
Market trends will offset decline in SFP	1	n/a	0	4	0	0
Financial ruin	1	n/a	0	0	4	0
Expect landowners to be more responsible for water	1	n/a	0	0	4	0
The end of us keeping cattle/sheep	1	n/a	0	4	0	0
Not renew F.B.T.	1	n/a	0	4	0	0
None/Nothing	43	n/a	**10**	50	46	50
Don't know/don't want to say	3	n/a	10	4	0	0
Number of respondents	*68*	*0*	*10*	*26*	*26*	*6*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q75A)

International policy

5.2.73 The main influencing areas of international policy are: animal welfare; food hygiene and transport policies of the EU and the rigour of their enforcement in member states; changes in international tariffs and rules on production and export subsidies agreed

through the WTO; and the control of animal diseases within the UK and in countries from which meat is imported.

5.2.74 As mentioned previously, the impact of the expanding EU will also impact British farming. Improvements in the efficiencies and quality of production systems in farming industries of EU accession states will introduce greater levels of output and greater elements of import competition to British meat producers (see Asken, 2001). Poland in particular is cited as having a great potential for increases in output. Exports from these countries will also benefit from meeting EU animal welfare standards and guarantees to customers of adherence to EU environmental regulations. Trade works both ways, however, and the East of England may benefit from easier access to more markets in the East of Europe.

Climate change

Future

5.2.75 Climate change may work in different directions for the supply of red meat. A warming of the British climate will extend the grass growing season, with warmer, wetter winters providing improved winter grazing. Higher levels of nitrogen pollution also enhance the growth of grasses. Warmer winters also mean less need for over-wintering in buildings.

5.2.76 However, this advantage may be offset by the forecast impact of hotter, drier summer, posing possible feeding and welfare issues for stock. Higher levels of storms and floods will also pose problems for grazing stock on flood plains and coastal marshes. Mean temperatures are likely to increase, meaning fewer frosts and hotter extreme summer conditions. Within the EU, maize may be grown further north and crops dependent on low temperatures for bud cannot grow further in milder areas. It may become very difficult for some horticultural crops to be grown profitably further south in Europe[66].

5.2.77 Serious concerns over climate change may lead to a restriction in the expansion of beef production in areas of tropical forest[67].

Profitability of Farms – comparison

Present

Specialist poultry most profitable of the livestock enterprises

5.2.78 The table below summarises the net farm income by type of farm in real terms at 2004/05 prices. The net farm incomes fluctuate wildly for all types of farms and all

[66] Source: The First Report of the Sustainable Farming and Food Research Priorities Group, March 2005

[67] See 5.3.18.

years. In 2004/05, specialist poultry was by far the most profitable type of farm on average.

Past

Profitability varied by enterprise type

5.2.79 In comparison to current profitability, in 1999/00, specialist poultry was one of the least profitable types of farm. Lowland grazing livestock has consistently been one of the least profitable farm types since 1998/99, its net income peaking at £7,300 per farm in 2003/04.

Table 5.20 Net farm income by type of farm, real terms, 2004/05 prices (£000/farm)[68]

	98/99	99/00	00/01	21/02	02/03	03/04	04/05
Dairy	**13.3**	**10.4**	**15.4**	**33.4**	**17.4**	**24.3**	**26.4**
Grazing livestock (LFA)	7.1	6.3	6.5	8.0	18.8	15.4	13.4
Grazing livestock (lowland)	**2.0**	**0.6**	**-0.4**	**-0.1**	**6.8**	**7.3**	**5.4**
Cereals	9.7	17.3	8.2	6.4	14.0	37.5	15.6
General cropping	41.1	8.4	20.4	18.9	16.6	58.6	32.2
Specialist pigs	-45.9	-12.3	46.2	23.3	26.8	35.4	25.1
Specialist poultry	26.1	5.7	33.3	28.9	102.9	54.8	89.7
Mixed	4.7	8.2	8.4	4.8	12.0	25.2	16.4
Horticulture	25.9	22.7	23.7	38.3	36.7	41.8	28.4
All types	*13.2*	*9.8*	*11.6*	*16.1*	*17.6*	*30.4*	*21.2*

Source: Defra, October 2005
NB. 2001/02 excludes farms subjected to compulsory FMD cull.

Profitability of farms – dairy

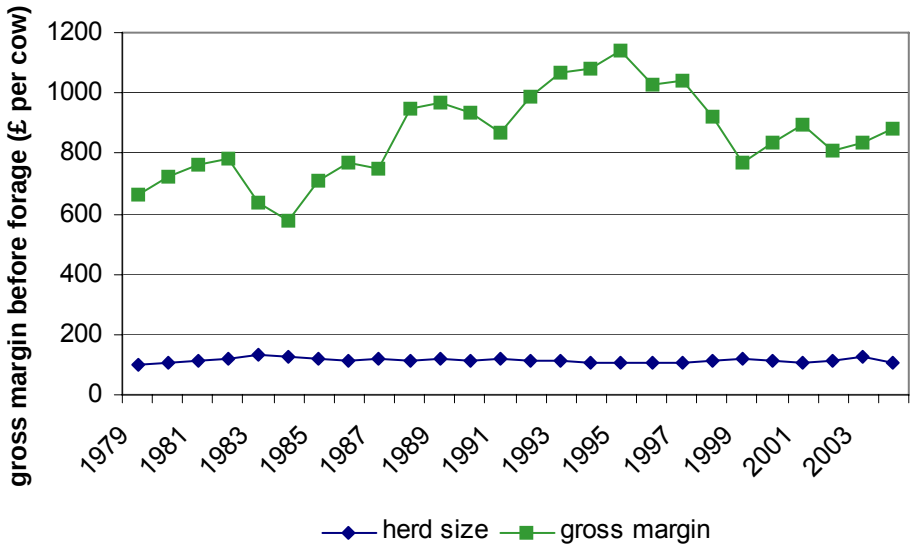
Present and Past

Dairy farms have gross margins around £800 per cow, recent lower values from strong pound

5.2.80 By 2004, the gross margin was around £880 per cow. Figure 5.14 shows the gross margin per cow of dairy enterprises between 1979 and 2004. The results are shown in real terms, at 2004 prices[69].

[68] Net farm income represents a return to the farmer and spouse alone for their manual and managerial labour and on tenant-type capital invested (which includes livestock, machinery, glasshouses, etc, but does not include land and buildings). To represent the return to the farmer and spouse alone, a notional deduction is made for any unpaid labour provided by non-principal partners and directors, valued at average local market rates for manual agricultural work. An imputed rent is deducted for owner occupied land and buildings and landlord-type improvements made by the tenant, in order to confine the measure to tenant-type activities. No deduction is made for interest payments on farming loans, overdrafts or mortgages.

Figure 5.14 Dairy gross margin, Eastern counties of England, 1979 to 2004



Source: Rural Business Unit

5.2.81 Dairy enterprise profitability generally improved following the introduction of milk quotas in 1981. Inputs were used more efficiently through closer attention to management of dairy enterprises; margins improved accordingly. Favourable exchange rates in the mid 1990s improved the sale value of milk. The gross margin peaked at £1,138 per cow in 1995. The subsequent fall was due to the strengthening value of sterling and a corresponding reduction in the milk price.

5.2.82 As milk buyers in the East of England rationalise processing capacity and haulage, and as fewer farms supply milk, the cost of milk collection is passed to those remaining in production. The requirement to make significant capital investment in dairy enterprises can force the decision of whether to remain in production. In particular, the costs of investment in facilities of machinery to avoid pollution can render dairy businesses unviable.

5.2.83 Whilst the gross margin provides a reliable guide to the technical performance of the dairy enterprise, it takes no account of the costs of labour, machinery and land occupancy. Dairy enterprises have demanding labour requirements as staff must be technically competent but must also be willing to work long and antisocial hours. As a result, suitable labour tends to be scarce and costly, especially where farm businesses compete in labour markets with non-agricultural businesses.

5.2.84 Environmental legislation, mainly in relation to the management of waste, also gives rise to increased fixed costs. The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations were introduced in 1991. They restricted applications of slurry to land, and often necessitated investment in slurry handling facilities.

[69] For the methodology of the annual surveys, see Lang (2005).

Future

5.2.85 The future profitability of farming mainly depends on the price to the farmer and impacts of changes in subsidies. The Farm Management Pocketbook[70] suggests that the higher the milk yields and stocking rates of the farmers, the more they are set to lose. However, the larger farms tend to be the more efficient, as fixed costs are shared amongst more cows. Defra anticipates that herd sizes will continue to grow, averaging 115 cows per herd in the UK by 2010[71]. Anecdotal evidence suggests existing large farms will find it difficult to expand a large amount, as expansion would require heavy capital investment for new equipment.

5.2.86 Farmers are increasingly looking to decrease input costs, for example, by breeding cows with larger capacity for milk production, and by increasing the occurrence of feeding cattle in their cubicle rather than taking cattle out to graze. This decreases labour requirements in moving cattle in and out of the shed. The forage maize to feed the cattle can be produced on the farm at low cost and stored as silage for the year. This may be a particularly attractive option in the East of England where the land is fertile for such arable growth.

5.2.87 The Royal Association of British Dairy Farmers (RABDF) suggests that dairy farmers in the UK must get bigger or collaborate in sharing, buying or marketing in order to survive in the future. They also recommend farmers dedicate themselves to certain customers or markets and offer substantial product attributes[72].

Profitability of farming – beef

Present

A significant proportion of beef production in England is carried out unprofitably, particularly in the East

5.2.88 The recent study into the Economics of Lowland Beef Production shows that a significant proportion of beef production in England is carried out unprofitably, and that beef production, to 2004, was subsidy-driven. The gross and net margin performance of suckler and trading beef enterprises in North, West and East England in 2004 are shown respectively in Table 5.21 and Table 5.22.

[70] Farm Management Pocketbook 2007, John Nix, September 2006

[71] Defra; *The Future of Dairy Farming* (2004)

[72] *The Dairy Industry Today* – a presentation by Nick Everington, Chief Executive of the RABDF

Table 5.21 Output costs and margins for suckler herds in the North, West and East regions

	North	West	East
Number of enterprises	26	34	30
Suckler cows per herd	45.6	51.3	48.7
Forage hectares per head	35.27	42.8	44.7
Stocking rate (cows per hectare)	1.29	1.21	1.09
		£/cow	
Cattle output	272	265	197
Subsidy output	154	164	158
Total output	426	429	355
Variable cost	146	131	168
Gross margin	**280**	**298**	**187**
Fixed costs	366	325	405
Net margin	**-86**	**-27**	**-218**

Source: The Economics of Lowland Beef Production in England 2003, University of Aberystwyth, 2003
Note: Fixed costs include overheads and environmental scheme payments

5.2.89 The average suckler herd in the East generated a gross margin of £187 per cow and a net margin of -£218 per cow. The lower net margin in the East is attributable mainly to higher fixed costs than in the North and West, which result from higher labour costs for the suckler herd and higher rent/ rental equivalent. The average trading enterprise in the East generated a gross margin of £188 per animal and a net margin of £3 per animal (after a £120 per animal subsidy).

Table 5.22 Outputs, costs and margins for trading beef enterprises in the North, West and East regions

	North	West	East
Number of enterprises	59	103	70
Animals per enterprise	97	94	83
Throughput per enterprise (ha)	27,000	22,962	23,714
Forage hectares per enterprise	22.5	32.6	26.36
Stocking rate (LU per hectare)	2.03	1.36	2.03
		£ per animal	
Cattle output	229	208	237
Subsidy output	138	106	120
Total output	367	314	357
Variable costs	212	162	169
Gross margin	**155**	**152**	**188**
Fixed costs	173	195	185
Net margin	**-18**	**-43**	**3**

Source: The Economics of Lowland Beef Production in England 2003, University of Aberystwyth, 2003

5.2.90 It is not unusual for beef farmers to cross-subsidise unprofitable production. This can be through ignoring the full economic cost of owner occupied land or 'unpaid' labour. Alternatively, farmers might support unprofitable farm enterprises with revenue generating activity. This could be a diversification enterprise, rental income from an asset such as a mobile telephone mast or from off farm income. In some cases agri-environment scheme income might be cross subsidisation or, more usually, will be integral with the livestock production enterprise. In many cases, as a result of inadequate record keeping on farms, the farmer does not have the necessary information to ascertain whether an enterprise is profitable.

5.2.91 In recent years, a series of animal diseases have disrupted the marketing of livestock and have given rise to a series of legislative constraints to livestock production. The individual disease events include the Bovine Spongiform Encephalopathy (BSE), Foot and Mouth Disease (FMD), and Tuberculosis (TB). Whilst these are historical events, they demonstrate that animal disease continues to be a driver of enterprise profitability due both to the disruption of markets and due to the costs of managing biosecurity and other disease impacts.

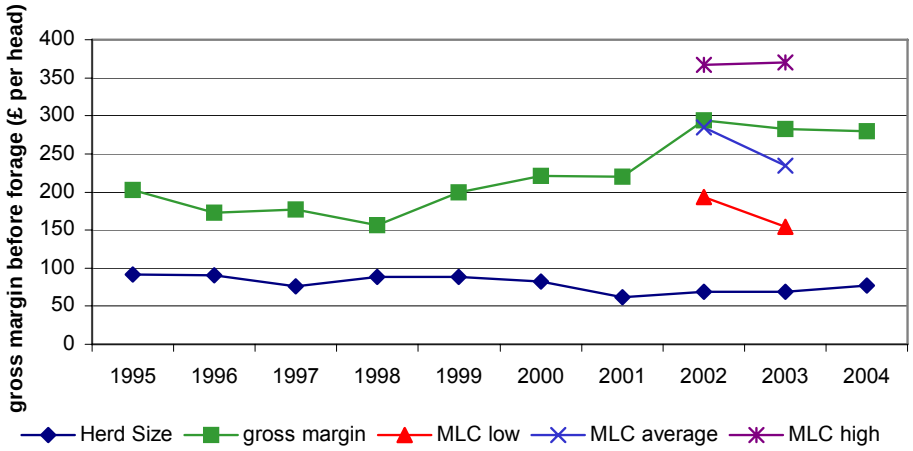
Past

Gross margin of beef enterprises generally increased since 1995, although temporary decline 1995-98

5.2.92 Figure 5.15 shows the gross margin of beef enterprises in the East of England (before the deduction of the forage costs[73]) for 1995 to 2004. The results are taken from the Farm Business Survey. The chart shows that by 2004 the gross margin per head was around £280. In general the gross margin increased over the period, with a temporary decline between 1995 and 1998.

[73] These forage costs include seeds, fertilisers and sprays used on fodder crops including grass for both grazing and conserving as silage, or hay.

Figure 5.15 Beef gross margin, Eastern counties of England, 1995 to 2004[74]



Source: Rural Business Unit and MLC

Future

5.2.93 The data above shows that even the most efficient farmers will find it difficult to make a positive net margin without subsidies. Whilst the system is in a stage of transition, farmers will still be able to use the Single Payment effectively as a subsidy and the Pocketbook suggests that in the next few years farmers should use this support to move the cost of businesses to lower unit costs of production. The Pocketbook suggests that unless unit costs can be cut, beef numbers are likely to fall, unless the end price rises significantly or the cost of calves and stores falls.

Profitability of farming – sheep

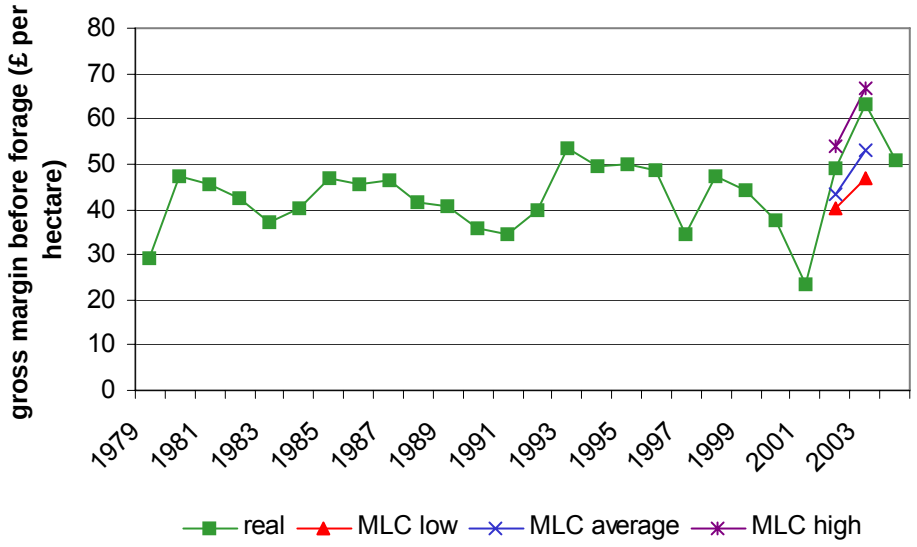
Present and past

Gross margins of sheep enterprises relatively stable in the 1980s, but volatile since 1993 from exchange rate and SAPS

5.2.94 Figure 5.16 shows the gross margin of sheep enterprises between 1979 and 2004. By 2004 the gross margin was around £50 per head. Through the 1990s and early 1980s, the gross margin was relatively stable, but it was more volatile between 1993 and 2004, varying in response to the Sterling to Euro exchange rate and the rate of the Sheep Annual Premium Scheme (SAPS).

[74] For 2002 and 2003, the national results of the Meat and Livestock commission (MLC) survey of beef production costs are also shown. These include high, low and average performance enterprises. The Farm Business Survey and MLC survey present a consistent picture of enterprise performance in 2002 and 2003. Subject to differences in survey methodology, it can be seen that the East of England farms were close to, or a little higher than, average profitability over the two years common to both surveys. Profitability declined over this period.

Figure 5.16 Sheep gross margin, Eastern counties of England, 1979 to 2004[75]



Source: Rural Business Unit and MLC

Future

5.2.95 Prices for sheep and lambs is expected to remain high in the short term (source: the Pocketbook) as demand stays high and the flocks continue to contract. Anecdotal evidence suggests however that the numbers of sheep are not likely to increase, particularly in the East where grazing land is fragmented and it is difficult to move flocks around.

Profitability of Cattle, Sheep and Dairy

Future

5.2.96 We asked farmers, land managers and graziers what they would do if grazing cattle/sheep became economically unviable. A quarter of respondents (19 out of 81) would sell their land and a further 12% (8 out of 81) would stop all farming on the land. For 5% they anticipate no change to the current arrangement and indeed two farmers comment that grazing cattle/sheep is already uneconomical.

[75] As observed for beef enterprises, the results for sheep enterprises were consistent with findings of MLC surveys. As with beef, the East of England sheep enterprises performed between the average and high MLC performance level.

Table 5.23 What would you do if grazing cattle and sheep on your land became economically unviable? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Sell land	23	11	24	25	33	33	25	100	0
Use land for pigs/chickens (no grazing)	17	21	18	15	22	0	25	0	0
Reduce cattle/sheep numbers on the land	14	16	18	15	0	17	13	0	0
Stop all farming on the land	12	21	6	20	0	17	0	0	0
No change to current arrangement	5	5	0	5	0	17	13	0	0
Diversify into other businesses	4	5	0	5	11	0	0	0	0
Turn all land to arable/horticultural usage	1	0	6	0	0	0	0	0	0
Other	23	21	29	15	33	17	25	0	100
Number of respondents	*81*	*19*	*17*	*20*	*9*	*6*	*8*	*1*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q72A)

Table 5.24 Other actions if the land became economically unviable

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Making hay for horses	33	0	60	50	0	0	50	n/a	n/a
It is already uneconomical	13	67	0	0	0	0	0	n/a	n/a
Plant more trees	13	33	0	0	0	0	50	n/a	n/a
Not allowed	13	0	40	0	0	0	0	n/a	n/a
It takes years to establish viable stock	7	0	0	0	0	100	0	n/a	n/a
Identify reason and address	7	0	0	0	50	0	0	n/a	n/a
Environmental scheme	7	0	0	0	50	0	0	n/a	n/a
Don't know/don't want to say	7	0	0	50	0	0	0	n/a	n/a
Number of respondents	*15*	*3*	*5*	*2*	*2*	*1*	*2*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q72B)

5.3 Demand Side

5.3.1 This part of the chapter considers past, present and future trends of drivers on the demand side of the red meat industry. We consider:

- Price to the consumer
- Incomes and consumption
- Consumer tastes
  - Health concerns
  - Halal meat
- World demand
- Dairy Consumption

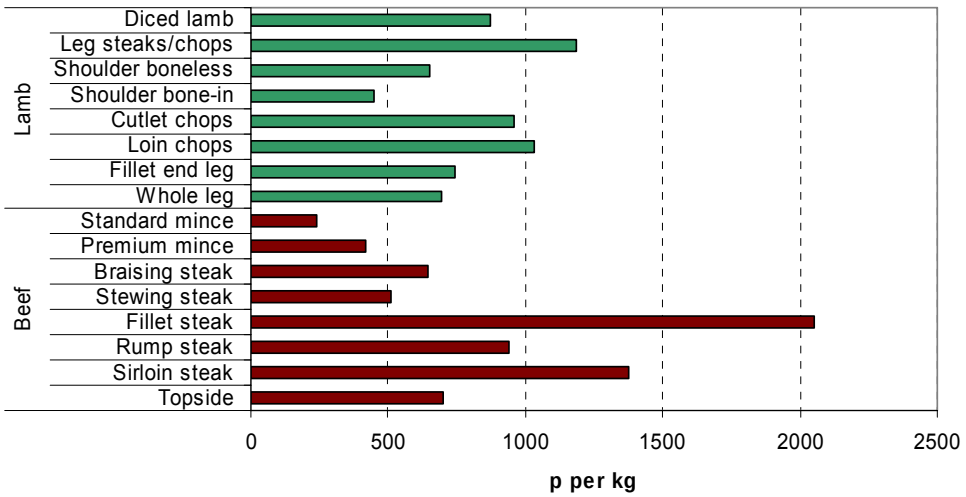
Price to the consumer

Present

Steak the most expensive meat cut, but all lamb cuts more expensive than cheapest beef cuts

5.3.2 Price change generally affects the demand for a good, in that when the price increases, demand normally declines.

Figure 5.17 Price of meat cuts, GB, Nov 2005



Source: MLC, Office of National Statistics

5.3.3 The price of selected meat cuts is shown in Figure 5.17. Fillet steak is by far the most expensive per kilo, with sirloin next highest. Leg steaks/chops are the most expensive lamb cut.

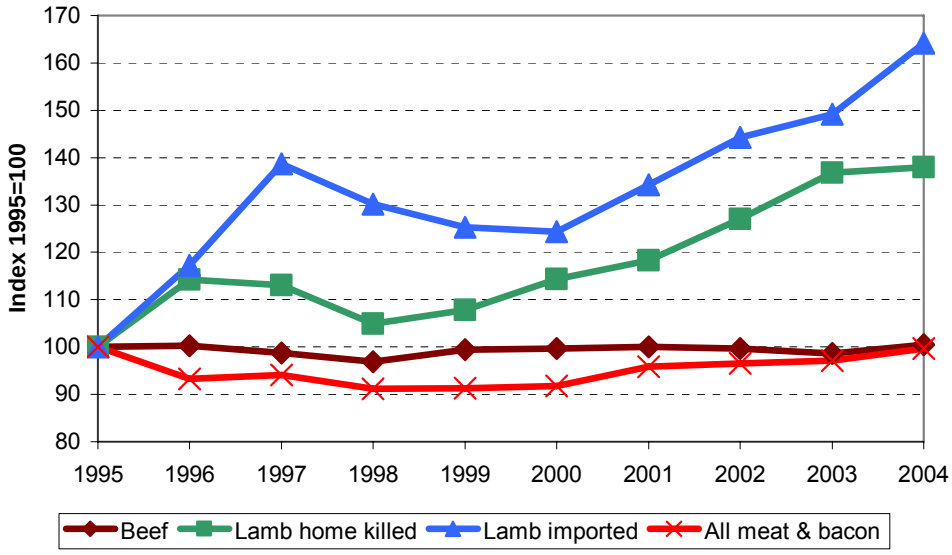
Past

Price to the consumer of beef and bacon been relatively steady since 1995; price of lamb (imported especially) has risen

5.3.4 The chart below shows the price of red meat indexed using 1995 as a marker[76]. The price has increased for home-killed lamb and lamb imports, whilst the price of beef has remained reasonably steady.

5.3.5 Recent evidence suggests that some people are willing to pay more for sourced meat. Although the market shares of premium and organic sectors of the retail meat market are small (about 10% for beef), they are growing quickly - even with prices of up to 50% higher than for standard grades. For example, in the year to September 2005, total meat sales rose by 2.2% in value terms, while the premium sector rose by 54% and the organic sector by 26%[77].

Figure 5.18 Retail price of meat, 1995-2004[78]



Source: MLC, 2005, Office for National Statistics

Future

Price elasticity of demand for meat

5.3.6 The price elasticity of demand measures how the quantity of a good demanded changes in response to the change in price. The National Food Survey 2000 estimates price elasticities for meat products, using data from 1988-2000.

[76] This is a re-indexed as the RPI actually runs from 1987.

[77] Source: Fresh meat brand analysis, Taylor Nelson Sofres special report for MLC.

[78] Note: 'All meat and bacon' comprises: beef, lamb home killed, lamb imported, pork, bacon and poultry meat.

Table 5.25 Price elasticity of demand for meat[79]

	Price elasticity
Beef and veal	-0.45
Mutton and lamb	-1.29

Source: Defra, National Food Survey 2000

5.3.7 These figures suggest that for a 10% increase in price (subject to caveats in the footnote below), demand for beef and veal would fall by 4.5%. However, lamb and mutton are slightly different as an increase in price results in a more than corresponding decrease in demand. For a 10% increase in price, demand for mutton and lamb would fall by 12.9%. This suggests demand for mutton and lamb is highly 'price elastic' which normally means there are 'substitute' meats to consume if the price increases.

Consumer Tastes

Past

Health concerns from animal diseases has reduced demand for red meat since the 1980s

5.3.8 Concerns about diet and health have been particularly significant in affecting the demand for red meat. Successive government reports in the mid-eighties (e.g. NACNE, 1983, COMA, 1984) drew attention to the high levels of saturated fats and dietary cholesterol in red meat, advising the public to reduce levels of consumption. At the same time there were concerns for animal welfare, reflected in the growth in vegetarianism.

5.3.9 A succession of food scares occurred towards the end of the eighties – salmonella (eggs), lysteria (soft cheese) and BSE (beef) – all of which served to heighten consumer concerns over food safety.

5.3.10 Following these health scares, consumers have increasingly demanded a higher quality of meat purchases. This has encouraged the producers all across the EU to provide information about both the geographical origin of the product and the system of rearing the animal. This 'guaranteed labelling' has been taken furthest in premium and organic meat. Region-of-origin labelling of fresh meat has also had some

[79] It is important to note that the NFS caveats the results for beef and veal price elasticity. *'It is possible that the price effects revealed in the NFS are a combination of demand and supply side effects. This would happen if factors affecting producer costs, and so the prices at which they are willing to sell, also affect consumer demands. The recent issues concerning meat safety are potentially such a factor, possibly causing increases in production costs for farmers and shifting demand schedules.'* The model was re-estimated and concerns were raised about the reliability of the results for beef and veal. However, the study still suggests *'The results for beef and veal…are the most reliable available at this time. However, they are less reliable than the other results presented there, and should be used with caution.'*

success for producers in both Wales (for lamb) and Scotland (for beef), supported by extensive advertising.

Future

Increasing health and hygiene standards may increase demand for red meat

5.3.11 There may be an increase in demand for red meat resulting from improved health and hygiene standards that resulted following livestock health problems in the 1990s.

Increasing public awareness of the process and procedures involved in producing meat for the table may make consumers more discerning

5.3.12 Farmers have voiced their support for the recent television show: *'Kill It, Cook It, Eat It'*[80] which was designed to reconnect the public with where their meat comes from by showing them the whole slaughter process. Almost everyone in the audience of guests who watched the procedure said they had found it valuable and many commented on the professionalism and skill of the slaughtermen, who they felt made the whole process as humane as possible. If making people more knowledgeable about how their food is produced makes them more discerning, this would be positive for British farmers who could market themselves by highlighting the differences between their standards compared to foreign competitors.

Demand for local meat may increase, for health and traceability reasons

5.3.13 The trend towards demand for locally-produced meat may help to support increases in beef and lamb consumption. People increasingly like to know where their meat has come from, partly because of hygiene standards already highlighted and partly to support local trade. This may lead to preferences shifting against international trade. People also prefer to know the source of their meat, which will also serve to increase demand for locally-sourced meat. Natural England's 'Eat the View' (ETV) scheme, which came to an end on 31/12/2006, aimed to promote sustainable local produce by increasing:

- consumer awareness of purchased products and the countryside
- demand for local/regional sustainable products
- marketing opportunities for producers through promoting landscape
- sustainable land management practices

5.3.14 It is possible there may be a 'polarisation' of available meat, whereby the premium brands and organic meat sectors grow for those who can afford and wish to pay a premium for their meat, and the low-cost sector grows for those who cannot afford or do not wish to pay the premium.

[80] Screened on BBC Three at the beginning of March 2007

Some increases in price for substitutes may increase demand for red meat

5.3.15 Unless active conservation measures are taken and/or there is a large increase in fish farming, fish may be expected to become relatively more expensive as a source of protein and competitor product[81]. Substitute foods will be sought.

Demand for halal meat is on the increase

5.3.16 The demand for sheep meat is strongly affected by the demand for halal meat for the Muslim population (although Muslims consume much less beef). Muslims eat approximately four times as much mutton and lamb as the population as a whole, and around 20% of the sheep meat produced in the UK. Around 80-85% of the UK total mutton consumption is by Muslims (source: MLC). Analysis by the MLC shows that fresh meat accounts for a greater share of Muslim customers' retail food expenditure (24%) than it does for the population as a whole (18%)[82].

However, demand may decline as substitutes for red meat become increasingly available

5.3.17 The variety of food available to the British consumer will increase, presenting substitutes for red meat (e.g. ostrich, game – pheasant, venison and partridge, and Quorn). The 'Game to Eat' campaign aims to improve the public's awareness of game as a healthy alternative to red meat. If disease (e.g. avian flu) does not intervene, health considerations may also continue the trend towards poultry as people are increasingly aware of the fat content and cholesterol implications of their diet. The trend towards vegetarianism, combined with the changing taste patterns of a British population with a higher proportion of the elderly, may also contribute towards a continuation of the fall in red meat consumption per head.

Environmental awareness among some consumers is likely to decrease demand for imported meat and possibly increase demand for local meat

5.3.18 There are two environmental issues when considering the production of meat: methods of production and food miles. Learning of the environmental costs of red meat production may deter some people from consuming red meat, particularly imported red meat. This may be particularly pertinent to Brazil, where it is believed swathes of Brazilian rainforest are being cleared for beef production[83].

5.3.19 The distribution, in terms of oil products, carbon emissions and food miles, may also deter people from buying produce that has travelled a long distance, particularly by air. However, whilst less distribution is by air within the UK, it is sometimes difficult to know how far food has travelled, as food described as 'local' meat may still have had to travel long distances to abattoirs, packers, distribution sheds and back to shops.

[81] See for example, Science, 03.11.2006

[82] Note: This excludes convenience products, which may include meat. Source: Mintel.

[83] Source: *Brazil's beef trade wrecks rainforests,* New Scientist, 10/04/2004

And even environmentally conscious consumers will continue to be influenced by price.

Incomes

Past and Present

Increases in income raise demand for meat – although by a lower proportion than the increase in income

5.3.20 Income is a driver of demand: the more money a person has, the more goods they are likely to demand. Income elasticity of demand measures the responsiveness of a quantity of a good demanded compared to the income of the person making the demand. Food tends to follow 'Engel's law' in that, as income increases, demand for the good also increases, but not in line with the increase in income. This is because the good is a 'necessity' i.e. poorer people spend a larger proportion of their income on food because they need it to survive; additional income may increase the amount of food they buy, or the quality of the food they buy, to some extent, but not in proportion to the income.

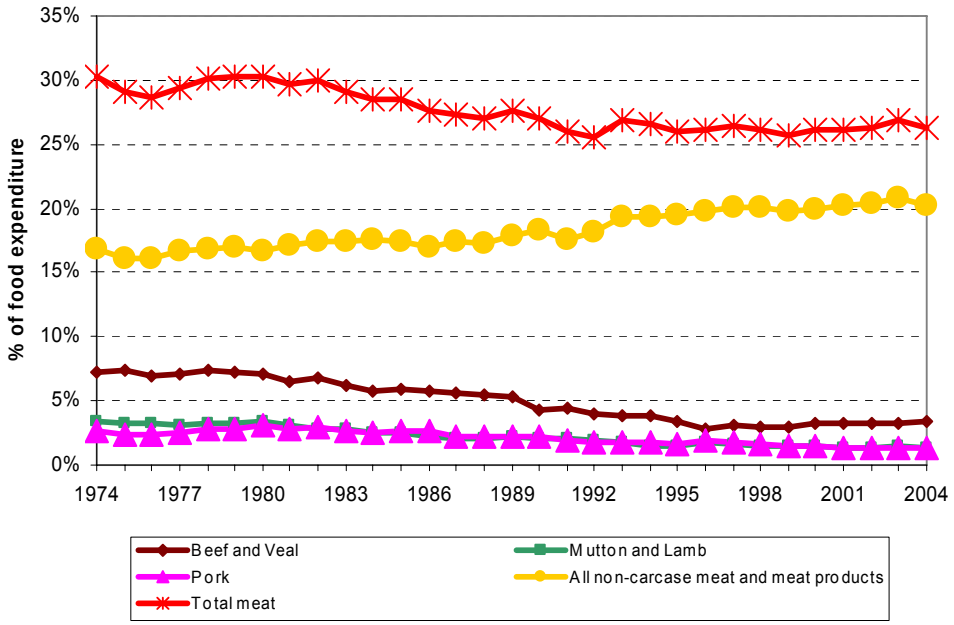
5.3.21 This is shown clearly in the table below. Gross disposable household income for the UK has increased by 4.4% per annum since 1995. This is slower than consumption expenditure, which increased by 5.9% per annum, but more quickly than expenditure on food, which increased by 2.8% per annum.

Table 5.26 Income and expenditure, current prices, UK, £million, 1995-2004

	Gross disposable income	Consumption expenditure	Consumption expenditure on food and drinks
1995	499,103	441,085	49,700
1996	528,590	472,711	53,025
1997	561,277	501,290	53,787
1998	581,138	534,153	55,162
1999	609,734	567,994	57,040
2000	646,059	600,826	58,628
2001	688,255	632,496	59,804
2002	710,144	664,562	61,310
2003	744,395	697,160	63,174
2004	768,304	732,531	65,521
Per annum growth	4.4%	5.9%	2.8%

Source: Economic Trends 633, August 2006, Office for National Statistics (National Accounts)

Figure 5.19 % of food expenditure on meat, 1974-2004



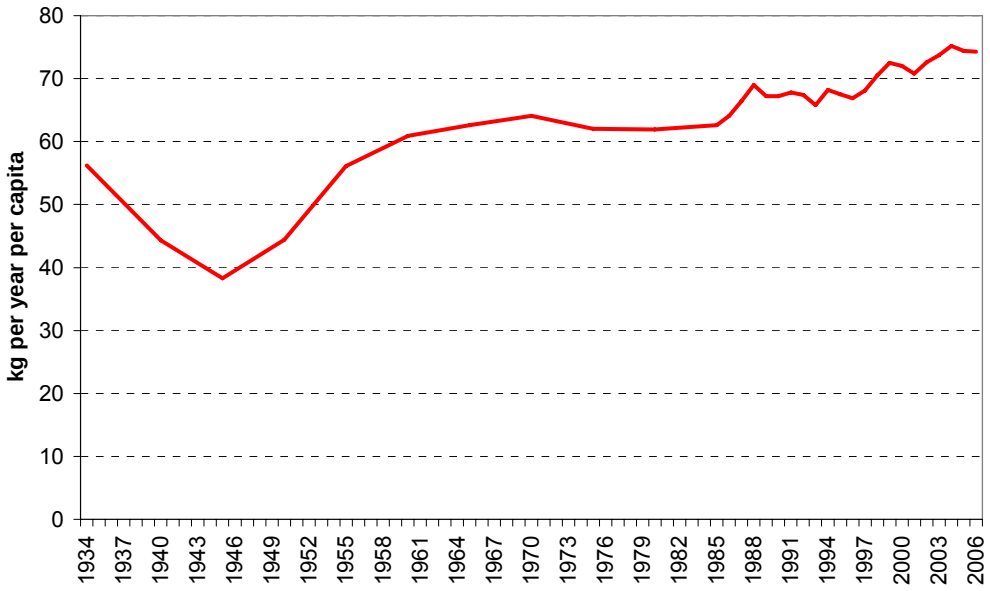
Source: Expenditure and Food Survey, Defra

5.3.22 Within an increasing amount of money being spent on food, however, the proportion spent on meat has been declining since 1974 (see Figure 5.19 below), from around 30% to 26%. The share spent on beef and veal and mutton and lamb has declined and the share on non-carcase meat and meat products (e.g. sausages, liver, bacon, ready meals, pate, and delicatessen meat) has increased.

Meat consumption increased post-Second World War

5.3.23 The chart below shows the per capita meat consumption, kg per year, in terms of carcase weight. This declined during the Second World War, but since has generally shown an increasing trend. The consumption shows meat available for consumption, including fresh and processed meat.

Figure 5.20 Per capita meat consumption, kg per year, carcase weight



Source: Meat and Livestock Commission, Meatfax 11, 2006

Consumption of all meat types has declined, except poultry, which has increased strongly

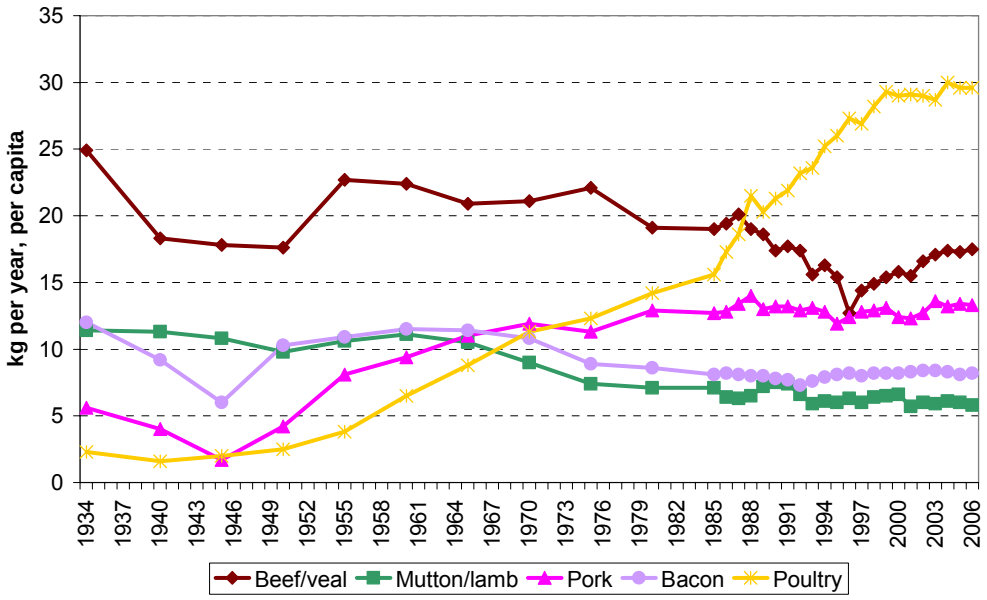
5.3.24 The types and categories of food consumed have changed in the last thirty years. For example, national consumption of fats, sugar, potatoes, green vegetables and bread has gone down while the consumption of fruit, milk products (but not liquid whole milk) and cereal products has risen[84].

5.3.25 Consumption of different kinds of meat has also changed. Consumption of both beef and veal, and mutton and lamb has declined, whilst the consumption of poultry has increased strongly. Beef has shown some recovery since 1997, when consumption started to increase again.

5.3.26 Since 1934, consumption of beef and veal has decline by 0.5% per annum. However, the trend since 1996 shows an increase of 3.3% per annum. Mutton and lamb have shown a fairly consistent declining trend, with equivalent figures of -0.9% pa and -0.8% pa.

[84] Source: National Food Survey, 1974-2000.

Figure 5.21 Consumption by meat type, 1942-1999



Source: Meat and Livestock Commission, Meatfax 11, 2006

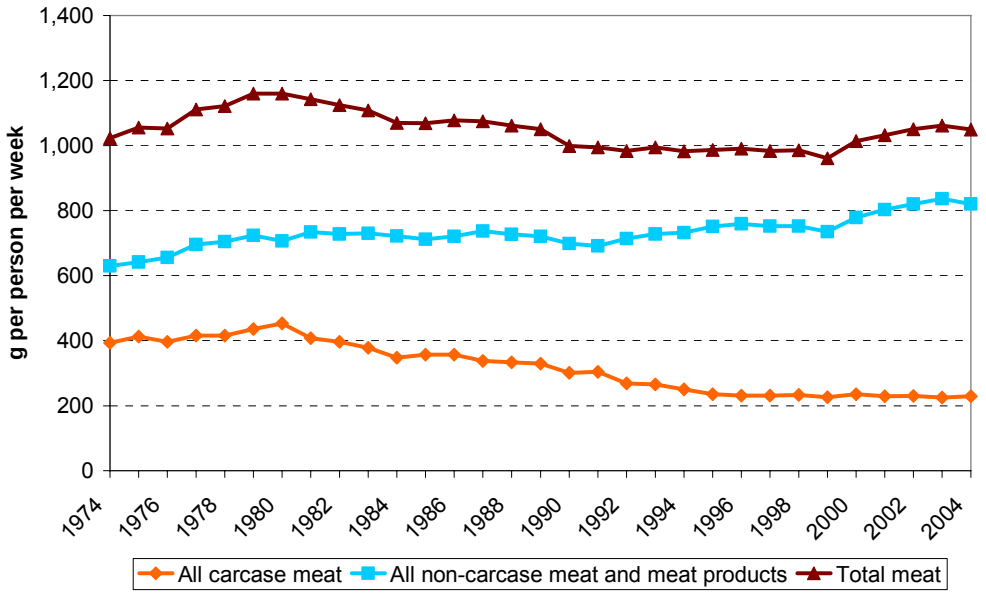
5.3.27 Consumption data is also available from the Expenditure and Food Survey (Defra). However, this shows just meat consumed within the home (i.e. excludes food eaten out). The chart shows declining consumption of carcase meat, and increasing consumption of non-carcase meat and meat products. A shift towards more processed food products may increase supplies from large scale suppliers.

5.3.28 The trend for total meat consumed differs slightly to that shown in Figure 5.20 as, firstly, it measures meat consumed (rather than meat available), secondly, data is taken from a sample, and thirdly, it excludes meat consumed outside of the home[85].

5.3.29 Consumption of meat by type is shown in Figure 5.23, again subject to the same differences as explained above.

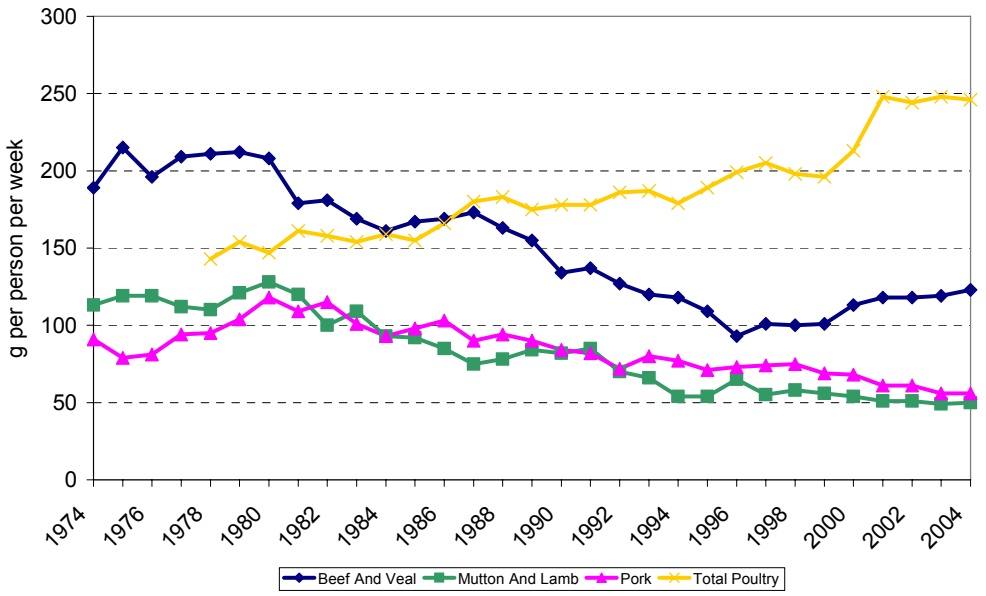
[85] Source: Clarification of data differences results from conversations with both Defra and the MLC.

Figure 5.22 Meat consumption, g per person per week



Source: Expenditure and Food Survey, Defra

Figure 5.23 Household Meat Consumption by Type, g per person per week



Source: Expenditure and Food Survey, Defra

Future

Income elasticity of demand for meat

5.3.30 The National Food Survey 2000 calculated estimates of income elasticity for food products. The survey used data from 1979 to 2000 to investigate the responsiveness to variations in income and the price of meat. The analysis indicates all goods are 'normal' i.e. an increase in income leads to an increase in demand for the good.

Table 5.27 Income elasticities of the demand for red meat, 1998-2000

	Income elasticity
Beef and veal	0.25
Mutton and lamb	0.15
All meats	*0.19*

Source: Defra, National Food Survey 2000

5.3.31 The price elasticity of 0.25 for beef and veal suggests that a 10% increase in income would result in a 2.5% increase in the demand for beef and veal. Similarly, demand for mutton and lamb would increase by 1.5% for a 10% increase in income.

World demand

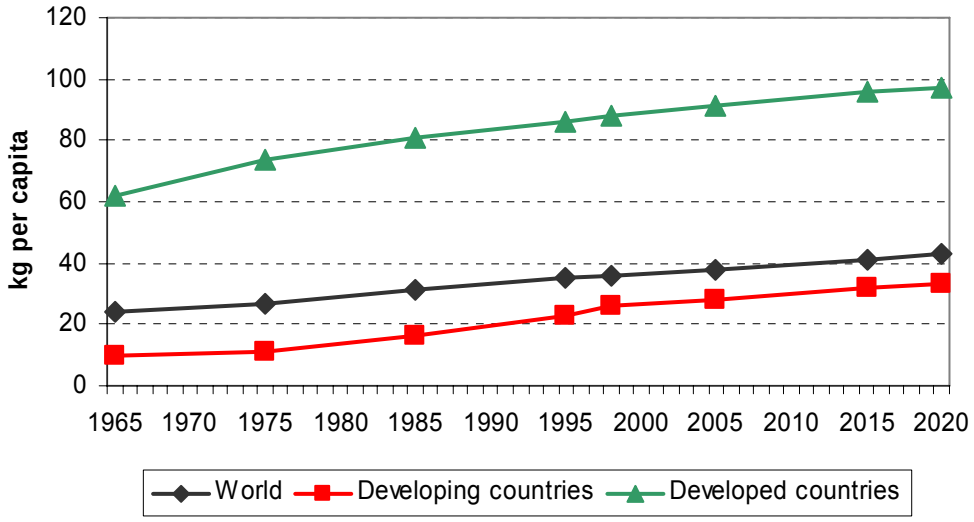
Present

5.3.32 The chart below shows that in 2005, the meat consumption of developed countries was around 91 kg per capita. Consumption for developing countries to 28 kg per capita. The average world consumption was 38 kg per capita.

Past

The developing world has increased demand for red meat as its affluence has increased

Figure 5.24 Annual world meat consumption



Source: Meat and Livestock Commission, from United Nations – FAO data

5.3.33 The chart above shows that consumption of meat per capita has more than doubled in developing countries since the 1960s. As affluence increases, the ability to afford red meat has also increased.

Future

5.3.34 Meat consumption is forecast to increase further by 2020 – to 33 kg per capita for developing countries and 97 kg per capita for developed countries. The average world forecast is around 43 kg per capita.

Dairy Consumption

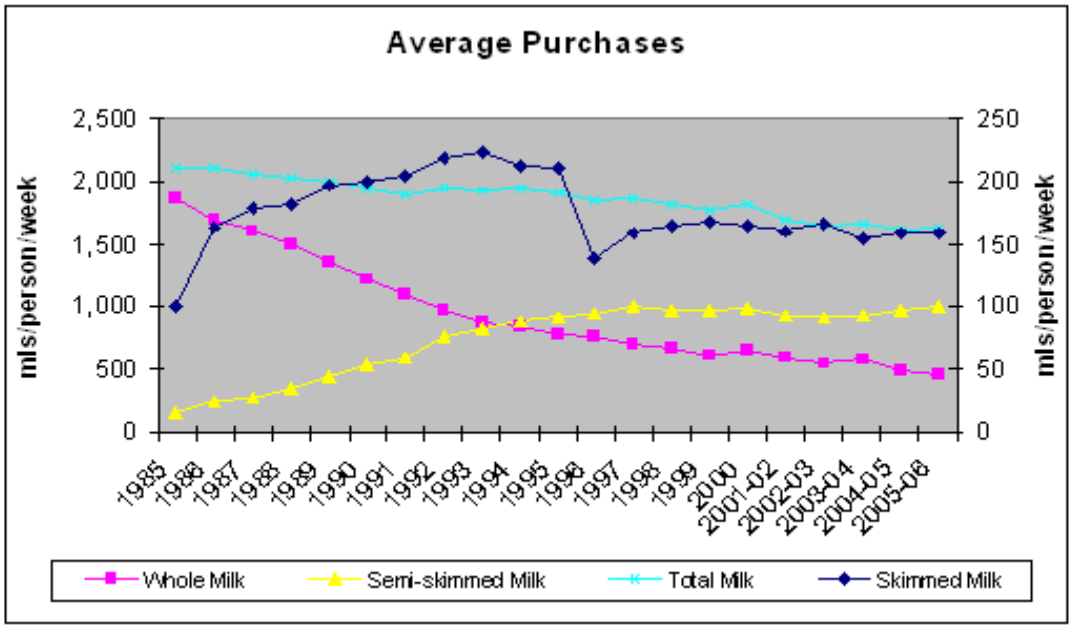
Present

5.3.35 On average, each person in the UK consumes 1.665 litres of milk per week[86].

Past

5.3.36 Average milk consumption has decreased steadily over the last twenty years, as shown by the following chart. Increases in skimmed and semi-skimmed milk sales have not compensated for falls in whole-milk sales over this period.

Figure 5.25 UK Milk Consumption, 1985-2004



Source: Defra

5.3.37 Conversely, consumption of dairy products, and especially yogurt has increased over the past 10 years, but UK consumption of cream, butter and cheese is below the EU average.

[86] Defra, 2004/05

Table 5.28 Average UK consumption per person per week

	2003-4	2004-5	1995
Liquid Milk (ml)	1,665	1,617	1,911
Yogurt (ml)	177	187	145
Cheese (g)	113	110	108
Butter (g)	35	35	34
Cream (ml)	20	19	18
Dairy Desserts (not frozen) (ml)	46	43	23

Source: Defra

Table 5.29 Consumption of Dairy Products in EU (kg/head)

	Milk	Cream	Butter	Cheese
Denmark	137.4	9.1	1.6	14.8
France	92.6	4.1	8.2	25.8
Germany	90.2	8.0	6.5	21.6
Netherlands	125.7	2.2	3.3	17.6
UK	112.7	3.3	3.3	9.9
EU Average	*96.6*	*4.6*	*4.6*	*18.8*

Source: RABDF, 2006[87]

Future

5.3.38 Recent developments have seen a growth in the consumption of yogurt drinks and 'designer' milk (including milk marketed as rich in Omega 3 or as the product of particular breeds or regions). Demand for organic milk continues to grow by 25% a year but still only represents just one in every 30 pints sold. There is future potential for the UK cheese market, especially as imports currently account for half of the cheese consumed in the UK. Supermarkets are already actively marketing regional cheeses. There is also potential for milk producers to enter the ice-cream processing market, although sales are limited to a local market without access to a good distribution network.

[87] *The Dairy Industry Today* – a presentation by Nick Everington, Chief Executive of the RABDF

5.4 Summary of the drivers of supply and their future impact

Driver	Discussion	Possible Impact[88]	Domestic Growth/Decline[89]
Price to the farmer	Although the supply of beef is expected to rise in the short-term from relaxing the OTMS in the UK (which usually lowers prices), strong levels of demand coupled with the recent reductions in South American supply are expected to keep beef prices at a relatively high level in 2006. Marketing and the lifting of the export ban, plus strong EU and world demand for beef means a weakening of prices is not expected.	Rising prices may increase or firm up supply.	++
	Demand for lamb likely to stay firm; prospects strong for sheep.	May increase or firm up supply.	++
	CAP decoupling: effects are ambiguous.	Prices may decline through improvements in efficiency and restructuring, or may increase as a result of lower production levels.	+ / -
Change in technology	For upstream industries, advanced chilling techniques, providing for longer storage time without loss of perceived quality.	Possibly give relative advantage to meat importers.	-
	New technologies in animal husbandry, cutting and storage, and distribution.	May give lower costs and lower relative prices for red meat, and improved margins for farmers. Improved technology likely to have more impact on arable farming than livestock, as more scope for technology gains. Livestock farming still relatively labour-intensive e.g. checking the health of animals daily is	+

[88] These views of possible impacts are extremely difficult to predict. In some cases, it is impossible to predict how the driver may impact the industry in the future, e.g. exchange rates, or the possibility of a major animal disease.

[89] The importance attached to the possible future impacts of each key driver is indicated by a number of positive or negative signs; the more signs there are, the greater the impact is likely to be.

		difficult to automate.	
Import prices	Increasing oil costs will increase transportation costs and increase import prices.	Potentially reduce imports as price increases.	+
	A strong (weak) pound.	Keep the costs of imports low (high) and exports relatively more (less) expensive.	-
	Improvements in efficiencies and quality of production systems in farming industries of EU accession states will introduce greater levels of output and greater elements of import competition to British meat producers (see Asken, 2001). Poland in particular is cited as having a great potential for increases in output. Exports from these countries will also benefit from meeting EU animal welfare standards and guarantees to customers of adherence to EU environmental regulations.	May increase supply meaning imports are cheaper.	- -
	Growing developing economies will see labour prices increase.	Cost of production will increase for the developing economy, thereby increasing export prices. Price of domestic supply will appear comparatively cheaper than previously.	+
Input prices	Given the very small net margins of profit, it is likely that even small changes in input prices will have a strong effect on profitability of firms and the consequent level of supply. For example, energy costs will impact suppliers. A progressive rise in the price of oil and oil based products used by British agriculture will put a cost pressure on agricultural products that have a high level of oil-based inputs: machine, fertiliser and chemical intensive products. Wheat and barley world costs are increasing substantially (£86 per week in October 2006 – 36% higher than October 2005[90]). If this continues, concentrates will increase in price.	This will work in favour of extensive grazing and supply may decline.	-
Livestock health problems	These are difficult to predict and it is uncertain how they will affect supply levels in the future. However, the improved levels of production quality hygiene should serve to make the occurrence of such problems less frequent, although it will be impossible to rule out another outbreak of disease, given the adaptive capacity of bacteria to drugs.	Occurrence of disease less likely than previously but frequency/severity very difficult to predict. As in the past, livestock health problems	- -

[90] Source: *Farming and Food Brief*, October 2006, DEFRA

		would be likely to drive down demand and supply.	
Increasing average age of farmers	The increasing average age of farmers and lack of younger farmers coming through, suggests that farming will tend towards fewer, but larger and more efficient, farms and an increased use of contractors.	Level of production may not change if fewer farmers take on more land. May affect intensity of production. Average size of cattle and dairy farms likely to continue to increase.	+/-
Decoupling of the CAP	Decline of 12% suckler cows, 9% dairy cows , finishing beef 12% and breeding ewes 4% and finishing lambs little change (source ADAS, 2005).	Increase average herd size for dairy and more specialised concentration in the West[91].	- -
	CAP reforms in other sectors (dairy, cereals and general cropping) may result in increased livestock production, extensively on lowlands[92]. However, this depends on the extent to which land is not used instead for energy-intensive crops.	May increase livestock production, extensively on lowlands.	+
	Pressure on price margins.	May cause overall reduction of 10-30% in beef numbers.[93]	- - -
Animal welfare, food hygiene, health and safety, environmental designations and protections, and waste, nutrient, run-off and dead animals policies	Possibly affect the medium term development of the East of England region, mainly through the cost implication to producers.	Would serve to lower profits and therefore may reduce production.	-
Other international policies	The main influencing areas are: the animal welfare, food hygiene and transport policies of the EU, and the rigour of their enforcement in member states; changes in international tariffs and rules on production and export subsidies agreed through the WTO; and the control of animal diseases within the UK and in countries from which meat is imported.	Open policies for the export of British beef and lamb to member states of the EU will support production in the East of England.	+
Climate change	This may work in different directions. A warming of the British climate will extend the	May increase levels of	+

[91] Source: *A study of long-term trends affecting the farming industry,* EFFP, Defra, 2005
[92] Source: ibid
[93] Source: ibid

	grass growing season, with warmer, wetter Winters providing improved Winter grazing. Higher levels of nitrogen pollution also enhance the growth of grasses. Warmer Winters also mean less need for over-wintering in buildings.	livestock production as costs reduce.	
Profitability of farming	This advantage may be offset by the forecast impact of hotter, drier Summers, posing possible feeding and welfare issues for stock. Higher levels of storms and floods will also pose problems for grazing stock on flood plains and coastal marshes. Mean temperatures are likely to increase, meaning fewer frosts and hotter extreme Summer conditions. Within EU, maize may be grown further north and crops dependent on low temperatures for bud cannot grow further in milder areas. May be impossible to grow some horticultural crops profitably in southern Europe[94]	Growing season for crops increases means possible shift of land use to arable from livestock in UK. May increase profitability of arable production, reducing the levels of livestock farming.	-
	Future profitability of dairy farming points to more intensive systems, such as 'zero grazing', and there being a smaller number of farms. Improving productivity of the cows may help to keep production at current levels using fewer cows.	A decreasing number of cows for similar levels of production. Possibly fewer farms, with the larger ones surviving and smaller ones moving out of the business.	- - -
	For beef/veal farmers, one consequence of the move to an area based subsidy may be that smaller livestock farmers, especially the more elderly, decide to sell their livestock and live on the subsidy, undertaking the minimum required level of environmental management on their land, while using the buildings for other purposes and renting their land opportunistically for grazing or crops. This contention is supported by findings in the ADAS (2005) survey. Also farmers with clear succession plans are less likely to reduce livestock numbers.	Beef numbers likely to fall unless end price rises or costs decline.	-
	The remaining farmers are more likely to be profitable, however, as they will exploit economies of scale on larger farms.	There would not necessarily need to be an overall reduction in the number of livestock from a reduction in the number of farmers.	+
	However, where lowland dairy and arable cropping activities are no longer viable, and there are opportunities to take up agri-environmental schemes and use land that would be marginal for other sectors, then conversion may take place into extensive beef and sheep production. This opportunity may depend on the evolving market for non-food and energy crops.	Production may increase	+
	Smaller livestock farmers are likely to continue to leave the industry, except for 'hobby farmers' or farmers running extensive low input grazing alongside profitable arable crop	May reduce production.	-

[94] Source: The First Report of the Sustainable Farming and Food Research Priorities Group, March 2005

	production systems. Difficulties in recruiting relevant skilled labour and a reduction in intra-family transfer of both skills and land will reinforce the impact of squeezed margins.

5.5 Summary of drivers of demand and their future impact

Driver	Discussion	Possible Impact	Domestic Growth/Decline
Price to the consumer	The price elasticity of demand measures how the quantity of a good demanded changes in response to a change in price. The National Food Survey 2000 estimates price elasticities for meat products[95], using data from 1988-2000: beef and veal - 0.45 mutton and lamb - 1.29 This suggests the demand for mutton and lamb is highly 'price elastic', which normally means there are substitute meats to consume if the price increases.	For a 10% increase in price, demand for beef and veal would fall by 4.5%. Demand for mutton and lamb would fall by 12.9% - more than the corresponding increase in price.	+ / -
	People are currently willing to pay more for sourced meat, with premium and organic markets growing. In the past, total meat sales increased by 2.2% in 9 months of 2005; the premium sector rose by 54% and the organic sector by 26%[96].	If people are prepared to pay more, production more likely to remain viable and farmers more likely to stay in production.	+
Changing tastes	Overall consumption of meat has declined in the UK. Decreasing consumption of beef and veal of 0.5% pa since 1942 and -0.9% pa for lamb and mutton. In more recent years, however, beef and veal has increased (3.3% pa growth since 1996).	May continue to increase or start to decline again for reasons given below.	+ / -
	Improving health and hygiene standards since livestock health issues of the 1990s.	May increase demand for British meat	++
	Trend towards demand for locally-produced meat, as people like to know where their meat has come from – hygiene, support of local trade and traceability reasons. Possible polarisation of available meat – premium brands/organic and low-cost.	Increase volume of 'locally' produced meat (i.e. regional)	++
	Depletions of the fish stock will result in lower supply and increased prices.	May increase demand for red	+

[95] The NFS caveats the results for beef and veal price elasticity. '*It is possible that the price effects revealed in the NFS are a combination of demand and supply side effects. This would happen if factors affecting producer costs, and so the prices at which they are willing to sell, also affect consumer demands. The recent issues concerning meat safety are potentially such a factor, possibly causing increases in production costs for farmers and shifting demand schedules.'* The model was re0estimated and concerns were raised about the reliability of the results for beef and veal. However, the study still suggests '*the results for beef and veal…are the most reliable available at this time. However, they are less reliable than the other results presented there, and should be used with caution.'*

[96] Source: Fresh meat brand analysis, Taylor Nelson Sofres special report for MLC.

		meat as alternative source of protein.	
	Likely increasing demand for halal meat (especially mutton and lamb) with increasing Muslim population in the UK.	Increase demand for halal meat.	+
	Substitutes for red meat increasingly available, particularly with better health credentials to those of red meat.	Demand for red meat may decrease	- -
	Environmental awareness of consumers may deter people from consuming red meat – particularly imported red meat. May increase demand for locally-sourced meat.		+
	However, the amount of food miles for locally-produced red meat is difficult to know.		
Changing household income	The National Food Survey 2000 calculated estimates of income elasticity for food products. The survey used data from 1979 to 2000 to investigate the responsiveness to variations in income and the price of meat. The analysis indicates all goods are 'normal' i.e. an increase in income leads to an increase in demand for the good. The price elasticities derived were: beef and veal 0.25 mutton and lamb 0.15 all meats 0.19	This suggests that for a 10% increase in income, demand for beef and veal would increase by 2.5%. The demand for mutton and lamb would rise by 1.5%.	+ / -
World demand	An increase in the population will impact the world demand for meat, particularly as more of the populations are living in cities and increasing affluence in real terms. An increase in demand is usually reflected in an increase in prices. Whilst key international producer nations, in South America and Southern Africa especially, may be expected to respond to rising price signals with increased production for export, the overall impact will be higher prices for internationally traded meat[97].	The relative benefit to UK red meat producers will depend upon the exchange rate.	+

Source: PACE

[97] However, the recent short-term ban on some 600,000 tonnes of beef exports by Argentina, a major supplier to world markets, should help prices to firm, as well as presenting an immediate opportunity to British producers.

6 The Future of the Red Meat and Dairy Industries in the East of England

6.1 Introduction

6.1.1 This chapter considers the future of the red meat and dairy industries. Changes in policy and the drivers of supply and demand will affect the level of red meat and dairy products produced in the UK and in the East of England. In turn, the change in the amount of red meat and dairy products produced affects how much grassland will be grazed in the future and where this might occur.

6.1.2 The purpose of the chapter is to set out our predictions for the red meat and dairy industries in the East of England for the years 2011 and 2016. These predictions include the number of cattle and sheep grazed in the region; the number of direct and indirect jobs supported and the amount of GVA supported by grazing activity in the region. The predictions are calculated using a baseline scenario which takes into account past trends, current data, and the drivers of change (detailed in the previous chapter and summarised in sections 5.4 and 5.5 above). A detailed explanation of how the baseline scenario is used to predict the future of the red meat and dairy industries in the region is given in section 2.7.

6.1.3 The chapter is broken down into the following sections:

- Future land use in the East of England
- Future numbers of cattle and sheep in the East of England
- Jobs supported by grazing sheep and cattle in the East of England in the future
- GVA supported by grazing sheep and cattle in the East of England in the future

6.2 Future Land Use in the East of England

6.2.1 We asked farmers, land managers and graziers in the region how they expected the grassland which they currently manage to be used in 5 years time. In most cases (79 out of 114), and for all located in Bedfordshire, respondents saw there being no change to the current use, i.e. cattle and sheep would still be grazing on the land. However, those with grassland in Hertfordshire were more likely to predict a change. 7% of all respondents (8 out of 114) believed that there would no longer be cattle/sheep grazing and that the grassland would be mowed or cut instead. This is a common belief for respondents in Suffolk, with a quarter of those farmers/land managers/graziers surveyed from the county anticipating this trend. Amongst other predicted land uses, keeping horses was a popular choice.

Table 6.1 How do you expect the grassland which you currently manage to be used in 5 years time? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
No change to current use	69	74	58	80	88	**33**	**100**	100	**52**
Land converted for chicken/pig production	6	0	0	0	0	0	0	0	**30**
Continue to be grazed but under alternative arrangement	7	9	5	4	13	0	0	0	13
Land given over to arable production	3	4	0	4	0	17	0	0	0
No cattle/sheep grazing-kept as grassland by mowing/cutting	7	9	**26**	4	0	0	0	0	0
Land given over to recreational use	5	0	5	8	0	33	0	0	4
Other	3	4	5	0	0	17	0	0	0
Number of respondents	*114*	*23*	*19*	*25*	*8*	*6*	*9*	*1*	*23*
Margin of error (%)	*9*	*20*	*22*	*20*	*35*	*40*	*33*	*98*	*20*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q70A)

Table 6.2 Other uses the grassland you manage will be put to in 5 years time

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Unpredictable	22	50	50	0	0	0	0	n/a	n/a
Produce hay for horses	22	50	50	0	0	0	0	n/a	n/a
Used for horses	22	50	0	100	0	0	0	n/a	n/a
Planning rules do not allow for change of use	11	0	0	0	100	0	0	n/a	n/a
Reduced use of chemicals	11	0	0	0	0	50	0	n/a	n/a
Plant more trees	11	0	0	0	0	0	100	n/a	n/a
Less environmentally friendly options might be forced on me	11	0	50	0	0	0	0	n/a	n/a
Horse riding	11	0	0	0	0	50	0	n/a	n/a
Number of respondents	*9*	*2*	*2*	*1*	*1*	*2*	*1*	*0*	*0*
Margin of error (%)	*33*	*69*	*69*	*98*	*98*	*69*	*98*		

Source: PACEC Survey of farmers, land managers and graziers (Q70B)

6.2.2 When asked what the consequences would be of any land use change resulting from a decline in the number of cattle and sheep, the primary concern was a reduction in the volume of locally-supplied red meat, cited by 52 out of 67 respondents (78%). A further 10 believed the land would be put to more profitable use. Other consequences listed by respondents focused chiefly on environmental impacts which will be discussed in greater detail in phase 3 of the project.

Table 6.3 What consequences do you believe any land use change resulting from a decline in the number of cattle and sheep would have on the grassland areas and wider economy? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Reduction/loss of locally-produced meat	78	76	64	83	75	75	100	100	100
Land put to more profitable use	15	24	14	17	0	0	25	0	0
Other	28	18	50	28	25	25	0	0	**100**
Number of respondents	*67*	*17*	*14*	*18*	*8*	*4*	*4*	*1*	*1*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q77A)

Table 6.4 Other consequences

(Multiple responses allowed)	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Environmental damage	38	50	25	40	0	100	50	n/a	0
Increase bracken	31	33	13	40	0	50	50	n/a	100
Loss of habitat	27	50	**0**	40	0	0	50	n/a	100
Nature of grassland has changed to non-food	12	17	13	0	0	0	50	n/a	0
Service industry	8	0	13	0	0	50	0	n/a	0
Depends on restrictions on ploughing grassland up	8	0	13	20	0	0	0	n/a	0
Recreation	8	0	13	20	0	0	0	n/a	0
Lower public health	4	17	0	0	0	0	0	n/a	0
Hay for horses	4	0	13	0	0	0	0	n/a	0
Rent out fields as paddocks	4	0	0	20	0	0	0	n/a	0
Less grass fed meat production	4	0	13	0	0	0	0	n/a	0
Less power to the supermarkets	4	0	0	0	50	0	0	n/a	0
Grass would have to be mown	4	0	0	20	0	0	0	n/a	0
Closure of livestock auction	4	0	0	0	50	0	0	n/a	0
Livestock no longer sold for market prices	4	0	0	0	50	0	0	n/a	0
No outlet for store cattle	4	0	0	0	50	0	0	n/a	0
None/Nothing	4	0	13	0	0	0	0	n/a	0
Number of respondents	*26*	*6*	*8*	*5*	*2*	*2*	*2*	*0*	*1*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q77B)

6.3 Future Numbers of Cattle and Sheep in the East of England

Forecasting

6.3.1 Taking into consideration past trends in livestock numbers and factors which are likely to impact on the red meat and dairy industries in the East of England in the coming years, we estimate that the number of cattle and sheep grazing in the region in 2011 and 2016 will be as follows:

Table 6.5 Future numbers of cattle and sheep in the East of England

	Number of livestock in the East of England		
	2005[98]	2011	2016
Beef Cattle[99]	188,000	161,000	169,000
Dairy Cattle	29,000	27,000	24,000
Sheep	345,000	360,000	361,000

Source: PACEC Model

6.3.2 As shown in Figure 2.6, the model is driven by production and there are four main variables: the changing production of meat/milk in the UK, the proportion of animals that are productive, the level of productivity per animal and the proportion of animals that come from the East of England.

Beef

6.3.3 The assumptions used for beef cattle are outlined below:

- **UK output (tonnes)** is assumed to increase by 0.9% per annum. This is based on the past change in production between 1996 and 2005. This reflects the growth in output following BSE.
- The proportion of animals that are **productive** is 28.1%. This is the mean of UK output divided by the total population of cattle and calves 1980-2005.
- **Productivity per animal (tonnes)** is assumed to be 319 kg. This is made up of a proportion of the animals being steers, heifers and young bulls, some being calves and some being cows and adult bulls. Compared to 2005, we assume a growing proportion of the total number of animals are calves and cows and adult bulls to reflect the removal of the Over Thirty Months Scheme, which previously meant a disproportionate number of animals being slaughtered were steers, heifers and young bulls. The weight of steers, heifers and bulls, and cows and adult bulls increased substantially between 1980 and 2005; the average weight used assumes weight will continue to increase at half the previous per annum rate. The average weight of calves is assumed to remain constant.
- **% in the East** is assumed to be the same as in 2005, which uses Agricultural Census figures for cattle in the East, and AUK figures for cattle in the UK.

6.3.4 For 2016, the only assumption that changes is the productivity per animal. This increases to 321 kg per animal overall. This assumes the proportion of calves and

[98] Source: Agricultural Census, 2005, Defra

[99] This is the total number of cattle, minus the number of dairy cattle.

cows and adult bulls increases further compared to 2011, as BSE recovery continues. It also assumes that the increased average weight of steers, heifers and bulls, and cows and adult bulls continues at half the rate of 1980-2005.

6.3.5 In counting the number of beef cattle, some production is from dairy cattle. The amount of meat produced by dairy cows is subtracted from the production of beef so there is no double-counting of livestock numbers.

Dairy

6.3.6 The assumptions used for dairy cattle to 2011 and 2016 are outlined below:

- **UK output (tonnes)** is assumed to increase by 0.03% per annum. This is based on the past change in production 1973-2005. Whilst production was temporarily higher in the 1980s, in general production levels have not changed substantially over the timescale.
- All animals are assumed to be **productive**. The AUK data used gives a productivity level for all cows in the dairy herd, which includes cows and heifers in milk, plus cows in calf but not in milk, kept mainly for producing milk or rearing calves for the dairy herd. Whilst in reality therefore, only some of the cows in the herd will be in milk, the productivity per animal includes all cows in the herd.
- **Productivity per animal (litres)** is assumed to be 7,500 litres per cow per year in 2011[100] and 8,100 litres per cow per year in 2016. This assumes the increasing productivity of 1.7% per annum that occurred between 1973 and 2005 continues at the same rate.
- **% in the East** is assumed to be the same as in 2005, which uses Agricultural Census figures for cattle in the East, and AUK figures for cattle in the UK.

Sheep

6.3.7 The assumptions used for sheep to 2011 and 2016 are outlined below:

- **UK output (tonnes)** is assumed to increase by 0.09% per annum. This is based on the past change in production 1985-2005.
- 45.1% of animals are assumed to be **productive**. This is the mean of UK output divided by the total population of sheep between 1985 and 2005.
- **Productivity per animal (tonnes)** is assumed to be 19.5 kg. This comprises a proportion of sheep being clean sheep and lambs and a proportion being ewes and rams, at a heavier average weight. The proportion of each type of sheep is kept the same as in 2005. The weight of the livestock is kept at the average weight between 1985 and 2005 for both categories of sheep.
- **% in the East** is assumed to be the same as in 2005, which uses Agricultural Census figures for cattle in the East, and AUK figures for cattle in the UK.

[100] Defra forecasted a milk yield of 7,400 litres per cow for the year 2010 in *The Future of Dairy Farming* (2004)

6.4 Jobs supported by grazing sheep and cattle in the East of England in the future

Table 6.6 Direct and Indirect Jobs, 2005, 2011 and 2016, '000s

	Jobs ('000s)											
	Beef			Dairy			Sheep			Total		
	05	11	16	05	11	16	05	11	16	05	11	16
Direct	2.44	1.97	1.97	0.47	0.40	0.35	1.38	1.35	1.29	4.29	3.73	3.61
First round suppliers	1.86	1.60	1.68	0.29	0.26	0.24	0.79	0.82	0.83	2.94	2.69	2.75
Second to n^{th} round suppliers	0.56	0.48	0.50	0.09	0.08	0.07	0.24	0.25	0.25	0.88	0.81	0.82
Downstream	2.71	2.33	2.45	1.04	0.94	0.87	1.54	1.61	1.62	5.30	4.89	4.93
Total	*7.58*	*6.39*	*6.60*	*1.89*	*1.69*	*1.53*	*3.95*	*4.03*	*3.98*	*13.41*	*12.11*	*12.12*

Note: Job numbers for 2005 have already been set out in Table 4.5
Source: PACEC Model

6.4.2 The same methodology for calculating indirect jobs is used that was set out in Chapter 4. In addition to this, the number of direct jobs per 1,000 animals is assumed to decline by 1.0% per annum, reflecting improvements in technology and economies of scale as farms tend to have larger numbers of animals per farm over time.

2011

6.4.3 For beef, the total number of jobs is forecast to decline overall, with a drop in 2011 reflecting the reduction of livestock numbers. Declines are forecast for both direct and indirect jobs.

6.4.4 Employment in dairy farming is forecast to decline steadily, reflecting the reductions in numbers of dairy cows and improvements in productivity.

6.4.5 The numbers employed in sheep farming are forecast to increase in 2011, reflecting the slightly increased number of sheep forecast. The increases are experienced in the indirect employment, as direct employment declines due to productivity improvements.

6.4.6 In total, jobs in cattle and sheep farming in the East are forecast to decline down to 12,110 jobs, with the largest drop coming from beef farming.

2016

6.4.7 Beef employment shows a small recovery in 2016, with all indirect jobs increasing compared to 2011. This recovery reflects the increase in production forecast.

6.4.8 Dairy employment is forecast to continue to decline steadily, in line with reductions in numbers of dairy cows and improvements in productivity.

6.4.9 The numbers employed in sheep farming are forecast to decline compared to 2011, although not to the levels of 2005. The indirect employment is forecast to continue to increase, whilst direct employment declines, reflecting productivity improvements.

6.4.10 In total, jobs in cattle and sheep are forecast to remain at similar levels to 2011, resulting from the recovery in numbers employed in beef farming.

6.5 GVA supported by cattle and sheep grazing in the East of England in the future

Table 6.7 GVA 2005, 2011 and 2016, £ millions

	GVA (£m)											
	Beef			Dairy			Sheep			Total		
	05	11	16	05	11	16	05	11	16	05	11	16
Direct	36	31	32	11	10	9	17	18	18	64	59	60
Downstream	91	78	82	47	42	39	52	54	54	189	174	175
First round suppliers	69	59	62	11	10	9	29	30	31	109	99	102
Second to n^{th} round suppliers	21	18	19	3	3	3	9	9	9	33	30	31
Total	216	186	195	72	65	60	107	112	112	395	363	367

Source: PACEC Model

6.5.2 The same methodology for calculating GVA is applied to 2011 and 2016 figures that was applied in Chapter 4 to the 2005 values.

2011

6.5.3 As with the jobs figures in beef farming, both direct and indirect GVA reduces by 2011.

6.5.4 Dairy GVA – both direct and indirect – reduces steadily to 2011.

6.5.5 The GVA figures for sheep show an increase in 2011, with increases in both indirect and direct GVA.

6.5.6 However, this increase in insufficient to mean total GVA increases. The large drop in GVA from dairy farming and declines in GVA of beef farming out-weigh the increases from sheep farming.

2016

6.5.7 GVA associated with beef recovers slightly in 2016, with larger proportional increases in indirect GVA. The level of GVA remains below the value in 2005, however.

6.5.8 Dairy GVA continues to decline, with reductions in both direct and indirect GVA.

6.5.9 The rounding of GVA to the nearest million hides the fact that the sheep GVA 2016 level is slightly higher than 2011. This slight increase reflects the increased number of sheep.

6.5.10 In total, GVA for cattle and sheep production in the East of England is higher than 2011 because of the increases due to beef. However, the total GVA is still lower than the 2005 value.

Panel 6.1 The Red Meat Industry in the East of England in 2011

- Livestock nos:
  - Beef – 161,000
  - Dairy – 27,000
  - Sheep – 360,000
- Jobs:
  - Beef – 6,390
  - Dairy – 1,690
  - Sheep – 4,030
- GVA:
  - Beef - £186m
  - Dairy - £65m
  - Sheep - £112m

Panel 6.2 The Red Meat Industry in the East of England in 2016

- Livestock nos:
  - Beef – 169,000
  - Dairy – 24,000
  - Sheep – 361,000
- Jobs
  - Beef – 6,600
  - Dairy – 1,530
  - Sheep – 3,980
- GVA:
  - Beef - £195m
  - Dairy - £60m
  - Sheep - £112m

7 Cattle and Sheep Grazing Occupations

7.1 Introduction

7.1.1 Chapters 4 and 6 above detail the number of jobs which are currently and forecast to be supported by sheep and cattle grazing in the East of England. However, a study which looks at both the economic and social impacts of grazing would be incomplete without some consideration of the nature of the jobs supported by this industry. Indeed, in order to assess the ability for the industry to recruit as well as the potential redeployment of labour exiting the industry, it is important to understand the nature and quality of employment involved in grazing cattle and sheep.

7.1.2 This chapter starts by exploring the occupational and age structures of the livestock farming industry and the skill levels of a livestock farmer. It then goes on to consider the changing lifestyle of those involved in grazing sheep and cattle in the Eastern region and how changes in the industry are likely to impact on future generations of livestock farmers, including the implications for recruitment and redeployment.

7.2 Occupational structure

7.2.1 Looking at all agricultural livestock production in the UK, the workforce currently shows the following characteristics:[101]

- approximately three men are employed to every woman;
- a quarter (22%) of those employed work part time;
- a third (32%) of the workforce are over the age of 55 years of age
- two thirds (63%) are owner-managers.

7.2.2 In 2000, the occupational structure of the estimated livestock production workforce in the UK was as follows:

Table 7.1 Occupational Structure of the Livestock Industry in the UK

	Estimated workforce 2000	
	Numbers	Percentage
Managers	17,800	6%
Owner-Mangers	187,200	63%
Supervisors	5,900	2%
Sales and Administration	8,900	3%
Skilled staff	59,800	20%
Semi-skilled staff/Unskilled staff	16,600	6%
TOTAL	*296,200*	*100%*

Source: Lantra's LMI database/model

[101] Lantra (2001) 'Skills Foresight – A dialogue for action'

7.2.3 In the East of England, there were approximately 50,100 people employed in farming in 2005 – the latest year for which data is available. The occupational breakdown of those employed in agriculture in the region is shown below. Over half (58%) of those employed in agriculture in the region are farmers or managers. Over half (55%) of those working in agriculture in 2005 were part time or casual workers.

Table 7.2 Labour in agriculture in East of England, 2005

Farmers (full time)	10,585
Farmers (part time)	15,117
Managers (full time)	2,363
Managers (part time)	990
Male workers (full time)	8,337
Male workers (part time)	2,102
Female workers (full time)	1,357
Female workers (part time)	2,278
Casual labour	6,934
Total labour	*50,063*

Source: Defra, Agricultural Census

7.2.4 Our survey of farmers, land managers and graziers showed that the jobs associated with grazing sheep and cattle in the East of England tend to be permanent rather than seasonal workers, although on average, across ten holdings, the number of part time workers tends to be higher. This was even true of land managers/farmers, averaging 5.8 part time positions for every ten holdings, compared to 5.4 full time permanent positions for the same job on ten holdings.

7.2.5 Dairy holdings tend to require a greater number of full time permanent staff.

Table 7.3 During 2005 what was the average number of permanent full time and part time jobs involved in the grazing of the land? Also what was the number of full and part time seasonal jobs? (Mean numbers per 10 holdings)

	Statistics of all respondents. (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Land Manager/Farmer-Full time permanent	5.3	5.8	11.2	5.0	4.3
Grazier-Full time permanent	0.6	0.2	1.2	0.3	2.9
Farm/Land management help-Full time permanent	1.6	2.1	10.0	0.6	0.0
Land Manager/Farmer-Part time permanent	5.7	5.8	2.5	6.7	5.7
Grazier-Part time permanent	0.7	0.5	0.0	0.9	1.4
Farm/Land management help-Part time permanent	1.8	1.5	0.0	1.7	2.1
Land Manager/Farmer-Full time seasonal	0.3	0.3	0.0	0.6	0.7
Grazier-Full time seasonal	0.0	0.0	0.0	0.0	0.0
Farm/Land management help-Full time seasonal	0.0	0.0	0.0	0.0	0.0
Land Manager/Farmer-Part time seasonal	0.9	1.1	1.2	0.6	1.4
Grazier-Part time seasonal	1.1	1.1	1.2	0.9	0.7
Part time seasonal	1.2	1.3	0.0	2.7	0.0
Number of respondents	*95*	*61*	*8*	*33*	*14*

Source: PACEC Survey of farmers, land managers and graziers (Q31A)

7.3 Age structure of the agricultural workforce

7.3.1 The age structure of farmers has already been discussed in Chapter 5, which outlined the key supply-side drivers of change in the red meat industry. The median age of farmers today was found to be 57. However, 61% of the oldest group of farmers (65+) occupy the smallest size of farm (8 ECUs or fewer). Only 2% of them are on the largest sized farms. This means the median age of farmers is skewed by the large number of older farmers on small farms.

7.3.2 Indeed, our survey findings for farmers, land managers and graziers in the East of England showed that when managing smaller areas of grassland of between 10 and 19 hectares, respondents were more likely to be over the age of 65. There were however no significant differences in age according to the type of livestock grazed. The age patterns of our survey respondents were similar to those for the UK, with just under half (47 in 105) aged 60 or over.

Table 7.4 Could we ask which age band you fit into?

	Percentage of all respondents (by Area of Grassland managed.)						
	Total	0 to 9 Ha	10 to 19 Ha	20 to 49 Ha	50 to 99 Ha	100+ Ha	Not known
18-29	1	0	4	0	0	0	0
30-44	15	13	4	23	8	17	20
45-59	39	33	26	41	**67**	50	36
60+	45	53	**65**	36	25	33	44
Number of respondents	*109*	*15*	*23*	*22*	*12*	*12*	*25*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q80)

Table 7.5 Could we ask which age band you fit into?

	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
18-29	1	2	0	0	0
30-44	15	16	17	13	18
45-59	39	42	50	42	27
60+	45	40	33	45	55
Number of respondents	*109*	*57*	*6*	*31*	*33*

Source: PACEC Survey of farmers, land managers and graziers (Q80)

7.4 Skill Levels

7.4.1 Livestock production currently has 42 specialist colleges and a network of private training providers throughout the UK[102]. These offer a range of courses, including short courses and those required to obtain certification for legislative purposes.

7.4.2 There are 148 qualifications available to the livestock industry, the most frequently used being the National Certificates awarded by City and Guilds/NPTC (Agriculture) and SQA (Animal Husbandry). Between 1994 and April 2000 the East of England was one of five regions in England with the largest numbers of trainees[103].

7.4.3 Lantra estimated the skills gap in the livestock production workforce in 2001. The following table shows that the sector lacks people qualified at NVQ/SVQ levels 3 and above. While this may demonstrate that workers are low-skilled, it is also possible that workers with low or no qualifications may have considerable skills at higher levels without these being formally recognised.

[102] Lantra (2001): 'Skills Foresight – a dialogue for action'
[103] Lantra (2001): 'Skills Foresight – a dialogue for action'

Table 7.6 Highest level of qualification held (NVQ/SVQ equivalence) by workforce, compared to anticipated workforce requirements by NVQ/SVQ level (2001)

	Highest Qualification by NVQ/SVQ Equivalence			
	None/1	2	3	4+
Estimated workforce numbers by highest qualification	175,100	38,800	58,400	19,600
Estimated workforce demand by highest qualification	14,900	43,600	119,300	114,100
Difference between estimated workforce qualification levels and estimated industry requirements	*160,200*	*-4,800*	*-60,900*	*-94,500*

Source: Lantra's LMI database/model

7.4.4 Indeed, anecdotal evidence suggests that many of the skills applicable to sheep and cattle grazing have previously been passed down from generation from generation as a result of on-site experience and observation. As farmers retire and leave the industry without training up a new generation, there is a risk that these specialist skills in animal husbandry will be lost.

7.4.5 Lantra's survey of agricultural livestock businesses in 2001 showed 16% of businesses reporting difficulties in recruiting in the preceding 12 months. Over half (54%) of these reported difficulties relating to recruiting skilled workers.

7.4.6 Our own survey of cattle and sheep farmers in the East of England also demonstrated the difficulties in sourcing skilled labour. A fifth (23 out of 116) of farmers cited poor availability of skilled labour as a constraint to grazing sheep and cattle.

Table 7.7 Do you experience any of the following constraints relating to grazing sheep/cattle on your site? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Type of livestock grazed)				
	Total	Beef	Dairy	Sheep	No stock or type not known
Boundary maintenance	47	51	50	53	44
Low prices for produce	46	46	70	49	49
Public liability	29	34	50	28	28
Risk / occurrence of vandalism/crime	23	24	40	26	26
Marketing constraints	22	23	30	28	**10**
Provision of water	22	23	**50**	30	21
Handling of sheep and cattle (loading facilities)	21	**28**	40	**30**	26
Poor availability of skilled labour	20	21	30	28	21
Lack of outlets for products	18	20	20	19	21
Site location	15	17	30	17	23
Public opinion (e.g. welfare concerns, vegetarianism)	14	18	20	17	13
Difficulties sourcing cattle/sheep	13	17	20	11	8
Small field sizes	12	13	30	11	13
Presence of scrub	9	11	10	4	5
No constraints	9	6	0	9	13
Poor availability of business advice/support	3	4	10	2	5
Other	8	7	0	9	3
Number of respondents	*116*	*71*	*10*	*47*	*39*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q27A)

7.4.7 Furthermore, we asked farmers and land managers if they were normally reliant on using one or more graziers and if they were, whether they were currently having difficulties finding graziers. 30 out of 87 farmers and land managers were normally reliant on graziers[104], of which 9 were experiencing difficulties sourcing them. Interestingly, those managing grassland in Suffolk were more likely to experience difficulties finding graziers than those in Norfolk. One respondent remarked that 'good graziers are hard to find'.

[104] The high number of 'not applicable' responses refers to respondents who do not currently rely on a grazier.

Table 7.8 If you are normally reliant on one or more graziers using all or some of your grassland, are you currently having difficulties finding graziers? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Yes	10	15	**24**	8	0	0	0	0	n/a
No	24	25	18	**38**	11	20	11	0	n/a
Not applicable	66	60	59	54	89	80	89	100	n/a
Number of respondents	*87*	*20*	*17*	*26*	*9*	*5*	*9*	*1*	*0*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q28A)

7.4.8 Within agricultural livestock businesses surveyed by Lantra in 2001, the most significant skills gaps were felt to be among were employees from the most highly skilled occupations, as shown by Table 7.9 below.

Table 7.9 Skills Gaps in Agricultural Livestock Workforce

Owner-managers	-43%
Supervisors	-1%
Sales and administration	-3%
Skilled staff	-34%
Semi-unskilled staff	-20%

Source: Lantra's LMI database/model

7.4.9 The Royal Association of British Dairy Farmers (RABDF) recognises a shortage of skilled herdsmen, as well as associated tradesmen such as dairy service engineers, machinery fitters, large animal vets and herd managers[105].

7.5 The changing lifestyle of a livestock farmer

7.5.1 There are many aspects of a livestock farmer's occupation which may be appealing: the rearing and caring for livestock, working from home and in beautiful landscapes, and the ability to be your own boss to name only a few. Indeed, when asked in our survey what the motivation was behind keeping sheep / cattle on their land, some farmers mentioned the 'way of life' and the 'job satisfaction'.

7.5.2 However, there is no doubt that the lifestyle of a sheep or cattle farmer today is very different to that of the last generation fifty years ago. As mechanisation has meant the work of several in the past can now be done by just one person, and members of farming families have sought higher paid jobs in towns and cities, the average number of people working on a farm holding has fallen significantly and there is now little employed labour. Today on average in the East of England there are just 1.5 people working on a lowland cattle / sheep farm holding, of which 1.0 are the farmer

[105] *The Dairy Industry Today* – a presentation by Nick Everington, Chief Executive of the RABDF

and his/her spouse[106]. For many farms therefore the farmer works alone, grazing only as many sheep/cattle as he can manage himself, given that the cost of taking on an additional worker can not be met unless the herd is enlarged substantially[107]. This makes the job of a livestock farmer today increasingly isolated and lonely. This lack of social interaction can also deter future generations from entering the industry.

7.5.3 We asked cattle and sheep farmers in the region how often they came into contact with other farmers and land managers. We found that around a fifth (18 in 105) see farmers every day and almost half see farmers on a weekly basis (47 in 105). Respondents between the age of 30 and 44 and those living in Bedfordshire were more likely to see each other this frequently. However, over a quarter (29 in 105) reported that they came into contact with other farmers monthly or less frequently. (This trend was also true of the 13 respondents who answered the farm business quality of life questionnaire.) This is concerning, given that farmers and their businesses can benefit from sharing experiences and advice with others in the same industry.

Table 7.10 How often do you typically come into contact with other farmers/land managers? (Please tick one)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Daily	17	100	14	17	17	17
Weekly	45	0	**71**	50	33	42
Fortnightly	10	0	7	11	12	0
Monthly	10	0	0	8	12	25
Less frequently	18	0	7	14	26	17
Number of respondents	*105*	*1*	*14*	*36*	*42*	*12*
Margin of error (%)	*10*	*98*	*26*	*16*	*15*	*28*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q61)

[106] Farm Business Survey, East of England, 2004. The average number of labour units on dairy farms in the East is typically higher, (3.2 units in 2004 according to the Farm Business Survey for the region) due to the more labour intensive nature of producing milk.

[107] It should also be noted that the costs of full time labour increases while prices to the farmer do not increase.

Table 7.11 How often do you typically come into contact with other farmers/land managers? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Daily	17	10	16	16	0	29	**71**	0	13
Weekly	45	60	47	53	50	29	14	0	38
Fortnightly	10	5	5	5	38	14	0	0	13
Monthly	10	10	11	16	0	14	0	100	8
Less frequently	18	15	21	11	13	14	14	0	29
Number of respondents	*105*	*20*	*19*	*19*	*8*	*7*	*7*	*1*	*24*
Margin of error (%)	*10*	*22*	*22*	*22*	*35*	*37*	*37*	*98*	*20*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q61)

7.5.4 Three quarters of farmers reported to work with or share experiences/advice with other farmers or farm businesses in the region. The majority (64 out of 78) do so by exchanging ideas or advice either formally or informally. Others are members of co-operatives (15 out of 78) or share advice at farmers' markets (11 out of 78), which was particularly popular among those aged 45-59. Membership of the National Farmers Union and social events also provide means for farmers to learn from one another.

Table 7.12 Do you work with or share experiences/advice with other farmers/farm businesses in the region? (Please tick one)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Yes	70	100	64	81	68	50
No	30	0	36	19	32	50
Number of respondents	*105*	*1*	*14*	*37*	*41*	*12*

Source: PACEC Survey of farmers, land managers and graziers (Q62)

Table 7.13 If 'Yes' in what way(s)? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Exchange ideas/advice (formally or informally)	82	100	80	87	76	86
Member of a co-operative	19	0	30	23	10	29
Farmers' Markets	14	0	10	**23**	**3**	29
Other	26	0	20	26	31	14
Number of respondents	*78*	*1*	*10*	*31*	*29*	*7*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q63A)

Table 7.14 Other ways of sharing experience/advice with other farmers/farm businesses in the region

(Multiple responses allowed)	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Member of the National Farmers Union	23	n/a	0	22	22	100
Mutual support	23	n/a	33	11	33	0
Socialising	18	n/a	0	22	22	0
Markets	14	n/a	33	11	11	0
Farm auctions	14	n/a	33	11	11	0
Informal meeting and chatting	9	n/a	0	11	11	0
Anglia quality meats	5	n/a	0	11	0	0
Share sheering costs	5	n/a	0	0	11	0
Help neighbour with handling	5	n/a	0	0	11	0
Community lambing	5	n/a	0	11	0	0
Number of respondents	*22*	*0*	*3*	*9*	*9*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q63B)

7.5.5 When asked for what purpose they shared experience /advice with other farmers, half of respondents (13 out of 32) said it was to keep up to date with the current state of farming and some farmers mentioned specific information they sought such as livestock values. 6 out of 32 valued the opportunity to pool ideas.

Table 7.15 For what purpose(s) do you share experience/advice with other farmers? (Please give details)

(Multiple responses allowed)	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Keep up to date with the current state of farming	41	n/a	50	33	43	50
Commiseration	19	n/a	0	25	21	0
Pool Ideas	19	n/a	0	17	21	50
Keep abreast of current affairs	13	n/a	0	0	21	50
Maximise the performance of the system	9	n/a	0	0	**21**	0
Ideas	6	n/a	0	0	14	0
Contract work	6	n/a	25	0	7	0
Social	6	n/a	25	8	0	0
Hobby	6	n/a	0	8	7	0
Share a bull	3	n/a	0	8	0	0
Livestock welfare	3	n/a	0	8	0	0
General chat and interest	3	n/a	0	8	0	0
Farm shop potential	3	n/a	0	8	0	0
Keep up to date with Livestock value	3	n/a	0	8	0	0
Anglia quality meats	3	n/a	0	8	0	0
Possibility of cattle for grazing	3	n/a	0	0	7	0
Number of respondents	*32*	*0*	*4*	*12*	*14*	*2*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q63C)

7.5.6 It is encouraging to find that a fifth (6 out of 37) of farmers who have changed their approach to working with one another over the past five years as a result of changes in the red meat industry have increased their cooperation with other farmers. There is evidence to suggest that some farmers work with other farmers on a contractual basis and may share equipment, land and/or labour.

Table 7.16 Have you changed your approach to working with other farmers/farm businesses in the past 5 years as a result of changes in the red meat industry? Please note any changes in the *extent* of your collaboration

(Multiple responses allowed)	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Increased cooperation	16	n/a	33	14	13	25
Member of rare breeds association	11	n/a	0	14	13	0
Shifted focus from abattoir to customer	5	n/a	0	0	13	0
Stopped selling to the market because of poor returns	3	n/a	0	7	0	0
Increased knowledge	3	n/a	0	0	0	25
Transport cost are higher due to increased distance	3	n/a	0	0	6	0
Markets are closing	3	n/a	0	7	0	0
Working with butcher	3	n/a	0	7	0	0
Attend market less than before	3	n/a	0	0	6	0
Small producers not wanted	3	n/a	0	0	6	0
Sell dead weight	0	n/a	0	0	0	0
None/Nothing	51	n/a	67	50	50	50
Don't know/don't want to say	3	n/a	0	0	6	0
Number of respondents	*37*	*0*	*3*	*14*	*16*	*4*

Source: PACEC Survey of farmers, land managers and graziers (Q64A)

Table 7.17 Have you changed your approach to working with other farmers/farm businesses in the past 5 years as a result of changes in the red meat industry? Please note any changes in the *nature* of your collaboration

(Multiple responses allowed)	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Get a better return by selling direct to public	11	n/a	0	22	0	0
Share machinery and labour	11	n/a	0	22	0	0
Large scale diversification	6	n/a	0	0	14	0
Keep labour costs to a minimum	6	n/a	0	0	14	0
Market produce through dealers	6	n/a	0	11	0	0
Improved hedges fencing grassland	6	n/a	0	11	0	0
Arable crops going to fattening cattle	6	n/a	0	11	0	0
Not yet coded	6	n/a	0	0	14	0
Local market closed over 5 years ago	0	n/a	0	0	0	0
None/Nothing	39	n/a	100	22	43	100
Don't know/don't want to say	6	n/a	0	0	14	0
Number of respondents	*18*	*0*	*1*	*9*	*7*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q64B)

7.5.7 In our survey of farmers, land managers and graziers, we were keen to find out to what extent those working with sheep and cattle in the region were accessing advice and / or training and to ascertain whether there are currently any shortfalls in the advice / training being provided.

7.5.8 We asked farmers if they had made use of any advice / training relating to networking or collaboration or asked to be signposted to other members of the farming community over the last five years as a result of changes in the red meat industry. Only 14 out of 81 respondents had accessed such advice/training, and those who had not were typically older and unaware or did not know where to go for such help or said the advice/training which was available was not relevant.

Table 7.18 Have you made use of any advice/training relating to networking and collaboration or asked to be signposted to other members of the farming community over the last 5 years in response to changes in the red meat industry? (Please tick one)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Yes	17	0	30	17	**6**	**40**
No	83	100	70	83	**94**	**60**
Number of respondents	*81*	*1*	*10*	*29*	*31*	*10*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q65)

Table 7.19 If 'Yes', how would you rate the current provision of advice / training / signposting relating to networking and collaboration in the farming community? (Please tick one)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Excellent	0	n/a	0	0	0	0
Good	38	n/a	33	29	33	67
Average	38	n/a	33	43	33	33
Poor	13	n/a	0	14	33	0
Don't know	13	n/a	33	14	0	0
Number of respondents	*16*	*0*	*3*	*7*	*3*	*3*

Source: PACEC Survey of farmers, land managers and graziers (Q66)

Table 7.20 If you have not used such services or have rated them poorly, please indicate the reasons for your answer (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Not aware of their existence/Don't know where to go	45	100	20	56	35	57
Advice/Training available not relevant	35	0	20	25	40	57
Too far away to access effectively	8	0	0	13	10	0
Poor quality advice/support/training	8	0	20	0	10	14
Advice/Training not specific enough	6	0	20	6	5	0
Too expensive	0	0	0	0	0	0
Other	12	0	20	6	15	14
Number of respondents	*49*	*1*	*5*	*16*	*20*	*7*

Source: PACEC Survey of farmers, land managers and graziers (Q67A)

7.5.9 We also asked farmers if they had accessed any advice / training relating to the marketing of red meat products over the last 5 years in response to changes in the red meat industry. 12 out of 65 respondents had done but 4 of these rated the advice / training they had accessed as poor. Again, those who had not used such services or had rated them poorly, said that this was because they were unaware of their existence or the advice / training was not relevant to them.

Table 7.21 Have you made use of any advice or training relating to the marketing of red meat products over the last 5 years in response to changes in the red meat industry? (Please tick one)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Yes	18	0	13	21	13	33
No	82	100	88	79	87	67
Number of respondents	*65*	*1*	*8*	*24*	*23*	*9*

Source: PACEC Survey of farmers, land managers and graziers (Q41)

Table 7.22 If 'Yes', how would you rate the current provision of advice / training relating to the marketing of red meat products? (Please tick one)

	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Excellent	7	n/a	0	17	0	0
Good	20	n/a	0	33	0	33
Average	33	n/a	50	33	25	33
Poor	27	n/a	0	17	50	33
Don't know	13	n/a	50	0	25	0
Number of respondents	*15*	*0*	*2*	*6*	*4*	*3*

Source: PACEC Survey of farmers, land managers and graziers (Q42)

Table 7.23 If you have not used such services or have rated them poorly, please indicate the reasons for your answer (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Age of respondent)					
	Total	18-29	30-44	45-59.	60+	Not known
Not aware of their existence/Don't know where to go	40	n/a	50	33	31	80
Advice/Training available not relevant	24	n/a	0	28	31	20
Advice/Training not specific enough	13	n/a	17	11	13	20
Poor quality advice/support/training	11	n/a	17	6	13	20
Too expensive	9	n/a	0	17	6	0
Too far away to access effectively	7	n/a	0	11	6	0
Other	22	n/a	17	28	19	20
Number of respondents	*45*	*0*	*6*	*18*	*16*	*5*

Source: PACEC Survey of farmers, land managers and graziers (Q43A)

7.6 Implications for future employment in the industry and recruitment

7.6.1 As chapter 5 has discussed, it is anticipated that cattle and sheep grazing in the East of England will undergo a restructuring towards larger business units and contract farming. As owner-mangers on smaller holdings reach retirement (61% of the oldest group of farmers (65+) in the UK occupy the smallest size of farm (8 ECUs or fewer)), and without a son or daughter keen to take on the farm, we are likely to witness a decline in the number of small holdings. If the owner decides to remain on his land during retirement, the running of the farm may be contracted out. Alternatively, the land may be sold to a larger producer or farmed by a partnership. This restructuring has significant implications for the industry's future labour requirements in the region.

7.6.2 The enlargement of farm holdings and finite technological substitution for labour in the industry (given that animals must ultimately be overseen by workers and not by machinery) favours greater numbers of workers on a single holding and, with this, greater social interaction and team-working.

7.6.3 One might see a fall in the number of owner-managers and a rise in the number of managers and supervisors as surviving operations grow in size. Among all managers and owner-managers, business management skills will become increasingly important as farmers face decisions about restructuring and developing supplementary sources of income. As more and more farmers are forced to diversify, they will also require a wide range of specific skills such as those in relation to farm-based tourism and the marketing of leisure activities.

7.6.4 There are also increasing requirements for compliance with environmental, health and safety, animal welfare, hygiene and produce traceability legislation, which are leading to a need for higher levels of awareness as well as specific knowledge to support implementation. Existing farmers and potential new entrants might be

deterred by the time and cost implications of the additional training required to deal with this increasing volume of regulation.

7.6.5 Across the agricultural industry, information technology is increasingly being used for accounting, stock records and on some farms, the automation of equipment. Computer-related skills are therefore becoming more widely needed and they are set to grow in importance. In this sense livestock farmers are not alone as the use of ICT is becoming increasingly important across all sectors of employment.

7.6.6 In the dairy sector specifically, recent intensification of production resulting in more precise production methods and the need for environmentally responsible production call for increased environmental and technological knowledge in this field. Dairy enterprises have demanding labour requirements as staff must be technically competent but must also be willing to work long and antisocial hours. The Royal Association of British Dairy Farmers (RABDF) believes that dairy farms in the future will need a better qualified workforce. Currently just half of dairy farmers have degrees or diplomas[108].

7.6.7 As farmers work in an increasingly globally competitive market, they must also have the necessary marketing skills in order to promote their produce.

7.6.8 Indeed, the skills demands on livestock farmers today and into the future are high and in order to ensure that there are skilled workers for the livestock production industry in years to come, there must be relevant advice and training support available in the areas outlined above.

7.6.9 However, it is interesting to note from Lantra's survey of livestock farmers across the UK in 2001 that the more frequently cited reasons given for recruitment difficulties focus not only on a lack of skills / experience but also on the poor perception / lack of interest in the type of work.

Table 7.24 Recruitment difficulties for Agricultural Livestock workforce (2001)

Lack of applicants with required qualifications and skills	24%
Lack of interest in this type of work	20%
Lack of applicants with required work experience	16%
Potential applicants have a poor perception of the job	14%
General lack of applicants	7%
Higher wages offered by other employers	6%
Job entails shift work	4%
Remote location/poor public transport	4%
Lack of promotion	3%

Source: Lantra's LMI database/model

[108] *The Dairy Industry Today* – a presentation by Nick Everington, Chief Executive of the RABDF

7.6.10 In order to ensure that there are skilled workers for the livestock production industry in years to come, policy must focus not only on raising the skills levels of workers but also on raising the profile of the livestock industry. Otherwise, there is a danger that future generations, whether skilled or not, will not choose to work in the sector.

7.7 Redeployment of Labour

7.7.1 The redeployment of labour from the grazing industry is dependent on the age and skills levels of those leaving the industry. As it has already been discussed, it is likely that we see an older generation of farmers on smaller holdings retire from full time farming in the coming years. In these cases, farmers may decide to work part time in farming or diversify into other activities on their land.

7.7.2 It is the generation of farmers for whom retirement is still some years away and who do not have the ability or willingness to diversify for whom there should be the greatest cause for concern since they may be forced to leave the industry aged between 45 and 59 and with few formal qualifications. Age Concern notes that 75% of men who leave work when over the age of 50 do not go back into work.

7.8 Key Findings

Panel 7.1 Key Findings – nature of employment for grazing of livestock

- Two thirds (63%) of those currently employed in the UK livestock industry are owner-managers.
- Jobs associated with grazing sheep and cattle in the East of England tend to be permanent rather than seasonal workers, although numbers of part time workers outweigh full time workers.
- The median age of farmers in the UK today is 57 and past trends show an increasing average age of farmers. Those working on smaller holdings and managing smaller areas of grassland tend to be older.
- On small holdings, a farmer may work alone with no employed staff. In these cases, farmers' markets, auctions and committees provide farmers with the opportunity to meet and to share ideas and experiences. As changes take place in the industry, it is encouraging to find farmers working more closely with one another.
- Livestock businesses in the UK and the Eastern region are experiencing difficulties recruiting skilled labour. The livestock production sector lacks people qualified at NVQ/SVQ levels 3 and above. While some workers may be low-skilled, others have developed their skills through experience and do not hold formal qualifications. Many farmers do not know where to go to access training. For some, the training on offer does not appear to be relevant to them.
- The future of livestock farming is likely to demand a wider skills base, as farmers diversify into new businesses and face an increasing number of regulations.
- In addition to a lack of skills, a poor perception of the livestock industry makes it difficult to recruit young people.

- The successful redeployment of labour from the livestock industry will depend on the age and qualifications of farmers leaving the industry. Older farmers may choose to work part time, diversify or retire rather than change career.

8 The social impacts of cattle and sheep grazing in the East of England

8.1 Introduction

8.1.1 This chapter explores the social impacts surrounding cattle and sheep grazing in the East of England in the contexts of education; tourism and recreation. The chapter brings together findings from the quality of life and farmers and land managers' surveys[109] and case study evidence.

8.1.2 The chapter is broken down into the following sections:

- The role of local sheep and cattle grazing in the classroom
- The importance of grazed landscapes in attracting tourism and businesses
- The value of grazed landscapes in the provision of recreational activities

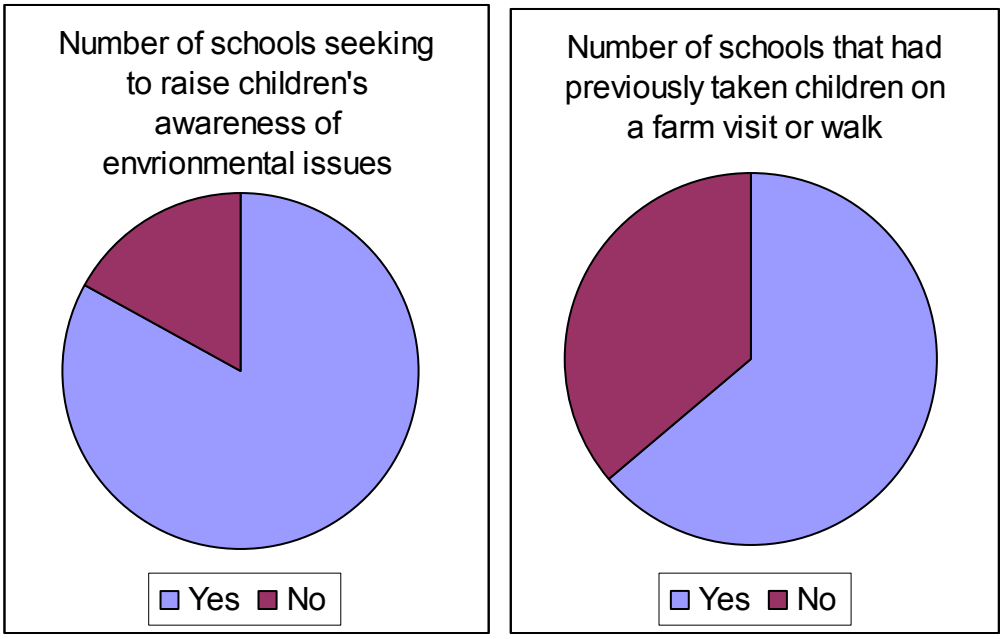
8.2 The role of local sheep and cattle grazing in the classroom

8.2.1 Over the past few years, concerns have grown about the quality of children's diets and the health problems related to poor standards of nutrition. Increasing attention has also been drawn to the positive role that schools and school meals can play in forming healthy eating habits, and in educating children about the provenance of food and how it is produced, and about farming and countryside management.

8.2.2 Among those schools we surveyed[110], there are recognitions that grazed landscapes are good for society and local grazing provides visible links with food production. Most of the schools we surveyed (21 out of 25) believed grazed landscapes offered cultural benefits for society. However, not all schools follow through their recognition of the cultural benefits to the classroom and school dining hall. At one extreme, some schools are demonstrating the use of local grazing by making regular visits to farms or grazed land, having contact with local farmers and sourcing their food locally. Two thirds of schools surveyed (16 out of 25) had previously taken children on a farm visit or a walk which incorporated areas of land grazed by sheep and cattle in the East of England.

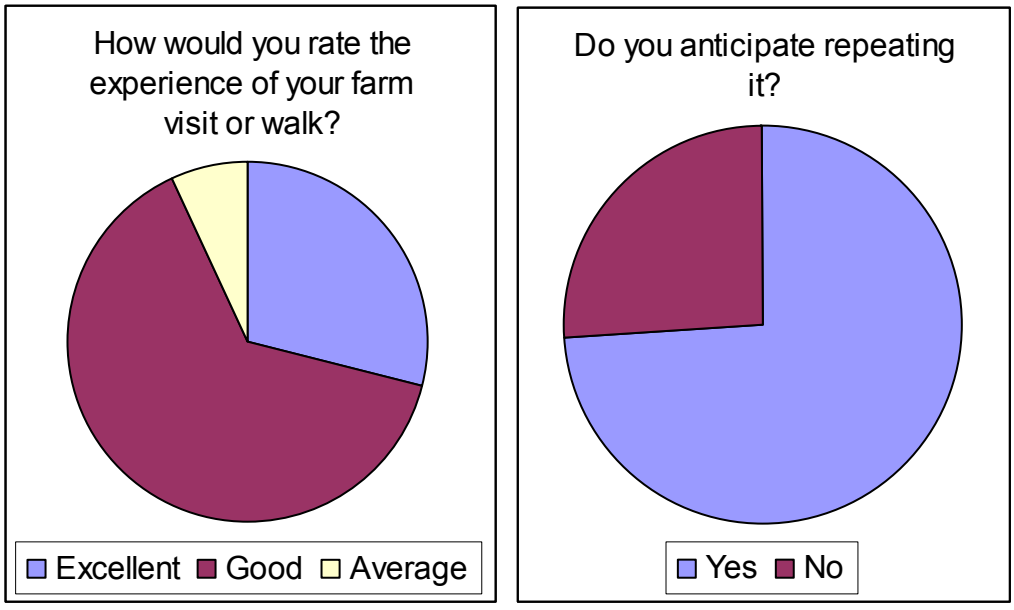
[109] Please note that the 'farmers and land managers survey' refers to our main survey sent to farmers in the region who may or may not have had additional business activities aside from grazing cattle and sheep. Survey results said to come from 'farm businesses' refer to those taken from the quality of life questionnaire sent to a sample of farm businesses.

[110] All schools surveyed were based in the Eastern region.



Source: PACEC Survey of schools (9A, 10A)

8.2.3 It is positive to observe that the majority of schools who have taken children on such a trip rated the experience as good or excellent and three quarters of schools would repeat the experience for future classes.



Source: PACEC Survey of schools (Q11A, 12)

8.2.4 At the other extreme, children may not see any animals grazing locally; they may not eat red meat and would not know where their food has come from.

8.2.5 Farming and Countryside Education (FACE)[111] continues to recognise and promote the linkages between food production and education. The aim of the independent

[111] Equally, Linking Farming and Environment (LEAF) provides living and working examples of how Integrated Farming can produce affordable food in harmony with the environment.

organisation is to educate children and young people about food and farming in a sustainable countryside and FACE works with members and partners to promote visits to farms and to provide easy access to a wide range of high-quality educational resources and activities to complement both school-based studies and outdoor visits. The Year of Food and Farming, which was put forward by FACE, will run from September 2007 to July 2008 and is designed to get pupils from both primary and secondary schools visiting local farms, tending school gardens and learning how to prepare food. Farmers are also encouraged to offer educational facilities on their farm (such as under the High Level Scheme) and FACE has recently increased the number of subsidised courses available for farmers wishing to learn more about hosting school visits.

8.2.6 61% (65 out of 107) of farmers, land managers and graziers who believed grazed landscapes offered benefits for society thought that grazing sheep and cattle had a crucial cultural positive impact for the wider community and on average the importance placed on the cultural benefits by these respondents was ranked at 2.5 (where 1 is not important and 5 is critically important). When asked to give details of other benefits, respondents highlighted the importance of increasing the understanding of where food comes from.

Table 8.1 What benefits do you believe grazed landscapes produce? (percentage of benefits ranked as crucial rather than not ranked)

	Total
Recreation benefits	51
Cultural benefits	61
Environmental benefits	80
Preservation of rare breeds/breeds specific to the area	52
Tourism benefits	50
Health benefits	50
Preservation of archaeological/historical sites	50
Other	7
Number of respondents	*107*

Source: PACEC Survey of farmers, land managers and graziers (Q68B)

Table 8.2 What benefits do you believe grazed landscapes produce? (Please rank according to importance where 1 is not important and 5 is critically important)-Mean Scores

	Total
Recreation benefits	2.2
Cultural benefits	2.5
Environmental benefits	3.0
Preservation of rare breeds/breeds specific to the area	2.5
Tourism benefits	2.3
Health benefits	2.2
Preservation of archaeological/historical sites	2.4
Other	1.7
Number of respondents	*151*

Source: PACEC Survey of farmers, land managers and graziers (Q68B)

8.2.7 Only around half of farmers and land managers surveyed (42 out of 92) believe that they play a part in bettering the public's understanding of the link between grazed land and food consumption.

Table 8.3 Do you believe that you play a part in bettering the public's (including children's) understanding of the origins of meat and meat products and the link between grazing/farming and food consumption? (Please tick one)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Yes	46	20	100	45	100	0	33
No	54	80	0	55	0	100	67
Number of respondents	*92*	*5*	*3*	*73*	*3*	*2*	*6*

Source: PACEC Survey of farmers, land managers and graziers (Q59A)

8.2.8 A quarter of these (20 out of 64) achieve this by hosting school visits and 5 respondents have seen the number of school visits increase in the last five years. Disappointingly, 13 schools said the number of trips had fallen in this period.

Table 8.4 If you host farm visits for schools, how have the number of farm visits changed in the last 5 years? (Please tick one)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Increased	8	0	0	8	33	0	0
Decreased	19	50	0	20	33	0	0
Stayed same	5	0	100	4	0	0	0
Not applicable	69	50	0	69	33	100	100
Number of respondents	*64*	*2*	*1*	*51*	*3*	*2*	*5*

Source: PACEC Survey of farmers, land managers and graziers (Q60)

8.2.9 However, school visits are by no means the only way of demonstrating the link. Some farmers say that just being able to see the animals in the field enhances the public's understanding of where their food is coming from.

Table 8.5 If you believe that you play a part in bettering the public's (including children's) understanding of the origins of meat and meat products and the link between grazing/farming and food consumption, in what ways do you achieve this?

(Multiple responses allowed)	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
School visits	25	0	0	28	33	n/a	0
Showing children how lambs are bred and reared	13	0	0	16	0	n/a	0
Public access through fields so people see the cattle	13	0	50	8	33	n/a	0
Meeting the general public at Agricultural shows	13	100	0	12	0	n/a	0
Keen member of NFU	9	0	0	12	0	n/a	0
Public relations with guests	9	0	0	12	0	n/a	0
Cattle can be seen grazing from the Road	9	0	0	8	33	n/a	0
Quality of meat	9	100	0	8	0	n/a	0
Tell people the cattle they are looking at will be eaten	6	0	0	8	0	n/a	0
Posters on footpaths advertising products for sale	6	0	50	0	0	n/a	100
Care of livestock	6	100	0	4	0	n/a	0
Rare breeds	3	0	0	4	0	n/a	0
On NFU Committee	3	0	0	4	0	n/a	0
Total sales on farmers markets	3	0	0	4	0	n/a	0
Explaining difference between dairy and meat production	3	0	0	0	33	n/a	0
Showing children working farms	3	0	0	4	0	n/a	0
Don't know/don't want to say	3	0	0	4	0	n/a	0
Number of respondents	*32*	*1*	*2*	*25*	*3*	*0*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q59B)

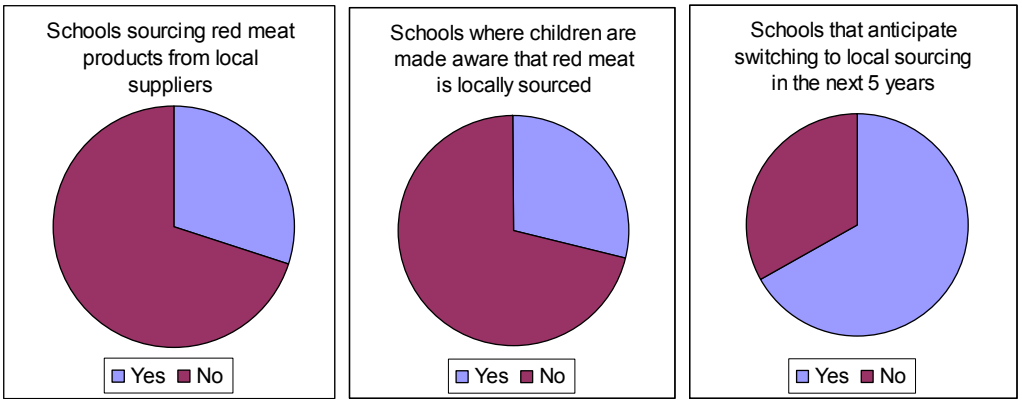
8.2.10 Two thirds of farm businesses interviewed (6 out of 9) believe that they better the public's understanding of the link between grazed land and food consumption and future plans for many include facilities to enhance this understanding and a greater focus on education.

Table 8.6 Do you believe that you play a part in bettering the public's (including children's) understanding of the origins of meat and meat products and the link between grazing/farming and food consumption? (Please tick one)

	Percentage of all respondents (by Business activities of farm)								
	Total	Accom	Recr	Tourism	Educ	Pub/ Rest	Meat Process	Farm Shop	Direct sales
Yes	67	71	67	71	67	50	67	67	67
No	33	29	33	29	33	50	33	33	33
Number of respondents	*9*	*7*	*6*	*7*	*3*	*2*	*3*	*3*	*3*

Source: PACEC Survey of farm businesses (Q18A)

8.2.11 Interest in sourcing local food for schools is growing, both amongst schools and the farming community. Projects such as 'Feeding our Future' in Essex and the work of East Anglia Food Link across the region show that the economic, environmental and social benefits of eating local food can be demonstrated practically, as well as in the classroom. Only a third of the schools we had responses from currently take steps to source red meat products from local suppliers and only a small number of these make their pupils aware that their food is being produced locally. However, two thirds of schools interviewed anticipate switching to local sourcing in the next five years.



Source: PACEC Survey of schools (Q28, 30, 33A)

8.2.12 To provide good quality local food to schools, a ready supply of key ingredients must be locally available and to ensure that children identify with where their food has come from, they must be able to see cattle and sheep grazing locally. At a time when the Government is trying to reform children's eating patterns and fewer young people are entering the struggling farming industry in the UK, it is vital that such linkages can continue to be made. A decline in grazing in the region might mean more schools in the position of one respondent in the region who pointed out 'there are no animals around us'.

8.3 The importance of grazed landscapes in attracting tourism and businesses

8.3.1 As well as their role in local food, cattle and sheep are important because they have created some of our most cherished landscapes over hundreds or even thousands of years through their grazing. Landscapes in the East of England that owe their existence to grazing animals include:

- grazing marshes in the floodplains of the Broads, the North Norfolk, Suffolk and Essex coasts;
- Norfolk and Suffolk River Valleys including Constable Country and the Waveney Valley; the Lee Valley and the Ouse Washes;
- chalk downland in the Chilterns and in Cambridgeshire;
- heathlands in North Norfolk, the Suffolk Sandlings and Breckland;
- parklands that surround many of the region's stately houses.

8.3.2 Many of these landscapes provide the habitats for some of our rarest plant and animal species, not to mention the bird life that makes the East of England so popular and well-known amongst bird watchers. They often carry environmental designations (e.g. Sites of Special Scientific Interest, SSSIs), in recognition of their regional, national or international importance.

8.3.3 The danger is that declining numbers of sheep and cattle make it increasingly difficult to manage all of these areas, despite the benefits they may bring in terms of access and recreation, tourism, local food, and conserving our rural heritage, countryside and wildlife.

8.3.4 33 farmers/land managers we interviewed have businesses operated on or off their holding which benefit directly or indirectly from the area which is grazed. On average, tourism activities and Bed & Breakfast/Self-Catering facilities were said to be fairly reliant on grazed land (where direct farm gate sales and farmers' markets were the most reliant of the business activities)

Table 8.7 To what extent are these business activities reliant on grazed land? Mean scores (1=Very Reliant,2=Reliant, 3=Fairly Reliant, 4=Not reliant)

	Total
Bed & Breakfast/Self-Catering Accommodation	3.1
Recreational activities	3.0
Tourist activities e.g. visitor centre	3.2
Educational resource e.g. school visits	3.1
Pub/Restaurant	3.2
Meat processing business	3.6
Farm Shop	3.5
Direct farm gate sales/Farmers' Market(s)	2.6
Other	2.5
Number of respondents	*33*

Source: PACEC Survey of farmers, land managers and graziers (Q53B)

8.3.5 When we asked farmers and land managers what level of impact a fall in the area of land grazed in the region would have on their business activities, a fifth (17 out of 85) anticipated a significant or major impact. When asked to explain these impacts, many responses highlighted a financial impact, with 4 respondents remarking that a small profit would become zero profit.

Table 8.8 What level of impact would a fall in the area of land grazed in the region have on your business activities? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Significant	9	5	13	13	11	0	0	0	50
Major	11	14	0	13	11	17	0	0	50
Minor	32	36	40	29	33	33	17	0	0
No impact	33	27	40	33	33	33	33	100	0
Don't know	15	18	7	13	11	17	50	0	0
Number of respondents	*85*	*22*	*15*	*24*	*9*	*6*	*6*	*1*	*2*

Source: PACEC Survey of farmers, land managers and graziers (Q57)

Table 8.9 If 'significant' or 'major' please specify what impacts you would expect a fall in the area of land grazed to have on your business(es)? (e.g. whole or part of business unprofitable, reduction in public visits) (Please give details)

(Multiple responses allowed)	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Small profit becomes no profit	27	0	33	40	50	0	n/a	n/a	0
Cattle and sheep would go	20	0	33	0	50	0	n/a	n/a	50
Reduction in Labour demand	13	50	33	0	0	0	n/a	n/a	0
Loss of grazing reduces countryside appeal	13	50	33	0	0	0	n/a	n/a	0
Mowing and spraying to maintain grassland	13	0	0	20	0	0	n/a	n/a	50
Reduction in stock levels	13	0	0	20	50	0	n/a	n/a	0
Low return/increased loss	7	0	0	0	0	100	n/a	n/a	0
Suppliers are closing down	7	0	33	0	0	0	n/a	n/a	0
Compulsory grazing (CSS) will cut losses	7	0	0	20	0	0	n/a	n/a	0
Have to find alternative source of income	7	0	0	20	0	0	n/a	n/a	0
Number of respondents	*15*	*2*	*3*	*5*	*2*	*1*	*0*	*0*	*2*

Source: PACEC Survey of farmers, land managers and graziers (Q58A)

8.3.6 Just under half of farm businesses surveyed said they kept livestock on the land for commercial or financial reasons. Indeed, 'Farm Stay East Anglia[112]' advertises properties as being on farms with or with views of grazing sheep/cattle.

Table 8.10 Please detail the motivation(s) behind keeping livestock on the land (Please give details)

(Multiple responses allowed)	Percentage of all respondents (by Business activities of farm)								
	Total	Accom	Recr	Tourism	Educ	Pub/ Rest	Meat Process	Farm Shop	Direct sales
Commercial/financial reasons	44	29	60	57	**100**	100	**100**	67	**100**
Personal preference	22	29	0	14	0	0	0	0	0
To graze the land	11	14	0	0	0	0	0	0	0
Had a dairy Herd	11	14	20	14	0	0	0	0	0
Farm Shop	11	14	20	14	0	0	0	33	0
Conservation	11	0	20	14	33	50	33	33	33
Number of respondents	*9*	*7*	*5*	*7*	*3*	*2*	*3*	*3*	*3*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farm businesses (Q11A)

8.3.7 Indeed, in the same way that grazed landscapes can benefit tourism, so too can tourism aid the livestock industry. A quarter of farmers/land managers surveyed (10 out of 41) have introduced new business activities, including tourism activities, as a

[112] Part of 'Farm Stay UK', a network of 1,100 agri-tourism businesses

result of changes in the red meat industry over the last five years. A further 16 farmers anticipate introducing such activities on their land in the next five years.

Table 8.11 Have any of the business activities you have ticked in Q53 above been introduced in the past 5 years as a result of changes in the red meat industry? (Please tick one)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Yes	24	100	n/a	17	50	n/a	20
No	76	0	n/a	83	50	n/a	80
Number of respondents	*41*	*2*	*0*	*30*	*4*	*0*	*5*

Source: PACEC Survey of farmers, land managers and graziers (Q54A)

Table 8.12 Do you anticipate that any of the business activities listed in Q53 above would be introduced on your land in the next 5 years? (Please tick one)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Yes	22	50	0	18	50	n/a	17
No	78	50	100	82	50	n/a	83
Number of respondents	*72*	*6*	*1*	*55*	*4*	*0*	*6*

Source: PACEC Survey of farmers, land managers and graziers (Q56A)

8.3.8 While, for some farmers, a large initial capital investment and increased red tape may deter diversification, for others, tourism activities can be run as a welcome complementary sideline to livestock farming, making use of spare space on the farm. Nigel Embry, Chief Executive of 'Farm Stay UK', said that 'in a way, foot-and-mouth was good news. It created awareness about what the countryside has to offer.'[113] However, Miriam O'Reilly comments[114] that it is the production of food which makes the countryside what it is and attracts business and tourists to rural Britain. Thus, tourism activities must exist alongside and not in place of sheep and cattle grazing.

8.3.9 Half of farmers, land managers and graziers surveyed recognised the tourism benefits of grazed landscapes, rating them at 2.3 in terms of the importance they believe such landscapes have for tourism in the wider community (where 1 is not important and 5 is critically important). The same number said that grazed landscapes benefited society because archaeological and historical sites were preserved (rated 2.4 in terms of importance).

[113] BBC News (11.10.2004)

[114] BBC News (31.08.2004)

Table 8.13 What benefits do you believe grazed landscapes produce? (percentage of benefits ranked as crucial rather than not ranked)

	Total
Recreation benefits	51
Cultural benefits	61
Environmental benefits	80
Preservation of rare breeds/breeds specific to the area	52
Tourism benefits	50
Health benefits	50
Preservation of archaeological/historical sites	50
Other	7
Number of respondents	*107*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q68B)

Table 8.14 What benefits do you believe grazed landscapes produce? (Please rank according to importance where 1 is not important and 5 is critically important)-Mean Scores

	Total
Recreation benefits	2.2
Cultural benefits	2.5
Environmental benefits	3.0
Preservation of rare breeds/breeds specific to the area	2.5
Tourism benefits	2.3
Health benefits	2.2
Preservation of archaeological/historical sites	2.4
Other	1.7
Number of respondents	*151*

Source: PACEC Survey of farmers, land managers and graziers (Q68B)

8.3.10 When asked to give details of the benefits attached to grazing land, 5 out of 9 respondents commented on the improvement that grazing animals made to the otherwise 'arable desert of East Anglia'.

Table 8.15 Other benefits

	Total
Making the arable desert of East Anglia better to look at	44
Greater understanding of where food comes from	33
Grassland of all type needs to be grazed	11
Maintaining a green and pleasant land	11
Habitats for rare bird species	11
Conservation of herb-rich grassland	11
Number of respondents	*9*

Source: PACEC Survey of farmers, land managers and graziers (Q68C)

8.3.11 Furthermore, when asked to comment on the consequences of any land use change and impacts resulting from a decline in cattle and sheep numbers in the region, one farmer said that tourism was suffering already because of the 'boring landscape in East Anglia' and more than one farmer said that 'a loss of grazing would 'reduce countryside appeal'. Clearly there is recognition within the industry that grazed landscapes are good for tourism in the region.

8.3.12 The majority of tourism associations and local authorities interviewed believed that grazed habitats and landscapes could offer benefits for society (23 out of 24).

Table 8.16 Do you believe that grazed habitats and landscapes can offer benefits for society? (Please tick one)

	Percentage of all respondents
Yes	96
No	4
Number of respondents	*24*

Source: PACEC Survey of tourism associations and local authorities (Q10A)

8.3.13 The resulting benefits they rated most highly were the preservation of rare breeds/breeds specific to area (an average score of 3.3), health benefits (3.1) and environmental benefits (3.0). Generally, those representing Bedfordshire, Norfolk and Suffolk tended to rate the benefits resulting from grazed landscapes more highly than those in other counties in the region.

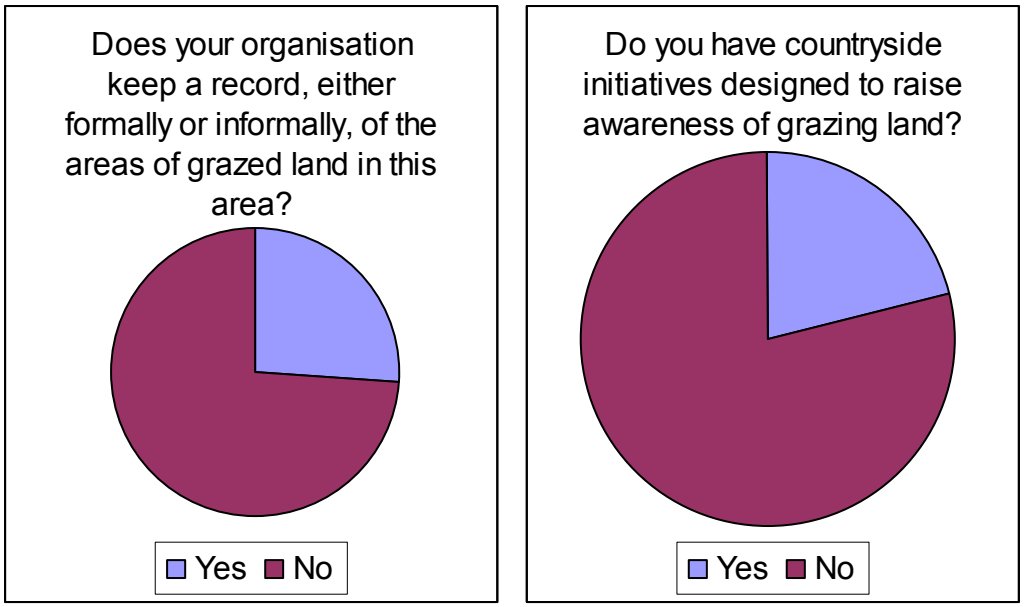
Table 8.17 If 'Yes', what benefits do you believe that they produce (Please rank according to importance where 1 is not important and 5 is critically important)-Mean scores

	Statistics of all respondents. (by Coverage of organisation)						
	Total	Beds	Cambs	Essex	Herts	Suffolk	Norfolk
Cultural benefits	2.6	3.0	1.8	2.0	2.0	4.0	3.2
Recreation benefits	2.2	1.5	1.6	1.0	2.0	4.3	3.2
Environmental benefits	3.0	5.0	1.8	2.0	2.0	4.7	4.0
Preservation of rare breeds/breeds specific to area	3.3	5.0	2.8	3.0	2.5	3.7	3.5
Tourism benefits	2.7	4.0	1.4	2.3	2.3	4.0	3.2
Health benefits	3.1	3.0	2.0	2.0	3.0	4.7	4.0
Preservation of archaeological/historical sites	2.7	4.0	1.7	3.0	2.0	3.0	3.0
Other	1.3	2.0	0.0	0.0	1.0	1.0	1.0
Number of respondents	*24*	*2*	*5*	*5*	*4*	*3*	*5*

Source: PACEC Survey of tourism associations and local authorities (Q10b)

8.3.14 However, despite the majority believing that grazed habitats and landscapes can offer benefits for society; over half of tourism bodies interviewed (13 out of 24) stating that tourism was critical or important to the area they covered; and rating tourism benefits produced by grazed landscapes as 2.7 on average, only 5 organisations keep a

record, either formally or informally, of the areas of grazed land in this area and only 4 had any countryside initiatives which are specifically designed to raise awareness or encourage the appreciation and enjoyment of land used for sheep or cattle grazing.



Source: PACEC Survey of tourism associations and local authorities (Q3, 8A)

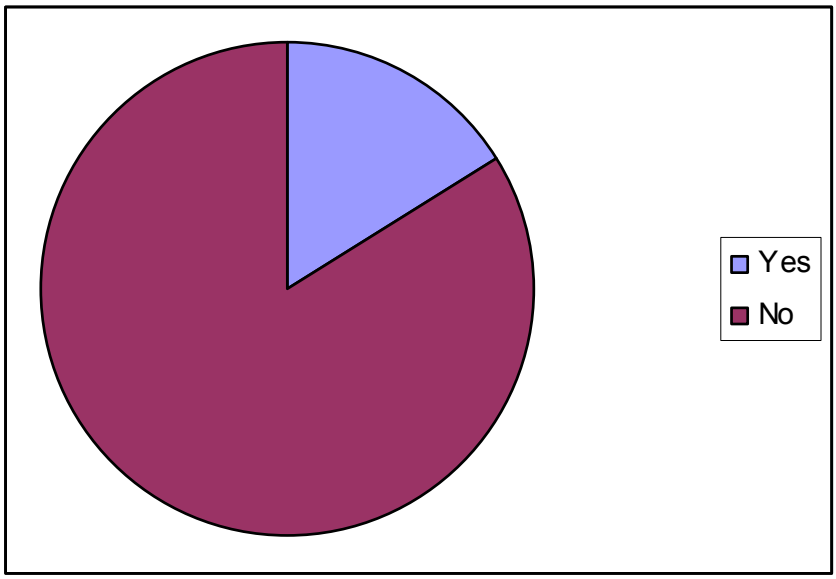
8.3.15 Furthermore, despite many recognising a fall in sheep and cattle in the region in recent years and commenting on the potential impact of a fall in livestock numbers on farm businesses and local produce, few tourism associations and local authorities currently take steps to encourage the consumption of locally reared red meat produce. It seems tight remits which exclude actions relating to local red meat produce might constrain organisations from pursuing such routes.

Table 8.18 What impacts, if any, would a fall in the area of land grazed have on businesses in the area? Please include any specific examples which illustrate your points. (Please give details)

	Percentage of all respondents
Reduction in locally produced meat & dairy products	29
Less visitors to the area	21
Farmers would suffer	14
Would suffer disastrously	7
Lack of variety	7
None	14
Don't know / don't want to say	21
Number of respondents	*14*

Source: PACEC Survey of tourism associations and local authorities (Q16A)

Figure 8.1 Does your organisation promote local lamb and beef produce in the area?



Source: PACEC Survey of tourism associations and local authorities (Q21A)

8.3.16 A large proportion (18/24) of tourism associations and local authorities did not believe that their organisation was important in bettering the public's understanding of the origins of meat and meat products and the link between grazing/farming and food consumption.

Table 8.19 How important do you believe your organisation is in bettering the public's (including children's) understanding of the origins of meat and meat products and the link between grazing/farming and food consumption? (Please tick one)

	Percentage of all respondents
Critical	0
Important	8
Average importance	13
Not important	75
Don't know	4
Number of respondents	*24*

Source: PACEC Survey of tourism associations and local authorities (Q18A)

8.4 The value of grazed landscapes in the provision of recreational activities

8.4.1 Many of the green spaces near or even within our villages, towns, and cities are meadows and commons that were, or continue to be, grazed. They form the natural places that people 'escape' to, or walk their dogs in, and so play an important role in the life of communities.

8.4.2 51% (55 out of 107) farmers/ land managers/ graziers believed that grazed landscapes offered recreational benefits for society, rating these benefits on average as 2.2 (where 1 is not important and 5 critically important). A further 50% (54/107) said that they offered health benefits, rating these benefits 2.2 in terms of importance.

Table 8.20 What benefits do you believe grazed landscapes produce? (percentage of benefits ranked as crucial rather than not ranked)

	Total
Recreation benefits	51
Cultural benefits	61
Environmental benefits	80
Preservation of rare breeds/breeds specific to the area	52
Tourism benefits	50
Health benefits	50
Preservation of archaeological/historical sites	50
Other	7
Number of respondents	*107*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q68B)

Table 8.21 What benefits do you believe grazed landscapes produce? (Please rank according to importance where 1 is not important and 5 is critically important)-Mean Scores

	Total
Recreation benefits	2.2
Cultural benefits	2.5
Environmental benefits	3.0
Preservation of rare breeds/breeds specific to the area	2.5
Tourism benefits	2.3
Health benefits	2.2
Preservation of archaeological/historical sites	2.4
Other	1.7
Number of respondents	*151*

Source: PACEC Survey of farmers, land managers and graziers (Q68B)

8.4.3 Additional comments on the benefits offered by grazed landscapes in the region included the provision of 'habitats for rare bird species'.

8.4.4 It is also worth noting that a handful of farmers/land managers/graziers (14 out of 107) believed grazed landscapes had negative impacts for society, and, on average, environmental impacts were rated higher in importance than grazed landscapes' hindrance to public access.

Table 8.22 Do you believe that grazed habitats and landscapes have resulting negative impacts on society? (Please tick one)

	Total
Yes	13
No	87
Number of respondents	*107*

Source: PACEC Survey of farmers, land managers and graziers (Q69A)

Table 8.23 What negative impacts do you believe grazed landscapes produce? (Please rank according to importance where 1 is not important and 5 is critically important) - Mean Scores

	Total
Environmental impacts	3.6
Hindrance to public access	2.1
Other	2.0
Number of respondents	*5*

Source: PACEC Survey of farmers, land managers and graziers (Q69B)

8.4.5 When walkers and ramblers were asked to rank their choices according to the importance of each benefit they selected, the highest ranked benefits were those relating to recreation, tourism and the environment, with recreational benefits rated 3.4.

Table 8.24 What benefits do you believe grazed landscapes produce? (Please rank according to importance where 1 is not important and 5 is critically important)- Mean Scores

	Total
Recreation benefits	3.4
Cultural benefits	2.7
Environmental benefits	3.3
Preservation of rare/Locally specific breeds	2.6
Tourism benefits	3.6
Health benefits	2.8
Preservation of archaeological/historical sites	2.7
Other	1.2
Number of respondents	*42*

Source: PACEC Survey of walkers and ramblers (Q8b)

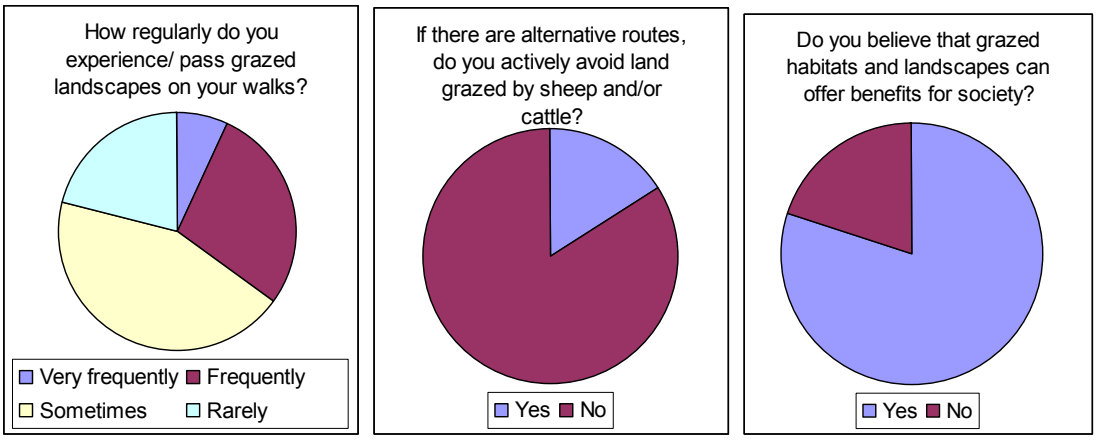
8.4.6 Three quarters of walkers/ramblers (40 out of 52) surveyed cited open spaces when they were asked what they liked about walking across grazed land. Only 5 out of 52 did not like anything about walking across grazed land. Over half of walkers (29/52) liked to see cattle /sheep on the land while they were walking.

Table 8.25 What do you like about walking across grazed landscapes? (Please tick as many as apply)

(Multiple responses allowed)	Percentage of all respondents (by Number of Dogs owned)				
	Total	None	1	2	3 or more
Open spaces	77	**46**	**92**	82	75
Seeing sheep / cattle on the land	56	38	54	73	75
Low level of grass	37	23	50	18	50
Flora & fauna associated with grazing	25	38	21	9	50
Nothing	10	23	**0**	9	25
Other	13	0	17	27	0
Number of respondents	*52*	*13*	*24*	*11*	*4*

A Number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the Number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of walkers and ramblers (Q5A)

8.4.7 Although responses from walkers and ramblers differed according to the location of the interview, the number of dogs owned and respondents' frequency of experiencing grazed landscapes, there is perhaps not such a stark contrast between the responses from dog and non-dog walkers as one might expect. For example, the survey evidence does not suggest that the ownership of a dog makes walkers more likely to avoid grazed land wherever possible. There emerged a group of respondents who do not like grazed land (and thus tend to walk elsewhere) but the majority like grazed landscapes and recognise in them beneficial aspects for themselves and for society as a whole.



Source: PACEC Survey of walkers and ramblers (Q4, 7, 8A)

8.4.8 However, few walkers and ramblers felt that a decline in sheep and cattle numbers in the region would impact significantly on them and their continued use of the countryside.

Table 8.26 What level of impact would a fall in the area of land grazed have on you and your use of the countryside? (Please tick one)

	Percentage of all respondents (by Regularity of experiencing grazed landscapes)				
	Total	Very Frequently	Frequently	Sometimes	Rarely
Significant	4	0	0	10	0
Major	13	0	7	24	9
Minor	19	20	**40**	14	0
No Impact	15	20	0	19	27
Don't know	48	60	53	33	64
Number of respondents	*52*	*5*	*15*	*21*	*11*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of walkers and ramblers (Q11)

8.5 Key Findings

Panel 8.1 Key Findings – the social impacts of grazing cattle and sheep

- There is recognition amongst both schools and farmers that locally grazed landscapes and the sourcing of locally produced food provides valuable links between food production and consumption. However, in practice, not all schools and farmers take steps to promote these links. At one extreme, some schools are demonstrating the use of local grazing by making regular visits to farms or grazed land, having contact with local farmers and sourcing their food locally. At the other extreme, children may not see any animals grazing locally; they may not eat red meat and would not know where their food has come from.
- Grazed landscapes can benefit tourism in the same way that tourism can aid the livestock industry. Many farmers' diversified businesses rely on the grazing of cattle and sheep and equally, many cattle and sheep producers rely on tourism to supplement their farming income.
- While tourism bodies in the Eastern region recognise the importance of tourism and believe that grazed landscapes might have tourism benefits, few tourism organisations take steps to record the areas of grazed land in their area or have initiatives in place to raise awareness of land used for the grazing of cattle and sheep. Nor do many tourism associations and local authorities currently take steps to encourage the consumption of locally reared red meat produce.
- Land owners and managers as well as users of the land (e.g. walkers) recognise the recreational and health benefits which grazed land can offer and very few believe the grazing of cattle and sheep hinders public access. However, a reduction in the number of animals is unlikely to alter walkers' and ramblers' current use of the countryside.

9 Conclusions and Recommendations for Further Research

9.1 Conclusions

The Grazing of Cattle and Sheep in the East of England today[115]

9.1.1 Today a total of 217,000 cattle (188,000 beef and 29,000 dairy) and 345,000 sheep are grazed in the East of England. The current trend is towards extensifying grazing practice - a third of respondents to our survey (35 out of 101) said that production systems had extensified in the last 5 years. In the last 15 years the region has witnessed declines in the number of cattle and sheep. In particular, the number of number of dairy cows in the region has dropped dramatically from 67,000 in 1990 down to 29,000 by 2005 and the number of dairy holdings in the region has fallen by 54% in the same period. In some cases, dairy farmers have switched to farming beef cattle, where the capital investment required is lower. Nevertheless, numbers of beef cattle in the region have also fallen, largely as a result of declining average numbers of beef cows per holding possibly resulting from the CAP reform's change in the subsidies system, which no longer rewards larger sizes of herd. While sheep numbers are also down on 1990 figures, largely due to Foot and Mouth disease in 2001, the number of sheep holdings in the East has risen in recent years as the trend for 'hobby farming'[116] has increased.

Action: Natural England may wish to consider undertaking specific research on the trend towards 'hobby farming' in order to aid understanding of the different requirements and assess the impacts (see areas of further research below)

9.1.2 While the region is now regarded as a predominantly arable area and the numbers of livestock are down on previous years, the economic contribution of livestock production in the region is not insignificant. Managing this livestock supports 13,410 jobs (FTEs), of which 4,290 are directly associated with the grazing activity. These 4,290 represent 9% of all those employed in agriculture in the region. Furthermore, this activity generates (directly and indirectly) £395 million total GVA for the region's economy. The £64 million directly supported represents 0.8% of all GVA generated by agriculture in the UK as a whole.

[115] Figures relate to 2005

[116] People keep a small flock of sheep for interest rather than commercial purposes.

Table 9.1 Jobs and GVA currently supported by cattle and sheep grazing in the East of England

	FTE Jobs ('000s)	GVA (£m)
Direct	4.29	64
First Round Suppliers	2.94	189
Second to nth round suppliers	0.88	109
Downstream	5.30	33
Total	*13.41*	*395*

Source: PACEC

9.1.3 However, farmers, land managers and graziers responsible for grazing sheep and cattle in the region are experiencing a squeeze on their profits as a result of pressure on revenues and increasing costs.

9.1.4 Low product prices were one of the three most frequently cited constraints relating to grazing sheep / cattle listed by farmers, land managers and graziers (cited by 46% of respondents). The East's dairy industry, which once dominated Suffolk's economy, is now particularly vulnerable to the persistence of low milk prices.

The number of dairy producers in the Eastern region could fall by as much as 75% by 2015 (Coleman & Harvey 2004).

9.1.5 The pressure on revenues resulting from low product prices is exacerbated by the increased availability of cheap imports.

Over half UK beef imports are from Ireland, with Brazil and Argentina forming almost 20% of the rest of the imports. Current prices show EU at around $3.50per kg of cattle, compared to around $1.40 from Brazil and $1.30 from Argentina.

Action: The carbon emissions associated with the use of air transport and, in some areas, the felling of tropical rainforests to clear land for beef production raise concerns regarding the impacts that these imports are having on the environment. Further research could be conducted to look at whether consumers' choices are influenced by the food miles / carbon emissions / rainforest clearance associated with importing red meat products (see areas of future research below).

9.1.6 Cost pressures include the costs of boundary maintenance and public liability (listed as constraints by 47% and 29% of our sample of farmers, land managers and graziers in the region respectively), as well as compliance with increasing amounts of regulation and rising input prices.

9.1.7 Beef cattle and sheep farmers in the East are also suffering as a result of the UK-wide closure of local abattoirs. Without access to a local abattoir, livestock farmers either transport their animals great distances (an average of 37 miles in our farmers' survey), resulting in significant haulage costs and potential livestock weight loss (caused as a result of animal stress), as well as having implications for the environment; or they risk going out of business.

One cattle breeder we spoke to is going out of business because it costs him £500 to kill each animal aged over 30 months. This is because the closure of small abattoirs requires the breeder to transport his cattle some 120 miles, return home to wait while the animals are processed and then return to collect them with a refrigerated van, in accordance with new health and safety legislation.

9.1.8 Not only are farmers, land managers and graziers facing increasing costs but there is also evidence to suggest that they are experiencing difficulties recruiting skilled labour. The livestock production sector lacks people qualified at NVQ/SVQ levels 3 and above (Lantra).

Action: We recommend that Natural England undertakes further research to investigate the livestock farming skills gap (see areas of future research below).

9.1.9 Just as significant are the recruitment difficulties stemming from a poor perception of the industry or lack of interest in livestock farming work.

Action: In the 'Year of Farming and Food', further steps should be taken to visit schools and promote farming as an attractive career choice. Further research could also be undertaken to understand what discourages young people from going into farming and what could be done to raise the image and perception of the livestock farming industry (see areas of future research below).

9.1.10 There is a danger that many skills pertinent to the production of beef and dairy cattle and sheep may be lost to future generations as existing farmers reach retirement and choose to sell or contract their land in the absence of a willing son or daughter to enter the farming business. A relatively high proportion of livestock farmers are over the age of 60 (47% in our survey), and this was especially true of farmers with smaller holdings, where typically the stock is managed by the owner-manager alone.

9.1.11 Over a third (38%) of our survey respondents have changed the way in which they market their products as a result of changes in the industry over the last 5 years and, interestingly, a third now market their produce as being produced locally.

Action: More detailed research could be undertaken to look at the marketing and promotional activities undertaken by cattle, dairy and sheep farmers in the region to identify current and future trends and any areas of marketing support which could be provided (see areas for further research below). Smaller outlets may require help sourcing local produce. There may be the opportunity for Natural England to get involved with the current stage of the East Anglian Food Link which looks at beef and lamb.

9.1.12 If smaller plots cease to be grazed, in addition to the economic implications there are also environmental implications. As the volume of locally-produced meat falls, this will necessitate increased transportation of meat from other regions and abroad, and thus an increase in food miles and implications for climate change. Where the land is formally recognised for its environmental contribution (such as land designated as SSSI) there is a danger that a lack of grazing will mean the land falls into an irreversibly unfavourable condition.

Action: Help should be made available for smaller units which do not benefit from economies of scale, in order to ensure the quality of environmentally significant land is preserved for future generations (see Phase 3 below for environmental research).

9.1.13 Encouragingly, 70% of farmers, land managers and graziers said that they work with or share experiences with other farmers / farm businesses in the region, although regular contact with other farmers was more likely among younger farmers[117].

The Future of Cattle and Sheep Grazing in the East of England

9.1.14 The range and complexity of factors which have the potential to have an impact on the red meat and dairy industries in the future make it difficult to predict the industries' futures with certainly. However, taking into consideration past trends and anticipated future movements of key supply and demand-side drivers of change (such as prices, policies, consumer preferences and climate change) we have endeavoured to estimate the future economic impacts of cattle and sheep grazing in the East region.

Table 9.2 Future numbers of cattle and sheep in the East of England

	Number of livestock in the East of England		
	2005[118]	2011	2016
Beef Cattle[119]	188,000	161,000	169,000
Dairy Cattle	29,000	27,000	24,000
Sheep	345,000	360,000	361,000

Source: PACEC
Note: Results under the Baseline Scenario

Table 9.3 Current and predicted changes in jobs and GVA supported by grazing cattle and sheep in the East of England

	2005	2011	2016
Total jobs (FTE)	13,410	12,110	12,120
Total GVA (£m)	395	363	367

Source: PACEC
Note: Results under the Baseline Scenario; GVA projections are based on 2005 prices

9.1.15 By 2011 it is forecast that beef and dairy cattle numbers in the region will have fallen, and with them, the number of jobs supported by dairy farming and cattle grazing. The predicted rise in sheep numbers in the region is likely to bring about a rise in indirect employment, as direct employment declines due to productivity improvements. However, overall, total jobs in cattle and sheep farming in 2011 are estimated to fall

[117] It is worth noting that many farmers were willing to talk to us about their concerns and ideas in person, by phone or by letter, often in preference to completing a series of tick boxes. This is perhaps an indication that the farming community would be willing to engage in discussions but through face-to-face or individual contact rather than through form-filling.

[118] Source: Agricultural Census, 2005, Defra

[119] This is the total number of cattle, minus the number of dairy cattle.

to 12,110, with the largest drop coming from beef farming. The successful redeployment of labour from the livestock industry will depend on the age and qualifications of farmers leaving the industry. Older farmers may choose to work part time, diversify or retire rather than change career.

9.1.16 Similarly, total GVA supported by cattle and sheep grazing is forecast to fall to £363 million by 2011, as large drops in GVA from dairy and beef farming outweigh any increases from sheep farming.

9.1.17 By 2016, beef farming is predicted to show some recovery, while dairy farming continues to decline steadily. Coupled with a forecast decline in sheep employment, total jobs supported by cattle and sheep grazing are likely to remain at similar levels to 2011 – 12,120 in total. In the same year, the GVA supported is predicted to rise compared to 2011 figures to £367 million, due to the small recovery in beef production, but not to return to 2005 levels.

9.1.18 Among farmers, land managers and graziers surveyed, 78% (52 out of 67) recognised that any land use change resulting from a decline in cattle and sheep would lead to a reduction / loss of locally produced meat.

The Social Impacts of Grazing Sheep and Cattle

9.1.19 Generally, grazed landscapes are regarded as having positive impacts for society, including the provision of a local, visible link with food production; the attraction of visitors to rural areas; and the enhancement of valuable recreational spaces. These positive attributes were cited by a wide variety of survey respondents, including non-farmers and non-users of the countryside. The most frequently ranked benefits by farmers, land managers and graziers were environmental (80%) but also of note is that half of farmers, land managers and graziers saw a health benefit arising from grazed landscapes.

Table 9.4 What benefits do you believe grazed landscapes produce? (percentage of benefits ranked as crucial rather than not ranked)

	Total
Recreation benefits	51
Cultural benefits	61
Environmental benefits	80
Preservation of rare breeds/breeds specific to the area	52
Tourism benefits	50
Health benefits	50
Preservation of archaeological/historical sites	50
Other	7
Number of respondents	*107*

Source: PACEC Survey of farmers, land managers and graziers (Q68B)

The NFU's recent publication *Why Farming Matters* (2006) highlights the value of farming in Britain to the quality, security and value of Britain's food supplies; the countryside; the economy; the environment and climate change; and to Britain's rural life and culture.

9.1.20 However, despite survey respondents' recognition that grazed landscapes can provide benefits, few have acted on and promoted direct linkages.

9.1.21 There is recognition amongst both schools and farmers that locally grazed landscapes and the sourcing of locally produced food provides valuable links between food production and consumption. However, in practice, not all schools and farmers take steps to promote these links. Fewer than half the numbers of farmers, land managers and graziers we interviewed (46%) believed they played a part in bettering the public's (including children's) understanding of the origins of meat and meat products and made the link between grazing/farming and food consumption. At one extreme, some schools are demonstrating the use of local grazing by making regular visits to farms or grazed land, having contact with local farmers and sourcing their food locally. At the other extreme, children may not see any animals grazing locally; they may not eat red meat and would not know where their food has come from.

9.1.22 Grazed landscapes can benefit tourism in the same way that tourism can aid the livestock industry. Many farmers' diversified businesses rely on the grazing of cattle and sheep and equally, many cattle and sheep producers rely on tourism to supplement their farming income. While tourism bodies in the Eastern region recognise the importance of tourism and believe that grazed landscapes might have tourism benefits, few tourism organisations take steps to record the areas of grazed land in their area or have initiatives in place to raise awareness of land used for the grazing of cattle and sheep. Nor do many tourism associations and local authorities currently take steps to encourage the consumption of locally reared red meat produce.

Action: Natural England might consider further research in order to find out why schools and tourism organisations are not making the link between grazing and the wider educational, tourism and recreational benefits in the region (see areas of further research below). There may be a case for Natural England providing guidance in this area.

9.1.23 Land owners and managers as well as users of the land (e.g. walkers) recognise the recreational and health benefits which grazed land can offer and very few believe the grazing of cattle and sheep hinders public access. Over half of walkers we spoke to (29 out of 52) like to see sheep and cattle on the land while they are walking.

9.2 Recommendations for Phase 3

9.2.1 While Phase 2 has detailed the economic and social impacts of a decline in the red meat and dairy industries in the East of England, it is equally important to consider the environmental contribution of sheep and cattle grazing in the region and the potential environmental impacts which would result from future falls in the numbers of animals grazed. This is one of the key objectives of Phase 3 of the current under grazing research.

9.2.2 The third phase of research is designed to look at:

- the environmental impacts of changing red meat and dairy industries in the East of England;
- potential ways in which the impacts of under grazing could be measured at regional and sub-regional levels in the future; and
- future projections of jobs and GVA supported by grazing cattle and sheep in the region under alternative scenarios in 2011 and 2016. (In Phase 2, these figures have only been forecast under a baseline scenario).

9.2.3 More specifically, in terms of evaluating the environmental impacts of changing red meat and dairy industries in the region, phase 3 would:

- provide a baseline and projected assessment of the environmental and ecological implications of a decline in the red meat and dairy industries;
- look at the environmental implications of a decline in the red meat and dairy industries for smaller, isolated grassland sites;
- take into account the natural resources of the region (including habitats, species, water, soil);
- discuss current environmental awareness and understanding amongst different groups;
- investigate the role that agri-environment schemes are currently playing (some unprofitable grazing may be maintained by agri-environment schemes);
- highlight the current and expected shortfalls in grazing levels, with reference to different types of grassland and different areas of the Eastern region;
- estimate the minimum grazing rates required to keep BAP and SSSI land in favourable condition; and
- gross up required grazing rates for different types of grassland across the region in order to estimate the total number of animals required for the East region as a whole.

9.2.4 The setting out of a methodology for the future monitoring of under grazing impacts would include:

- consideration of the key indicators for measuring the impacts of under grazing;
- a review of the strengths and weaknesses of existing methodologies; and
- suggested regional and sub-regional methodologies.

9.3 Other Future Areas of Research

9.3.1 PACEC, in discussion with Natural England, recommends that the following areas of research, which have not been possible to explore in detail under the present study's remit, could be the subject of future under grazing research in the Eastern region.

- **Marketing and promotional activities** undertaken by cattle, dairy and sheep farmers in the region, including how their approach to marketing is changing; what help they would like access to in this area; what they are promoting; and which media they prefer. Where are farmers selling their red meat? Also, is niche marketing in the dairy industry viable (case study evidence would be useful)?
- **Case studies / profiles of different types of livestock farmer in the region,** including the 'hobby' farmer.
- **Incoming farmers – are these mainly hobby farmers?** What are their reasons for entering the farming industry? What are their interests/ issues/concerns/benefits? How do they sell their meat and are there differences with traditional farmers? Is this the trend for years to come as fewer sons/daughters take over the running of the family farm? To what extent are hobby farms fuelled by city bonuses and the trend vulnerable to sudden changes in economic climate?
- What proportion of farmers are female? What is the **role of females** now and in the future of farming in the region? Are they more common in diversified farm businesses? Is farming set to remain male-dominated? Are females the innovating force in an evolving farming industry?
- **Why are schools and tourism organisations not making the link between grazing and the wider educational, tourism and recreational benefits in the region?** Are they lacking guidance about what actions to take? There is the potential for case studies and finding out from schools and tourism organisations what would help them. There also needs to be some inclusion of the wide ranging benefits of grazing in local policy documents.
- **Is there a housing issue for livestock farmers?** Given that livestock workers need to be on site in order to look after their animals, are they able to find affordable housing where they need to be? Is a shortage of affordable housing acting as a disincentive to potential farmers? Are farm owners/managers providing accommodation for workers? Is there evidence of the availability of on-site accommodation being reduced as assets are sold/rented privately in order to boost farm incomes in a period when property prices are at a high?
- **The skills gap in livestock production:** Is there a recognition within the industry that skilled labour is important? How can a shortage of (livestock) skilled labour be addressed? Are apprenticeships the most attractive option for employee and employer? (National Trust example from the Grazing Forum). What is Lantra doing to address the skills shortage?
- **Is it a poor sector image rather than a skills shortage which is most to blame for poor uptake?** What is discouraging young people from going into farming? What can be done to raise the image and perception of the farming industry? Should promotion be rather of a way of life? Can the benefits of hobby farming be used in promoting the future of the industry? What can be done at a young age to encourage young people? School visits and farming as a career choice.
- **What is 'local'?** Further research into farming systems. How easily can small food outlets (v supermarkets) source locally?

- **Further research into consumer tastes and preferences:** (ties in with marketing research above) what are the purchasing patterns of individuals? Are they affected by changes in marketing? Would they be willing or prefer to buy direct from the supplier (case study: dairy farmers in Suffolk)? Are consumers' choices influenced by fair prices for suppliers / food miles / climate change / carbon emissions / rainforest clearance / methane effects associated with grazing sheep and cattle and processing & importing red meat products.
- **What types of farming are the most carbon-neutral?** Are there any particular practices that should be being encouraged and might affect consumer preferences?
- **Is future livestock production in the East threatened by increased biofuel cropping in the region?** Will grassland be given over to biofuels? How will increasing biofuel cropping affect livestock systems – may mean reduction in grain-fed livestock, which favours extensive grazing systems.

Appendix A Stakeholder Organisations Contacted

The Brecks Tourism Partnership
British Cattle Veterinary Association
British Grassland Society
British Meat Producers Association
The Broads Authority
Country Land and Business Association
Countryside Agency
East Anglian Foodlink
East of England Development Agency
East of England Tourist Board
English Beef and Lamb Executive
English Nature
Essex Wildlife Trust
Farming and Wildlife Advisory Group
The Game Conservancy
Holkham Estate
Livestock Auctioneers Association
Meat and Livestock Commission
National Farmers Union
National Federation of Meat and Food Traders
The National Trust
Norfolk Rural Business Advice Service
Norfolk Wildlife Trust
Rare Breeds Survival Trust
Red Meat Industry Forum
Rural Development Service, Defra
Royal Society for the Protection of Birds
Suffolk Agricultural Association
Suffolk County Council
Tastes of Anglia
Welney Wildlife and Wetland Trust
Woolley & Company

Appendix B Bibliography

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Other important resources:

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http://www.countryside.gov.uk/LAR/Landscape/CC/the_east/index.asp

Defra Economics and statistics homepage
http://statistics.defra.gov.uk/esg/default.asp

English Nature GIS data sets http://www.english-nature.org.uk/pubs/gis/GIS_register.asp

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http://www.imperial.ac.uk/agriculturalsciences/cfcr/pdfdoc/private-label-products.pdf

Land Use Policy Group Publications http://www.lupg.org.uk/pubs/

Livestock Environment Interactions
http://www.fao.org/ag/aga/LSPA/LXEHTML/policy/index.htm

National Food Survey
http://www.statistics.gov.uk/StatBase/Expodata/Spreadsheets/D3802.xls

Undergrazing Project Partnership http://www.defra.gov.uk/rds/ee/undergrazing.htm

Appendix C Farmers and Land Managers' Questionnaire

The Impacts of Undergrazing
Phase 2 Survey of Farmers and Land Managers

Please refer to the Glossary (on the reverse of the enclosed covering letter) for terms marked with (*). If you have any queries about the questionnaire, please contact Harriet Hunter on 0207 734 6699.

The contact details given in this section will be used by PACEC to check consistency of information, check for duplication and for your inclusion in the prize draw. All information will be confidential and will only be reported in aggregate.

Q1 Name _____

Name of enterprise (if applicable) _____

Address _____

_____

Postcode _____

Telephone number _____

If you are able to complete the questionnaire in full, you will automatically be entered into the prize draw to win £200. If you are unable to complete the questionnaire in full, please complete all underlined questions throughout the questionnaire, which should take you no more than 15 minutes.

Background

Q2 In what capacity do you manage grassland? *(Please tick one)*

Owner [1] Tenant [2] Other [3]

What principal role do you have in managing grassland? *(Please tick one)*

Land manager [ ] Land conservationist [ ] Farmer [ ] Grazier [ ] Other (please state below) [ ]

_____

Q3 What is the total land area of the site for which you are responsible for (e.g. total agricultural holding)? _____ Ha

Q4 Please indicate what this land is used for? *(Please tick as many as apply)*

Cereal	[ ]	Golf	[ ]
Other Cropping	[ ]	Horse-riding	[ ]
Horticulture	[ ]	Water sports	[ ]
Lowland dairy	[ ]	Off-road quad-biking	[ ]
Lowland cattle & sheep	[ ]	Mountain Biking	[ ]
Mixed, predominantly arable	[ ]	Fishing	[ ]
Mixed, predominantly livestock	[ ]	Bird Reserve	[ ]
Other agricultural – please state below	[ ]	Parkland	[ ]
		Sporting Shooting	[ ]
_____			
National Park	[ ]	Other – please state below	[ ]
Nature Reserve	[ ]	_____	

Grassland

Q5 What is the total area of grassland you manage (in hectares)?

Ha

Please answer the following questions on the basis on this area of grassland and your activities thereon

Q6 Please state the proportion of grassland (under your management) which fell into the following categories during 2005: *(Please enter a number in each)*

Permanent Improved Grass* % Temporary Grass* % Rough Grazing* %

Q7 If you have any proportion of temporary grassland, please indicate what the temporary grassland is used for *(please tick one)*

Only silage production 1 Only grazing 2

Grazing and silage production 3 Not applicable 4

Q8 Please indicate below the proportion of grassland (if any) which you manage which has one of the following conservation designations (*Please add any other designations not listed)*:

Site of Special Scientific Interest (SSSI)	%
Countryside Stewardship Scheme	%
Environmentally Sensitive Area	%
Entry Level Scheme	%
Other – please list below	
_____	%
_____	%
_____	%

Cattle and Sheep Grazing

Q9 Are sheep/cattle grazed (or have they grazed in the last 5 years) on any part of the grassland you manage? *(Please tick one)*

Yes **(Go to Q11)** 1 No 2

Q10 If you have answered 'no', please give reasons why cattle/sheep are not kept on the grassland you manage *(Please give details)*

_____

_____

_____

Thank you – The remaining questions relate only to cattle and sheep grazing. If these are not relevant, please return questionnaire to PACEC in the envelope provided

Q11 What is the total area of each grassland type that you manage which is grazed (in hectares) and what is the average number of months that each grassland type is grazed in a typical year?

Permanent Improved Grass	Ha	Months
Temporary Grass	Ha	Months
Rough Grazing	Ha	Months

Q12 If known, what is your nearest area of grazed land (beyond the area of grazed land which you manage) and what is the distance of this land from your own. *(Please give name of site and enter distance in miles)*

_____ miles

Q13 What cattle/sheep are kept on the land you manage? For each livestock category, please indicate the total number of cattle/sheep grazed in 2005, whether the numbers have changed in the past 5 years, and the number of months for which they were grazed on the grassland you manage in 2005.

	Total number of livestock in 2005	*What has happened to livestock numbers in past 5 years? (please tick one)*			*Number months grazing on your grassland in 2005*
		Gone up	*Gone down*	*No change*	
Male bovine animals & heifers older than 24 months					
Male bovine animals & heifers aged 6 – 24 months					
Suckler cows					
Dairy cows					
Male & female bovine animals below 6 months					
Sheep					
Other – please state below					

Q14 What has happened to stocking density over the past 5 years? *(Please tick one)*

It has fallen [1] It has risen [2] It has stayed the same [3]

Q15 What proportion of the cattle/sheep on the land are rare breeds*?

%

Q16 What special requirements, if any, do rare breeds have in comparison with standard breeds? *(Please give details)*

Cattle: _____

_____

Sheep: _____

_____

Q17 What happens to the cattle/sheep when they are not on the grassland you manage? *(Please tick one)*

Cattle/sheep are housed in outdoor pens	1
Cattle/sheep are housed in indoor pens	2
They move to other grassland	3
Other – please state below	4

_____

Q18 Do you own the cattle/sheep? *(Please tick one)*

Yes, I own all the cattle/sheep **(Answer Q19 & NOT Q20)**	1	Yes, I own some of the cattle/sheep **(Answer Q19 AND Q20)**	2	No **(Go to Q20)**	3

Q19 Under what arrangement(s) are ***your*** cattle/sheep kept on the land? *(Please tick as many as apply)*

I own the land	
I graze my cattle/sheep on the land under a tenancy agreement	
I graze my cattle/sheep on the land under a licence agreement	
I graze my cattle/sheep on the land under an informal agreement	
Other – please state below	

_____

_____

_____

Q20 Under what arrangement(s) are cattle/sheep (which is ***not*** your own) kept on the land? *(Please tick as many as apply)*

The owner of the land owns the cattle/sheep	
The cattle/sheep are grazed on the land under a tenancy agreement	
The cattle/sheep are grazed on the land under a licence agreement	
The cattle/sheep are grazed on the land under an informal agreement	
Other – please state below	

_____

_____

_____

Q21 Who owns the cattle/sheep which are not yours (e.g. local farmer, non-local farmer, grazier, conservation body)? *(Please give details)*

Q22 Please detail the main motivation(s) behind keeping cattle/sheep on the land (e.g. conservation, meat production, etc) *(Please give details)*

Q23 If the grassland is part of an agricultural holding, are any of the cattle/sheep belonging to the farm enterprise grazed on other people's land? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please indicate the proportion of the total cattle/sheep grazed in this way ____ %

and in which months of the year *(please tick as many as apply)*

Jan		Feb		Mar		Apr		May		Jun	
Jul		Aug		Sep		Oct		Nov		Dec	

Q24 Over what distance do you ***typically*** move your cattle/sheep for grazing purposes? *(Please enter number)* ____ Miles

Q25 Over what distance would you be ***willing*** to move your cattle/sheep for grazing purposes? *(Please enter number)* ____ Miles

Q26 Generally, how have production systems on the land which is grazed changed over the past 5 years? *(Please tick one)*

They have become more intensive [1] They have become more extensive [2] They have not changed [3]

Q27 Do you experience any of the following constraints relating to grazing sheep/cattle on your site? *(Please tick as many as apply)*

Poor availability of skilled labour		Small field sizes	
Poor availability of business advice/support		Site location (*e.g. isolated sites, time and cost of travelling to sites for stock inspection)*	
Difficulties sourcing cattle/sheep		Provision of water	
Handling* of sheep and cattle (*loading facilities)*		Boundary maintenance (*e.g. fences, hedges, gates)*	
Marketing constraints		Presence of scrub	
Lack of outlets for products		Risk / occurrence of vandalism/crime	
Low prices for produce		Public liability (e.g. cattle/sheep escape onto roads, dog walkers conflict with animals)	
Public opinion (e.g. welfare concerns, vegetarianism)		No constraints	

Other – please state:

Q28 If you are normally reliant on one or more graziers using all or some of your grassland, are you currently having difficulties finding graziers? *(Please tick one)*

Yes [1] No [2] Not applicable [3]

Please give details

Q29 Is production constrained by any of the following environmental requirements? *(Please tick as many as apply)*

Water tables raised for conservation management		Good Agricultural and Environmental Condition (GAEC) standards	
pH uncorrected (*e.g. liming not permitted)*		Organic standards	
Constraints on timing of hay or silage production *(e.g. delay to allow seeding)*		Other standards associated with environmental grant schemes	
Reduced stocking rates for nature conservation reasons		No constraints	
Species mix resulting in herb rich meadow		Other – please state below	

Q30 What policy / institutional changes would help alleviate any of the problems you have highlighted above and support the maintenance of grazing? *(Please give details)*

_____

_____

_____

Livestock Business

Q31 During 2005 what was the average number of permanent full time and part time jobs* involved in the grazing of the land? Also what was the number of full and part time seasonal jobs? *(Please estimate a number in each box)*

Occupation	Full time permanent	Part time permanent	Full time seasonal	Part time seasonal
Land Manager/Farmer				
Grazier				
Farm/Land management help				
Other – please specify below				

Q32 What would you expect these figures to be if the grassland were **no longer** grazed by cattle/sheep? *(Please estimate a number in each box*

Occupation	Full time permanent	Part time permanent	Full time seasonal	Part time seasonal
Land Manager/Farmer				
Grazier				
Farm/Land management help				
Other – please specify below				

Q33 Please detail below the breakdown of income for 2005 **associated with grazing activity on the area of grassland you manage**. Please also indicate the incomes you would expect if cattle/sheep were no longer to be grazed on this land.

	2005 Income	If cattle/sheep were no longer kept on the land
Grazing Rent	£	£
Sale of cattle/sheep to other grazing sites (e.g. via auction)	£	£
Sale of cattle/sheep to abattoir	£	£
Sale of cattle/sheep to agent/dealer/wholesaler	£	£
Sale of cattle/sheep to butcher	£	£
Direct sales of meat/other cattle/sheep products (e.g. farm shop, farmers market or farm gate sales)	£	£
Tourism/Educational visits	£	£
Sponsorship	£	£
Grant aid (*please detail below)*	£	£
Other *(describe below)*	£	£

Q34 Please state whether you have given incomes above including or excluding VAT. *(Please tick one)*

Including VAT [1] Excluding VAT [2]

Q35 Please give details of any grant aid funding you received in 2005 which related to the area of grassland you manage.

Single Farm Payment	£	Environmental Stewardship	£
Countryside Stewardship Scheme	£	Processing and Marketing Grant	£
Environmentally Sensitive Areas	£	Organic Farming Scheme	£
		Other Grants – please specify below	£

Q36 Considering your 2005 gross income (turnover) from the sale of liveweight/deadweight cattle/sheep to the following groups, what proportion of sale income came from the East of England*? *(Please estimate to the nearest %)*

	East of England*
Abattoirs	%
Agents/Dealers/Wholesalers	%
Butchers	%

Q37 Over the past 5 years how has your grazing related income changed? *(Please tick one)*

Been rising [1] Stayed roughly the same [2] Been falling [3]

Q38 Please name and state the location of the abattoir that you or your grazier normally use and state how many miles away this abattoir is from the grazed land which you manage? *(Please enter name, county and distance in miles)*

Name: _____ County: _____ _____ miles

Q39 Have changes in the red meat industry in recent years changed the way in which you market red meat products from animals grazed on your site? *(Please tick one)*

Yes [1] No [2] Not applicable (Go to Q44) [3]

Q40 Which of the following do you currently use to promote your produce? *(Please tick as many as apply)*

Meat produced locally		Own brand	
Produce from rare breeds		Organic produce	
Produce from breeds specific to local area		Products are not actively marketed	
		Other – please state below:	

_____

_____

_____

Q41 Have you made use of any advice or training relating to the marketing of red meat products over the last 5 years in response to changes in the red meat industry? *(Please tick one)*

Yes [1] No(Go to Q43) [2]

Q42 If 'Yes', how would you rate the current provision of advice / training relating to the marketing of red meat products? *(Please tick one)*

Excellent [1] Good [2] Average [3] Poor [4] Don't know [5]

Q43 If you have not used such services **or** have rated them poorly, please indicate the reasons for your answer *(Please tick as many as apply)*

Not aware of their existence/Don't know where to go		Poor quality advice/support/training	
Too expensive		Advice/Training not specific enough	
Too far away to access effectively		Advice/Training available not relevant	
		Other – please state below:	

_____

_____

_____

Q44 Have you made changes to the composition of your livestock (sheep/cattle) in the last 5 years in response to changes in the red meat industry (e.g. introduction of local breeds, increase proportion of rare breeds)? *(Please tick one)*

Yes [1] No [2]

(Please give details)

Q45 What was your total operational expenditure for the farm in 2005?

£

Q46 What proportion of this operational expenditure relates to the grazing of sheep and cattle?

%

Q47 Please list the major items of operating expenditure (e.g. staff costs, land rent) relating to cattle/sheep grazing and indicate the total expenditure for 2005 and the proportion of total expenditure relating to cattle/sheep grazing for each category. *(Please add to the list as appropriate)*

Staff costs		£	%
Land Rent		£	%
		£	%
		£	%
		£	%

Q48 What was your total capital expenditure for the farm in 2005?

£

Q49 What proportion of this capital expenditure relates to the grazing of sheep and cattle?

%

Q50 Please list the major items of capital expenditure (e.g. livestock, fencing) relating to cattle/sheep grazing and indicate the total expenditure for 2005 and the proportion of total expenditure relating to cattle/sheep grazing for each category. *(Please add to the list as appropriate)*

Livestock - cattle		£	100%
Livestock - sheep		£	100%
		£	%
		£	%
		£	%

Q51 Are there items (including those listed above) which you have access to without incurring a financial cost? *(Please tick as many as apply)*

Straw		Empty buildings	
Arable by-products		Other – please state below	
Grain for feed			

Q52 What is your estimate of your profit* in 2005 which relates to the area of grassland which you manage? *(please enter loss as a negative number)* £

Quality of Life and environmental impacts

Q53 Are there any business activities operated on or off the total site/area/holding that benefit directly or indirectly from the area which is grazed on this site/holding? (this may include activities nearby which are under different ownership/management) To what extent are these business activities reliant on grazed land? *(Please tick and rate as many as apply)*

	Activity occurs	Very reliant	Reliant	Fairly reliant	Not reliant
Bed & Breakfast/Self-Catering Accommodation		1	2	3	4
Recreational activities		1	2	3	4
Tourist activities e.g. visitor centre		1	2	3	4
Educational resource e.g. school visits		1	2	3	4
Pub/Restaurant		1	2	3	4
Meat processing business		1	2	3	4
Farm Shop		1	2	3	4
Direct farm gate sales/Farmers' Market(s)		1	2	3	4
Other – please state below					
		1	2	3	4
		1	2	3	4
		1	2	3	4
None of the above (Go to Q56)					

Q54 Have any of the business activities you have ticked in Q53 above been introduced in the past 5 years as a result of changes in the red meat industry? *(Please tick one)*

Yes [1] No [2]

If 'Yes', for what reasons? *(Please give details)*

Q55 Do you experience any of the following constraints relating to the business activities (outlined in Q53 above) which grazed land supports. *(Please tick as many as apply)*

Poor availability of skilled labour		Lack of outlets for products	
Poor availability of business advice/support		Site constraints (e.g. isolated site)	
Marketing constraints		Not applicable	
		Other – please state below:	

Q56 Do you anticipate that any of the business activities listed in Q53 above would be introduced on your land in the next 5 years? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please state which activities and for what reasons? *(Please give details)*

Q57 What level of impact would a fall in the area of land grazed in the region have on your business activities? *(Please tick one)*

Significant	[1]	Major	[2]	Minor (Go to Q59)	[3]	No impact (Go to Q59)	[4]	Don't know (Go to Q59)	[5]

Q58 If 'significant' or 'major' please specify what impacts you would expect a fall in the area of land grazed to have on your business(es)? (e.g. whole or part of business unprofitable, reduction in public visits) *(Please give details)*

Q59 Do you believe that you play a part in bettering the public's (including children's) understanding of the origins of meat and meat products and the link between grazing/farming and food consumption? *(Please tick one)*

Yes [1] No [2]

If 'Yes' in what ways do you achieve this?

Q60 If you host farm visits for schools, how have the number of farm visits changed in the last 5 years? *(Please tick one)*

Increased [1] Decreased [2] Stayed same [3] Not applicable [4]

Q61 How often do you typically come into contact with other farmers/land managers? *(Please tick one)*

Daily [1] Weekly [2] Fortnightly [3] Monthly [4] Less frequently [5]

Q62 Do you work with or share experiences/advice with other farmers/farm businesses in the region? *(Please tick one)*

Yes [1] No(Go to Q64) [2]

Q63 If 'Yes' in what way(s)? *(Please tick as many as apply)*

Farmers' Markets [ ]
Exchange ideas/advice (formally or informally) [ ]
Member of a co-operative [ ]
Other – please state below: [ ]

and for what purpose(s)? *(Please give details)*

Q64 Have you changed your approach to working with other farmers/farm businesses in the past 5 years as a result of changes in the red meat industry? Please note any changes in the **extent** and **nature** of your collaboration, for example, would not have worked with others until X years ago, went to markets before but only recently joined supplier consortium) *(Please give details)*

Changes in Extent:

Changes in Nature:

Q65 Have you made use of any advice/training relating to networking and collaboration or asked to be signposted to other members of the farming community over the last 5 years in response to changes in the red meat industry? *(Please tick one)*

Yes [1] No(Go to Q67) [2]

Q66 If 'Yes', how would you rate the current provision of advice / training / signposting relating to networking and collaboration in the farming community? *(Please tick one)*

Excellent [1] Good [2] Average [3] Poor [4] Don't know [5]

Q67 If you have not used such services **or** have rated them poorly, please indicate the reasons for your answer *(Please tick as many as apply)*

Not aware of their existence/Don't know where to go		Advice/Training not specific enough	
Too expensive		Advice/Training available not relevant	
Too far away to access effectively		Other – please state below	
Poor quality advice/support/training			

:

Q68 Do you believe that grazed habitats and landscapes can offer benefits for society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what benefits do you believe that they produce? ***(Please rank according to importance where 1 is not important and 5 is critically important[120])***

Recreation benefits		Tourism benefits	
Cultural benefits (e.g. link with food source)		Health benefits (e.g. associated with outdoor recreation)	
Environmental benefits (e.g. prevention of land turning to scrub)		Preservation of archaeological/historical sites	
Preservation of rare breeds/breeds specific to the local area		Other – please state below or use space to give details on benefits listed above:	

[120] For Q68 and Q69: 1 = not important; 2 = somewhat important; 3 = average importance; 4 = important; 5 = critically important

Q69 Do you believe that grazed habitats and landscapes have resulting negative impacts on society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what negative impacts do you believe that they produce? ***(Please rank according to importance where 1 is not important and 5 is critically important[121])***

Environmental impacts (e.g. disposal of slurry/waste; pollution resulting from increased food miles)		Hindrance to public access (e.g. dog walkers walking through fields of cattle/sheep)	
		Other – please state below:	

The Future

Q70 How do you expect the grassland which you currently manage to be used in 5 years time? *(Please tick one)*

No change to current use	1	Land converted for chicken/pig production	2
Continue to be grazed but under alternative arrangement (e.g. land let to grazier)	3	Land given over to arable production	4
No cattle/sheep grazing but kept as grassland by mowing/cutting	5	Land given over to recreational use (e.g. golf, horse-riding)	6

Other – please state:

Q71 Please state the minimum number of cattle/sheep and grazing periods for the area of grazed land stated in Q11 which grazing animals on the land would become economically unviable.

	Minimum total number of livestock	*Minimum number months grazing on your grassland per year*
Male bovine animals & heifers older than 24 months		
Male bovine animals & heifers aged 6 – 24 months		
Suckler cows		
Dairy cows		
Male & female bovine animals below 6 months		
Sheep		
Other – please state below		

[121] For Q68 and Q69: 1 = not important; 2 = somewhat important; 3 = average importance; 4 = important; 5 = critically important

Q72 What would you do if grazing cattle and sheep on your land became economically unviable? *(Please tick one)*

Reduce cattle/sheep numbers on the land	1	Stop all farming on the land	2
Stop all cattle/sheep grazing and use land for pigs/chickens	3	Sell land	4
Stop all cattle/sheep grazing & turn all land to arable/horticultural usage	5	No change to current arrangement	6
Diversify into other businesses (e.g. B&B)	7	Other – please state below:	8

Q73 What **additional** costs would be incurred if **no** cattle/sheep were kept on the grassland you manage (please give details below: e.g. grass cutting, other costs associated with Good Agricultural and Environmental Condition (GAEC) standards)

		£
		£
		£

Q74 Have you or do you plan to make any changes in response to the Single Farm Payment (SFP) and the phasing out of area-based payments (if applicable) in relation to the area of grassland that you manage? *(Please tick one)*

Yes 1 No 2

If 'Yes', please give details below.

Q75 What effect will the gradual reduction in the level of the SFP you receive have on the area of grassland you manage? *(Please give details)*

Q76 What would happen to the proportion of the annual weight of meat **you** produce which is sold to farmers' markets or sold as 'locally produced meat' if the number of grazing animals in the **region** fell? *(Please tick one)*

It would fall 1 It would rise 2 It would not change 3

Q77 What consequences do you believe any land use change resulting from a decline in the number of cattle and sheep would have on the grassland areas and *wider economy*? *(Please tick as many as apply)*

Land put to more profitable use – please state below: ☐

Reduction/loss of locally-produced meat ☐

Other – please state below or use space to give details on benefits listed above: ☐

_____

_____

_____

Q78 What consequences do you believe any land use change resulting from a decline in the number of cattle and sheep would have on the grassland areas and *environment*? *(Please tick as many as apply)*

Change in landscape character ☐

Loss of biodiversity ☐

Inaccessibility/loss of public access ☐

Grassland would turn to scrub ☐

If so, what proportion of your grassland? _____ %

Other – please state below or use space to give details on benefits listed above: ☐

_____

_____

Q79 Do you have any further comments/observations on the cattle/sheep livestock industry, grazing sector, and policy support for grazing? *(Please give details)*

_____

_____

_____

_____

Q80 For the purposes of evaluation only, could we ask which age band you fit into? *(Please tick one)*

18-29 [1] ☐ 30-44 [2] ☐ 45-59 [3] ☐ 60+ [4] ☐

Q81 We would also like to speak to graziers who work in the East of England* and suppliers (e.g. feedstuffs, abattoirs) located in the region. Would you be willing to supply the contact details of any graziers/suppliers in the region? *(Please give details)*

Name of Grazier	Telephone

Name of supplier or manufacturer	Telephone

END – Thank you for completing this questionnaire (Please return this questionnaire in the envelope provided to: PACEC, 49-53 Regent Street, Cambridge, CB2 1AB)

Appendix D Graziers' Questionnaire

The Impacts of Undergrazing
Phase 2 Survey of Graziers

Please refer to the Glossary (on the reverse of the enclosed covering letter) for terms marked with (*). If you have any queries about the questionnaire, please contact Harriet Hunter on 020 7038 3573.

The contact details given in this section will be used by PACEC to check consistency of information, check for duplication and for your inclusion in the prize draw. All information will be confidential and will only be reported in aggregate.

Q82 Name _____

Name of enterprise (if applicable) _____

(Residential) Address _____

_____

Postcode _____

Telephone number _____

If you are able to complete the questionnaire in <u>full</u>, you will automatically be entered into the prize draw to win <u>£200</u>. If you are unable to complete the questionnaire in full, please complete <u>all underlined questions</u> throughout the questionnaire, which should take you no more than <u>15 minutes</u>.

<u>Q83</u> In what capacity do you <u>graze</u> sheep/cattle? *(Please tick one)*

Land manager [1] Farmer [2] Grazier[122] **(Go to Q3)** [3]

If you are a farmer or land manager, you are not required to answer any further questions on this survey and we would be grateful if you could return this questionnaire to PACEC in the envelope provided. Please indicate whether you would be willing to complete a questionnaire on the topic of under grazing designed for farmers/land managers. *(Please tick one)*

Yes [1] No [2]

Q84 Do you graze sheep/cattle on behalf of a conservation organisation (e.g. Wildlife Trust; RSPB)? *(Please tick one)*

Yes [1] No [2]

If 'Yes' please state the name of the organisation. *(Please detail)*

_____

Grazed land

<u>Q85</u> What is the total area of land you graze sheep/cattle over (in hectares)?

_____ Ha

[122] If you graze sheep/cattle on land which you do not own (e.g. you graze your own sheep/cattle on land owned/rented by others or you farm as the owner or tenant of land where no grazing takes place but graze animals on someone else's land).

How many individual sites does this area cover? *(Please tick one)*

1 [1] 2 [2] 3 [3] 4 [4] 5 or more [5]

Please indicate the proportion of this land which is found in the following counties/unitary authorities *(Please enter proportion in as many as apply)*

Bedfordshire	%	Cambridgeshire	%
Essex	%	Hertfordshire	%
Norfolk	%	Suffolk	%
Peterborough, Luton, Thurrock, Southend-on-Sea	%	Outside the East of England	%

Q86 In addition to grazing livestock, please indicate what other activities the land is used for, if any (e.g. arable farming, parkland, nature reserve, recreation)? *(Please give details)*

_____

_____

_____

Q87 Please indicate below the proportion of the land you graze with sheep/cattle which has one of the following conservation designations/agreements (*Please add any other designations/agreements not listed)*:

Site of Special Scientific Interest (SSSI)	%
Countryside Stewardship Scheme	%
Environmentally Sensitive Area	%
Entry Level Scheme	%

Other – please list below

_____	%
_____	%
_____	%
_____	%

Q88 Do you take responsibility for the general upkeep of the land on which you graze sheep/cattle (e.g. repairs to fencing, maintenance of rights of way)? *(Please tick one)*

Yes [1] No [2]

Cattle/Sheep Grazing

Q89 What is the total area of each grassland type that you graze with sheep/cattle (in ha) and what is the average number of months that each grassland type is grazed in a typical year?

	Ha	Months
Permanent Improved Grass*		
Temporary Grass*		
Rough Grazing*		

Q90 What happens to the cattle/sheep when they are not on the grassland? *(Please tick one)*

Cattle/sheep are housed in outdoor pens	1
Cattle/sheep are housed in indoor pens	2
Other – please state below	3

Q91 What cattle/sheep are kept on the land you graze? For each livestock category, please indicate the total number of cattle/sheep grazed in 2005 and the average number of months for which they were grazed on a single site in 2005.

	Total number of livestock in 2005	*Average number months grazing on a single site in 2005*
Male bovine animals & heifers older than 24 months		
Male bovine animals & heifers aged 6 – 24 months		
Suckler cows		
Dairy cows		
Male & female bovine animals below 6 months		
Sheep		
Other – please state below		

Q92 What has happened to your stocking densities over the past 5 years? *(Please tick one)*

It has fallen [1] It has risen [2] It has stayed the same [3]

Q93 What proportion of the cattle/sheep on the land are rare breeds*?

%

Q94 What special requirements, if any, do rare breeds have in comparison with standard breeds? *(Please give details)*

Cattle:

Sheep:

Q95 Do you own the cattle/sheep? *(Please tick one)*

Yes, I own all the cattle/sheep **(Answer Q15 & NOT Q16)**	1	Yes, I own some of the cattle/sheep **(Answer Q15 AND Q16)**	2	No **(Go to Q16)**	3

Q96 Under what arrangement(s) are ***your*** cattle/sheep kept on the land? *(Please tick as many as apply)*

I graze my cattle/sheep on the land under a tenancy agreement	
I graze my cattle/sheep on the land under a licence agreement	
I graze my cattle/sheep on the land under an informal agreement	
Other – please state below	

Q97 Under what arrangement(s) are cattle/sheep (which are ***not*** your own) kept on the land? *(Please tick as many as apply)*

The owner of the land owns the cattle/sheep	
The cattle/sheep are grazed on the land under a tenancy agreement	
The cattle/sheep are grazed on the land under a licence agreement	
The cattle/sheep are grazed on the land under an informal agreement	
Other – please state below	

Q98 Who owns the cattle/sheep which are not yours (e.g. local farmer, non-local farmer, conservation body)? *(Please give details)*

Q99 Please detail your main motivation(s) behind keeping cattle/sheep on the land (e.g. conservation, meat production, etc) *(Please give details)*

Q100 Do you pass over responsibility for the sheep/cattle you graze to another grazier or farmer for any part of the year? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please indicate the proportion of the total cattle/sheep you graze %

and in which months of the year *(please tick as many as apply)*

Jan		Feb		Mar		Apr		May		Jun	
Jul		Aug		Sep		Oct		Nov		Dec	

Q101 Over what distance do you ***typically*** move your cattle/sheep for grazing purposes? *(Please enter number)* Miles

Q102 Over what distance would you be ***willing*** to move your cattle/sheep for grazing purposes? *(Please enter number)* Miles

Q103 Do you experience any of the following constraints relating to grazing sheep/cattle on your site? *(Please tick as many as apply)*

Poor availability of skilled labour		Small field sizes	
Poor availability of business advice/support		Site location (*e.g. isolated sites, time and cost of travelling to sites for stock inspection*)	
Difficulties sourcing cattle/sheep		Provision of water	
Handling* of sheep and cattle (*loading facilities*)		Boundary maintenance (*e.g. fences, hedges, gates*)	
Marketing constraints		Presence of scrub	
Lack of outlets for products		Risk / occurrence of vandalism/crime	
Low prices for produce		Public liability (e.g. cattle/sheep escape onto roads, dog walkers conflict with animals)	
Public opinion (e.g. welfare concerns, vegetarianism)		No constraints	

Other – please state:

Q104 Are you experiencing difficulties in accessing landowners who have grassland available for grazing? *(Please tick one)*

Yes [1] No [2] Not applicable [3]

Please give details

Q105 Is production constrained by any of the following environmental requirements? *(Please tick as many as apply)*

Water tables raised for conservation management		Good Agricultural and Environmental Condition (GAEC) standards	
pH uncorrected (*e.g. liming not permitted)*		Organic standards	
Constraints on timing of hay or silage production *(e.g. delay to allow seeding)*		Other standards associated with environmental grant schemes	
Reduced stocking rates for nature conservation reasons		No constraints	
Species mix resulting in herb rich meadow		Other – please state below	

Q106 What policy / institutional changes would help alleviate any of the problems you have highlighted above and support the maintenance of grazing? *(Please give details)*

Livestock Business

Q107 How many people, **including yourself**, are involved in the grazing of sheep/cattle on the site(s) for which you are responsible? What proportion of these are permanent / seasonal and full time / part time? *(Please estimate a number in each box)*

Total number involved	Full time permanent	Part time permanent	Full time seasonal	Part time seasonal

Q108 Please detail below the breakdown of income for 2005 associated with your grazing activity. **Please note that all information you supply will be treated as confidential and will only be reported in aggregate.**

	2005 Income
Sale of cattle/sheep to other grazing sites (e.g. via auction)	£
Sale of cattle/sheep to abattoir/dealer/wholesaler/butcher	£
Other income associated with grazing activities (e.g. subsidies)	£

Q109 Considering your 2005 gross income (turnover) from the sale of liveweight/deadweight cattle/sheep to the following groups (If applicable), what proportion of sale income came from the East of England*? *(Please estimate to the nearest %)*

	East of England*
Abattoirs	%
Agents/Dealers/Wholesalers	%
Butchers	%

Q110 Over the past 5 years how has your grazing related income changed? *(Please tick one)*

Been rising [1] Stayed roughly the same [2] Been falling [3]

Q111 If known, please name and state the location of the abattoir that you normally use and state how many miles away this abattoir is from the grazed land which you manage? *(Please enter name, county and distance in miles)*

Name: County: miles

Q112 Have changes in the red meat industry in recent years changed the way in which you market red meat products from animals grazed on your site? *(Please tick one)*

Yes [1] No [2] Not applicable (Go to Q33) [3]

Q113 Which of the following do you currently use to promote your produce? *(Please tick as many as apply)*

Meat produced locally		Own brand	
Produce from rare breeds		Organic produce	
Produce from breeds specific to local area		Products are not actively marketed	
		Other – please state below:	

Q114 Have you made changes to the composition of your livestock (sheep/cattle) in the last 5 years in response to changes in the red meat industry (e.g. introduction of local breeds, increase proportion of rare breeds)? *(Please tick one)*

Yes [1] No [2]

(Please give details)

Q115 What was your total operational expenditure (or 'running costs' e.g. land rent, labour costs) relating to grazing sheep/cattle in 2005?

£

Q116 Please list the major items of operating expenditure relating to cattle/sheep grazing and indicate your expenditure for each in 2005. *(Please add to the list as appropriate)*

Land Rent		£
Labour Costs		£
		£
		£
		£

Q117 What was your total capital expenditure (e.g. livestock, fencing) relating to grazing sheep/cattle in 2005?

£

Q118 Please list the major items of capital expenditure relating to cattle/sheep grazing and indicate your expenditure for each in 2005. *(Please add to the list as appropriate)*

Livestock - cattle		£
Livestock - sheep		£
		£
		£
		£

Q119 Are there items (including those listed above) which you have access to without incurring a financial cost? *(Please tick as many as apply)*

Straw		Empty buildings	
Arable by-products		Other – please state below	
Grain for feed			

Q120 What is your estimate of your profit* in 2005 which relates to the area of grassland which you manage? *(please enter loss as a negative number)*

£

Liaison and collaboration

Q121 How often do you typically come into contact with other graziers/farmers? *(Please tick one)*

Daily [1] Weekly [2] Fortnightly [3] Monthly [4] Less frequently [5]

Q122 Do you work with or share experiences/advice with other graziers/farmers in the region? *(Please tick one)*

Yes [1] No(Go to Q43) [2]

Q123 If 'Yes' in what way(s)? *(Please tick as many as apply)*

Farmers' Markets		Member of a co-operative	
Exchange ideas/advice (formally or informally)		Other – please state below:	

and for what purpose(s)? *(Please give details)*

Q124 Have you changed your approach to working with other graziers/farmers in the past 5 years as a result of changes in the red meat industry? Please note any changes in the **extent** and **nature** of your collaboration, for example, would not have worked with others until X years ago, went to markets before but only recently joined supplier consortium) *(Please give details)*

Changes in Extent:

Changes in Nature:

Grazing and society

Q125 Do you believe that grazed habitats and landscapes can offer benefits for society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what benefits do you believe that they produce? ***(Please rank according to importance where 1 is not important and 5 is critically important[123])***

Recreation benefits		Tourism benefits	
Cultural benefits (e.g. link with food source)		Health benefits (e.g. associated with outdoor recreation)	
Environmental benefits (e.g. prevention of land turning to scrub)		Preservation of archaeological/historical sites	
Preservation of rare breeds/breeds specific to the local area		Other – please state below or use space to give details on benefits listed above:	

Q126 Do you believe that grazed habitats and landscapes have resulting negative impacts on society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what negative impacts do you believe that they produce? ***(Please rank according to importance where 1 is not important and 5 is critically important[124])***

Environmental impacts (e.g. disposal of slurry/waste; pollution resulting from increased food miles)		Hindrance to public access (e.g. dog walkers walking through fields of cattle/sheep)	
		Other – please state below:	

[123] For Q44 and Q45: 1 = not important; 2 = somewhat important; 3 = average importance; 4 = important; 5 = critically important

[124] For Q44 and Q45: 1 = not important; 2 = somewhat important; 3 = average importance; 4 = important; 5 = critically important

The Future

Q127 How do you expect the land which you currently graze with sheep/cattle to be used in 5 years time? *(Please tick one)*

No change to current use	1	Land converted for chicken/pig production	4
Continue to be grazed but under alternative arrangement *(please state below)*	2	Land given over to arable production	5
		Land given over to recreational use (e.g. golf, horse-riding)	6
No cattle/sheep grazing but kept as grassland by mowing/cutting	3	Other – *please state below*:	7

Q128 Please state the minimum number of cattle/sheep and average grazing periods without which grazing animals on the land would become economically unviable.

	Minimum total number of livestock	*Minimum average number months grazing on a single site per year*
Male bovine animals & heifers older than 24 months		
Male bovine animals & heifers aged 6 – 24 months		
Suckler cows		
Dairy cows		
Male & female bovine animals below 6 months		
Sheep		
Other – please state below		

Q129 What would you do if grazing sheep/cattle in the East of England* became economically unviable? *(Please tick one)*

Move livestock to another region of the UK	1	No change to current arrangement	2
Stop all livestock grazing and seek alternative employment	3	Cease grazing sheep/cattle and graze other animals e.g. horses, alpacas	4
		Other – please state:	5

Q130 Have you or do you plan to make any changes with respect to your grazing of sheep/cattle in response to the introduction of the Single Farm Payment (SFP) and the phasing out of area-based payments? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please give details below.

Q131 What effect will the gradual reduction in the level of the SFP you receive have on your grazing of sheep/cattle? *(Please give details)*

Q132 What would happen to the proportion of the annual weight of meat **you** produce which is sold to farmers' markets or sold as 'locally produced meat' if the number of grazing animals in the **region** fell? *(Please tick one)*

It would fall [1] It would rise [2] It would not change [3]

Q133 Do you have any further comments/observations on the cattle/sheep livestock industry, grazing sector, and policy support for grazing? *(Please give details)*

Q134 For the purposes of evaluation only, could we ask which age band you fit into? *(Please tick one)*

18-29 [1] 30-44 [2] 45-59 [3] 60+ [4]

Q135 Would you be willing to give us the names and contact details of any other graziers in the East of England* who might be interested in completing the survey? *(Please give details)*

Name of grazier: Telephone:

END – Thank you for completing this questionnaire (Please return this questionnaire in the envelope provided to: PACEC, 49-53 Regent Street, Cambridge, CB2 1AB)

Appendix E Suppliers' Questionnaire

The Impacts of Undergrazing
Phase 2 Survey of Suppliers / Sub-contractors

Public and Corporate Economic Consultants (PACEC) and the University of Cambridge are currently undertaking some research for the Natural England partnership into the economic, environmental and social impacts of under grazing in the East of England.

As you may be aware, the East of England has suffered a particularly strong decline in cattle and sheep numbers over the past decade. As well as their role in local food production, cattle and sheep are important because they have created some of our most cherished landscapes over hundreds or even thousands of years through their grazing and the impacts surrounding under grazing have important implications for the livestock farming community in the East of England. The Natural England partnership (The Rural Development Service, The Countryside Agency and English Nature) are concerned about these impacts in the region and have jointly commissioned the research to provide them with the evidence which they require in order to help secure a sustainable red meat industry in the future.

The purpose of this questionnaire is to allow an estimate to be made of the total number of jobs and Gross Domestic Product (GDP) supported by firms supplying services and products to the cattle and sheep grazing industry in the East of England. It will also facilitate estimates to be made of the *indirect* employment and GDP generated by these direct suppliers, through their operational and capital expenditure and the subsequent spending of their wages and profits.

All information you provide will remain totally confidential. It will only be used in order to produce these aggregated statistics.

Contact details

Interviewer - Please fill in respondent's contact details below in order to ensure that they are not asked to fill in another questionnaire, and, if necessary, for a member of PACEC to ask for clarification of any replies which may seem inconsistent. *(NB – address should be where they are based (not head office))*

Q136 Contact Name _____

Company Name _____

Position in Company _____

Address _____

Post Town / County _____

Postcode _____

Telephone _____

Products and services – please outline the nature of your business

Q137 Which of the following products or services do you provide to those responsible for grazing cattle and sheep (e.g. farmers, graziers)? *(Please tick as many as apply)*

Cattle/sheep equipment (e.g. feeding, processing		Land management service (e.g. hedge cutting, fencing services)	
Cattle breeder/dealer		Pest control service	
Feed for cattle/sheep		Grass seed	
Feed supplements for cattle/sheep		Pesticide / fertiliser	
Veterinary services		Water management	
Hay and Straw Merchant		Clothing	
Vehicles and parts		Professional services (e.g. insurance)	
Timber/Fencing		Other: _____	

Q138 Are you the manufacturer, processor or producer of the goods you sell? *(Please tick one)*

Yes [1] No [2]

Q139 In which county/unitary authority is your company based *(please tick the location of their head office if they have more than one site)* and to customers in which areas do you provide products and services?

	Company (or head office)	Coverage (tick as many as apply)
Bedfordshire	1	
Cambridgeshire	2	
Hertfordshire	3	
Essex	4	
Norfolk	5	
Suffolk	6	
Peterborough, Luton, Thurrock or Southend-on-Sea	7	
Outside the East of England	8	

Key Statistics – in order to estimate the **GDP** associated with grazing cattle/sheep, we ask you for your business' key financial statistics. Please note that this information is not used for any other purpose.

Q140 Could you please give estimates of the following key financial measures for 2005?

Total Turnover of your business	£	Employment costs of your business[125]	£	Gross profits of your business	£

[125] Please state if possible. Employment costs may be difficult to calculate in the case of self-employed people. Employment costs should include both sets of National Insurance contributions (employer & employee). Please only include UK based employment.

Q141 Could you please give estimates of the number of jobs (Full Time Equivalents[126]), together with estimates of your operational and capital expenditure in 2005? *(Please estimate)*

Jobs (FTE) | Operational expenditure[127] £ | Capital Expenditure[128] £

Q142 How was the above turnover broken down by type of customer (if known)? *(Please **estimate** to the nearest %)*

Cattle/sheep Farmers % | Cattle/sheep Graziers[129] % | Other %

Q143 Considering all of your **2005* operational and capital expenditure**, what proportion of your suppliers were located in the East of England (as defined in rows 1-7 in Q4 above)? *(Please estimate to the nearest %)*

%

Q144 Considering your **2005* income (turnover) from only those grazing cattle and sheep (either as farmers or graziers)**, what proportion of your customers were located in the East of England? *(Please estimate to the nearest %)*

%

Q145 Over the past 5 years, has the reduction in the numbers of sheep and cattle grazing in the East of England impacted on your business? *(Please tick one)*

Yes [1] | No (Go to Q12) [2]

Q146 If 'Yes', how has your business changed in terms of turnover and employment? *(Please tick one)*

Expanded [1] | Contracted [2] | No change [3]

Q147 What level of impact would a further fall in the number of cattle/sheep grazed in the region have on your business activities? *(Please tick anticipated level of impact for each scale of fall)*

Scale of Impact:	Major	Minor	No impact	Don't know
Scale of fall:				
Fall of 15 – 20%				
Fall of 20 - 30%				
Fall by over 30%				

Q148 If 'significant' or 'major' please specify what impacts you would expect a fall in livestock numbers to have on your business(es)? (e.g. whole or part of business unprofitable, cease all production) *(Please give details)*

_____

_____

[126] Full Time Equivalents (FTE): The number of full-time employees that could have been employed if the reported number of hours worked by part-time employees was worked by full-time employees.

[127] e.g. utilities, travel, communications, property rent

[128] e.g. buildings, vehicles, computers/equipment

[129] Defined here as those who graze sheep/cattle on land which they do not own (e.g. they graze their own sheep/cattle on land owned/rented by others or farm as the owner or tenant of land where no grazing takes place but graze animals on someone else's land).

Responses to a declining red meat industry in the region

Q149 [Intentionally Blank]

Q150 [Intentionally Blank]

Q151 [Intentionally Blank]

Q152 Please detail any changes in the red meat industry over recent years which have been significant for your business *and* your response to them. (e.g. reduced numbers of cattle/sheep being grazed in the region have meant we have had to diversify into other products/markets) *(Please give details)*

Q153 Do you anticipate undertaking any (further) changes to your business operation in the next 5 years? If so, please detail any changes you anticipate. *(Please give details)*

Jobs – in order to estimate the number of **jobs** supported by the cattle and sheep grazing industry in the East of England, it is useful to have the following information

Q154 During 2005 what was the average number of permanent full time and part time jobs[130] in your business? *(please estimate a number in each box)*

Occupation	Full time permanent	Part time permanent	Full time seasonal	Part time seasonal
Manager / senior officials / Professional / Associate professional / Technical				
Administrative and secretarial				
Skilled trades				
Personal service / Sales /Customer Service				
Process, Plant and machine operatives				
Elementary				

The following questions are optional – if the respondent does not have the time, please end and thank at this point. If possible, please ask for the following information.

[130] Includes both family and hired labour. Part time jobs are assumed to be 20 hours a week, Full time jobs are assumed to be 37 hours a week. Seasonal jobs are assumed to be for 20 weeks of the year, Permanent jobs are assumed to be for 52 weeks of the year.

Operational Expenditure – in order to ascertain what impact suppliers to the cattle and sheep grazing industry in the East of England have on the supply chain, we would be grateful for the following figures

Q155 What were your major items of **non labour** operational expenditure in 2005? For each item (adding to the list as necessary) please specify the cost and the proportion of each product you use which is supplied and *(where applicable)* manufactured in the East of England region.

Item of expenditure *(Please write in any items of major expenditure)*	**Cost**	Proportion supplied in the East of England[131]	Proportion manufactured in the East of England[132]
Other Manufactured goods	£	%	%
Utilities (oil, gas, electricity, water)	£	%	
Transport (e.g. tickets, fuel)	£	%	
Communications (e.g. postage, phone)	£	%	
Property costs (e.g. rent, rates, maintenance)	£	%	
Other services (e.g. accountancy, financial)	£	%	
	£	%	
	£	%	
	£	%	

Capital Expenditure

Q156 Looking back over the past 5 to 10 years as a guide, what capital expenditure is necessary for your business to operate? For each item (adding to the list as necessary) please specify the cost; the life time of the equipment / capital item (you may require a new building every 5 years, or a computer every 3 years or a vehicle every 2 years) and the proportion of each product you use which is supplied and manufactured in the East of England region.

Item of expenditure *(Please write in any items of major expenditure)*	**Cost**	**# Years**	Proportion supplied in the East of England	Proportion manufactured in the East of England
Buildings	£		%	
Vehicles	£		%	%
Office equipment (e.g. computers)	£		%	
	£		%	%
	£		%	%
	£		%	%

END. THANK YOU FOR YOUR HELP.

[131] equipment purchased from distributors in the region

[132] equipment manufactured and purchased in the region

Appendix F Downstream Businesses' Questionnaire

The Impacts of Undergrazing
Phase 2 Survey of Downstream Industries

Public and Corporate Economic Consultants (PACEC) and the University of Cambridge are currently undertaking some research for the Natural England partnership into the economic, environmental and social impacts of under grazing in the East of England.

As you may be aware, the East of England has suffered a particularly strong decline in cattle and sheep numbers over the past decade. As well as their role in local food production, cattle and sheep are important because they have created some of our most cherished landscapes over hundreds or even thousands of years through their grazing and the impacts surrounding under grazing have important implications for the livestock farming community in the East of England. The Natural England partnership (The Rural Development Service, The Countryside Agency and English Nature) are concerned about these impacts in the region and have jointly commissioned the research to provide them with the evidence which they require in order to help secure a sustainable red meat industry in the future.

The purpose of this questionnaire is to assess the dependency of associated businesses on local reared livestock and to allow an estimate to be made of the total number of jobs and Gross Domestic Product (GDP) supported by firms supplying services and products to the cattle and sheep grazing industry in the East of England. It will also facilitate estimates to be made of the *indirect* employment and GDP generated by these direct suppliers, through their operational and capital expenditure and the subsequent spending of their wages and profits.

All information you provide will remain totally confidential. It will only be used in order to produce these aggregated statistics.

Contact details

Interviewer - Please fill in respondent's contact details below in order to ensure that they are not asked to fill in another questionnaire, and, if necessary, for a member of PACEC to ask for clarification of any replies which may seem inconsistent. *(NB – address should be where they are based (not head office))*

Q157 Contact Name _____

Company Name _____

Position in Company _____

Address _____

Post Town / County _____

Postcode _____

Telephone _____

Products and services – please outline the nature of your business

Q158 Which of the following products or services do you provide to those responsible for grazing cattle and sheep (e.g. farmers, graziers)? *(Please tick as many as apply)*

Livestock Auctioneer		Abattoir/Cutting Plant	
Meat wholesaler		Renderer (processor of animal by-products)	
Butcher		Livestock Carrier	

Other (please specify): _____

Q159 [Intentionally blank]

Q160 In which county/unitary authority is your company based (please tick the location of your head office if you have more than one site) and to customers in which areas do you provide products and services?

	Company (or head office)	Coverage (tick as many as apply)
Bedfordshire	1	
Cambridgeshire	2	
Hertfordshire	3	
Essex	4	
Norfolk	5	
Suffolk	6	
Peterborough, Luton, Thurrock or Southend-on-Sea	7	
Outside the East of England	8	

Key Statistics – in order to estimate the **GDP** associated with grazing cattle/sheep, we ask you for your business' key financial statistics. Please note that this information is not used for any other purpose.

Q161 Could you please give estimates of the following key financial measures for 2005?

Total Turnover of your business £

Employment costs of your business[133] £

Gross profits of your business £

Q162 Could you please give estimates of the number of jobs (Full Time Equivalents[134]), together with estimates of your operational and capital expenditure in 2005? *(Please estimate)*

Jobs (FTE)

Operational expenditure[135] £

Capital Expenditure[136] £

Q163 How was the above turnover broken down by type of customer? *(Please **estimate** to the nearest %)*

Cattle/sheep Farmers %

Cattle/sheep Graziers[137] %

Other %

Q164 Considering all of your **2005* operational and capital expenditure**, what proportion of your suppliers were located in the East of England (as defined in rows 1-7 in Q4 above)? *(Please estimate to the nearest %)*

%

[133] Please state if possible. Employment costs may be difficult to calculate in the case of self-employed people. Employment costs should include both sets of National Insurance contributions (employer & employee). Please only include UK based employment.

[134] Full Time Equivalents (FTE): The number of full-time employees that could have been employed if the reported number of hours worked by part-time employees was worked by full-time employees.

[135] e.g. utilities, travel, communications, property rent

[136] e.g. buildings, vehicles, computers/equipment

[137] Defined here as those who graze sheep/cattle on land which they do not own (e.g. they graze their own sheep/cattle on land owned/rented by others or farm as the owner or tenant of land where no grazing takes place but graze animals on someone else's land).

Q165 Considering your **2005* income (turnover) from only those grazing cattle and sheep (either as farmers or graziers)**, what proportion of your customers were located in the East of England? *(Please estimate to the nearest %)*

%

Q166 Over the past 5 years, has the reduction in the numbers of sheep and cattle grazing in the East of England impacted on your business? *(Please tick one)*

Yes [1] No (Go to Q12) [2]

Q167 If 'Yes', how has your business changed in terms of turnover and employment? *(Please tick one)*

Expanded [1] Contracted [2] No change [3]

Q168 What level of impact would a further fall in the number of cattle/sheep grazed in the region have on your business activities? *(Please tick anticipated level of impact for each scale of fall)*

Scale of Impact:	Major	Minor	No impact	Don't know
Scale of fall:				
Fall of 15 – 20%				
Fall of 20 - 30%				
Fall by over 30%				

Q169 If 'significant' or 'major' please specify what impacts you would expect a fall in livestock numbers to have on your business(es)? (e.g. whole or part of business unprofitable, cease all production) *(Please give details)*

Responses to a declining red meat industry in the region

Q170 Do you have formal agreements with local farmers/ graziers, such that you depend in whole or in part on their output? *(Please tick one)*

Yes – depend on them [1] Yes – depend in part [2] No (Go to Q16) [3]

Q171 If 'Yes', how many agreements of this kind do you have? *(Please tick one)*

One [1] 2-5 [2] 6-10 [3] More than 10 [11]

For what purpose(s) do you have these agreements? *(Please give details)*

Q172 Does your business currently experience any of the following constraints? *(Please tick as many as apply)*

Limited supplies of local sheep/sheep meats/sheep products		Greater distances to local sheep/cattle or locally produced meat resulting in greater transport costs	
Limited supplies of local cattle/beef meats/milk		Increased congestion on the roads	
Poor quality local sheep/sheep meats/sheep products		Reduced demand for red meat (beef, lamb, mutton)	
Poor quality local cattle/beef meats/milk		Reduced demand for locally produced meat	
Increased legislation and associated bureaucracy		Other:_____	

Q173 Please detail any changes in the red meat industry over recent years which have been significant for your business *and* your response to them. (e.g. reduced demand for beef/lamb has made us diversify into other meats or place increased emphasis on locally produced meat; increased regulation following F&M / BSE has heightened hygiene/other procedures, etc) *(Please give details)*

_____

_____

_____

Q174 Do you anticipate undertaking any (further) changes to your business operation in the next 5 years? If so, please detail any changes you anticipate. *(Please give details)*

_____

_____

Jobs – in order to estimate the number of **jobs** supported by the cattle and sheep grazing industry in the East of England, it is useful to have the following information

Q175 During 2005 what was the average number of permanent full time and part time jobs[138] in your business?*(please estimate a number in each box)*

Occupation	Full time permanent	Part time permanent	Full time seasonal	Part time seasonal
Manager / senior officials / Professional / Associate professional / Technical				
Administrative and secretarial				
Skilled trades				
Personal service / Sales /Customer Service				
Process, Plant and machine operatives				
Elementary				

The following questions are optional – if the respondent does not have the time, please end and thank at this point. If possible, please ask for the following information.

[138] Includes both family and hired labour. Part time jobs are assumed to be 20 hours a week, Full time jobs are assumed to be 37 hours a week. Seasonal jobs are assumed to be for 20 weeks of the year, Permanent jobs are assumed to be for 52 weeks of the year.

Operational Expenditure – in order to ascertain what impact suppliers to the cattle and sheep grazing industry in the East of England have on the supply chain, we would be grateful for the following figures

Q176 What were your major items of **non labour** operational expenditure in 2005? For each item (adding to the list as necessary) please specify the cost and the proportion of each product you use which is supplied and *(where applicable)* manufactured in the East of England region.

Item of expenditure *(Please write in any items of major expenditure)*	**Cost**	Proportion supplied in the East of England[139]	Proportion manufactured in the East of England[140]
Other Manufactured goods	£	%	%
Utilities (oil, gas, electricity, water)	£	%	
Transport (e.g. tickets, fuel)	£	%	
Communications (e.g. postage, phone)	£	%	
Property costs (e.g. rent, rates, maintenance)	£	%	
Other services (e.g. accountancy, financial)	£	%	
	£	%	
	£	%	
	£	%	

Capital Expenditure

Q177 Looking back over the past 5 to 10 years as a guide, what capital expenditure is necessary for your business to operate? For each item (adding to the list as necessary) please specify the cost; the life time of the equipment / capital item (you may require a new building every 5 years, or a computer every 3 years or a vehicle every 2 years) and the proportion of each product you use which is supplied and manufactured in the East of England region.

Item of expenditure *(Please write in any items of major expenditure)*	**Cost**	**# Years**	Proportion supplied in the East of England	Proportion manufactured in the East of England
Buildings	£		%	
Vehicles	£		%	%
Office equipment (e.g. computers)	£		%	
	£		%	%
	£		%	%
	£		%	%

END. THANK YOU FOR YOUR HELP.

[139] equipment purchased from distributors in the region

[140] equipment manufactured and purchased in the region

Appendix G Schools Quality of Life Questionnaire

The Role of Local Sheep and Cattle Grazing in Education

For your chance to win a **free farm visit** for one of your school's classes[141], we are asking you to explore, using the questions below, the extent to which grazed landscapes (by cattle and sheep) and locally-produced red meat (mutton, lamb, beef) have a role to play in school life.

We would like to hear your views on

a the importance placed on sheep and cattle grazing in the curriculum

b your school's consumption of (local) mutton, lamb and beef

The answers you provide will contribute to an important study commissioned by the Natural England partners which is designed to quantify and value the environmental, social and economic impacts of the decline of the red meat industry in the East of England[142].

Please be assured that your identity and all information you provide will remain confidential and your responses will only be used to produce aggregated statistics.

If you have any queries about the questionnaire, please contact Harriet Hunter on 0207 734 6699.

Background

Q178 Name _____

School _____

Address _____

_____

_____

Postcode _____

Telephone number _____

Q179 Please state your school's level of education. *(Please tick as many as apply)*

Nursery ☐ Primary ☐ Secondary ☐

[141] Respondents who complete the questionnaire in full and return it by 1st August will automatically be entered into a prize draw to win a visit to a livestock farm for a group of up to 30 pupils, organised in conjunction with the National Farmers' Union.

[142] Public and Corporate Economic Consultants (PACEC) and the University of Cambridge have been commissioned to carry out this study. In our current phase of research we are looking specifically at the social impacts associated with land grazed with sheep and cattle in the region.

Q180 Is your school: *(Please tick one)*

Independent [1] Public-sector funded [2] Other – please state: [3]

Q181 Please state the total number of pupils who attend your school.

Grazing and the Curriculum

Q182 Are subjects concerning sheep and cattle grazing and red meat products (mutton, lamb, beef) currently part of the school curriculum? *(Please tick one)*

Yes [1] No (Go to Q7) [2]

Q183 If 'Yes', in which academic years are theses subjects covered? *(Please tick as many as apply)*

Nursery		Key Stage 1	
Key Stage 2		Pre GCSE	
GCSE		Sixth Form	

Please identify the subjects covered and indicate the time and teaching methods allocated to these subjects. *(For each subject listed, please enter the number of hours per term and tick any teaching methods apply).*

Subject – please add		Number of hours per term	Class lessons	Projects / workshops / site visits	Homework / individual research

Q184 If 'No', please explain why these subjects do not currently form part of the school curriculum

Q185 Do you believe that children are aware of environmental issues such as issues of sustainability and landscape conservation? *(Please tick one)*

Yes [1] No [2]

Q186 Do you actively seek to raise awareness among children of environmental issues, including the landscape and/or the countryside, through classes/workshops/discussions? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please give details:

Q187 Have you previously taken children on a farm visit or a walk which incorporated areas of land grazed by sheep and cattle in the East of England? *(Please tick one)*

Yes [1] No(Go to Q13) [2]

If 'Yes', how often are trips of this nature organised? *(Please tick one)*

More often than twice a term [1] Twice a term [2] Once a term [3] Annually [4] Bi-annually or less often [5]

Q188 How would you rank this experience? *(Please tick one)*

Excellent [1] Good [2] Average [3] Poor [4] Very Poor [5]

Please give reasons for your answer:

Q189 Do you anticipate repeating this experience for future classes? *(Please tick one)*

Yes [1] No [2]

Q190 Does your school make links with the sheep and cattle farming communities in any of the following ways? *(Please tick as many as apply)*

We have links with sheep/cattle farmers
Farmers visit the school
We host Farmers' Markets in site
Animals are kept on site

Grazing and society

Q191 Do you believe that it is important for children to see sheep and cattle grazing in the local area (e.g. on their way to school)? *(Please tick one)*

Yes [1] No [2]

If 'Yes', for what reasons?

If 'No', why not?

Q192 Do you believe that grazed habitats and landscapes can offer benefits for society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what benefits do you believe that they produce *(Please tick as many as apply)*

Recreation benefits		Tourism benefits	
Cultural benefits (e.g. link with food source)		Health benefits (e.g. associated with outdoor recreation)	
Environmental benefits (e.g. prevention of land turning to scrub)		Preservation of archaeological/historical sites	
Preservation of rare breeds/breeds specific to the local area		Other – please state below or use space to give details on benefits listed above:	

Q193 Do you believe that grazed habitats and landscapes have resulting negative impacts on society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what negative impacts do you believe that they produce *(Please tick as many as apply)*

Environmental impacts (e.g. disposal of slurry/waste; pollution resulting from increased food miles)		Hindrance to public access (e.g. dog walkers walking through fields of livestock)	
		Other – please state below:	

Q194 Do you believe that numbers of sheep and cattle in the East of England have increased or decreased in recent years? *(Please tick one)*

Increased [1] Decreased [2] Don't know [3]

Q195 How would you rate a fall in the area of land grazed in the area? *(Please tick one)*

Critical [1] Important [2] Average importance [3] Not important [4] Don't know [5]

Q196 What affects, if any, would a fall in the area of land grazed have on your school? (e.g. reduction in school visits, less chance of children making connection between food and countryside) *(Please give details)*

Lamb and Beef Consumption

Q197 Has your approach to catering (all foods) in the school changed over the past 5 years? *(Please tick one)*

Yes [1] No(Go to Q22) [2]

Q198 If 'Yes', what made you change your approach? *(Please give details)*

What changes have been made during the past 5 years? *(Please give details)*

Q199 Do you currently provide cooked school meals? *(Please tick one)*

Yes [1] No (please go to Q34) [2]

Q200 If 'Yes', what proportion of children in the school eat school meals?

%

Q201 What proportion of children eating school meals are vegetarian/vegan or do not eat red meat (mutton, lamb, beef) for religious/dietary reasons?

%

Q202 Do you anticipate a change in the number of children eating school meals in the next 5 years? How do you believe numbers will change? *(Please tick one)*

Increase [1] Decrease [2] Stay the same [3]

Q203 How frequently does red meat (lamb, mutton, beef) appear on the menu? *(Please tick one)*

Daily [1] 3 or 4 times a week [8] Once or twice a week [9] Less frequently than weekly [10]

Q204 Are children encouraged to eat red meat when it appears on the menu or do they have a choice? *(Please tick one)*

Only 1 non-vegetarian option [1] Choice of options but encouraged to eat meat [2] Free choice [3]

Q205 Do you take steps to source red meat products (mutton, lamb. beef) from local suppliers? *(Please tick one)*

Yes [1] No(Go to Q32) [2]

Q206 What proportion of mutton / lamb / beef used in school meals is sourced locally? *(Please enter percentages)*

Mutton % Lamb % Beef %

Q207 Are children made aware that mutton / lamb / beef is being sourced locally? *(Please tick one)*

Yes [1] No [2]

Q208 Please indicate how easy it is to source locally? *(Please tick one)*

Easy [1] Same as all food sourcing [2] Difficult [3] Don't know [4]

Q209 If you do not source red meat products locally, please explain why (*please give details)*

Do you anticipate that you will switch to local sourcing in the next 5 years? *(Please tick one)*

Yes [1] No [2] Don't know [3]

Q210 Do you believe that there is educational value in the provision of locally-produced food in schools? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please give reasons for your answer (*please give details)*

Comments

Q211 Do you have any further comments/observations on children's understanding of the link between sheep/cattle grazing and food consumption or schools' sourcing of local red meat products. *(Please give details)*

END – Thank you for completing this questionnaire

Please return in the envelope provided to PACEC, 49-53 Regent Street, Cambridge CB2 1AB

If you would like further information relating to the links between farming and education, please contact FACE (farming and countryside education) at www.face-online.org.uk.

For more information on the undergrazing research which is currently being conducted by the Natural England partners, please contact Nicola Newell (nicola.newell@DEFRA.GSI.GOV.UK).

Appendix H Farm Businesses Quality of Life Questionnaire

The Impacts of Undergrazing (Phase 1 Quality of Life Survey)
Farm Business Questionnaire

The impacts surrounding the decline in cattle and sheep farming in the East of England are of concern to the Natural England partnership (The Rural Development Service, The Countryside Agency, and English Nature). These three organisations have jointly commissioned Public and Corporate Economic Consultants (PACEC) and the University of Cambridge to undertake a study which will quantify and value the environmental, social and economic impacts of a reduction in the number of sheep and cattle grazing in the region.

We would very much appreciate it if you could spare the time to answer a few questions on this topic. **Please be assured that the answers you give will only be reported in aggregate and your contact details will remain confidential and will not be used for any other purpose.**

Background

Contact details to be filled in by interviewer: _____

Q212 Name _____

Name of enterprise (if applicable) _____

Address _____

_____

_____

Telephone number _____

Q213 What is the total land area of the site for which you are responsible for (e.g. total agricultural holding)? _____ Ha

Q214 Please indicate what this land is used for? *(Please tick as many as apply)*

Cereal	☐	Golf	☐
Other Cropping	☐	Horse-riding	☐
Horticulture	☐	Water sports	☐
Lowland dairy	☐	Off-road quad-biking	☐
Lowland cattle & sheep	☐	Mountain Biking	☐
Mixed, predominantly arable	☐	Fishing	☐
Mixed, predominantly livestock	☐	Bird Reserve	☐
Other agricultural – please state below	☐	Parkland	☐
		Sporting Shooting	☐
_____			
National Park	☐	Other – please state below	☐
Nature Reserve	☐	_____	

_____

Q215 Are sheep/cattle grazed (or have they grazed in the last 5 years) on any part of the site you manage? *(Please tick one)*

Yes(Go to Q6) [1] No [2]

Q216 If not, why not? *(Please give details)*

_____

_____

_____

[End – thank you]

Sheep/Cattle grazing

Q217 Over the last 5 years, what has happened to the numbers of sheep/cattle grazed on the land you manage? *(Please tick one)*

Increased [1] Decreased [2] No change [3]

Q218 Do you own the sheep/cattle on the land you manage? *(Please tick one)*

Yes, I own all livestock [1] I own a proportion of the livestock [2] No [3]

Q219 What is the total area of land you manage which is grazed (in hectares)?

Ha

Q220 What proportion of the land which is grazed, if any, is designated as a Site of Special Scientific Interest (SSSI)?

%

Q221 In what capacity do you manage grazed land? *(Please tick one)*

Owner [1] Tenant [2] Other [3]

Q222 Please detail the motivation(s) behind keeping livestock on the land *(Please give details)*

Grazed landscapes and society

Q223 Do you believe that grazed habitats and landscapes can offer benefits for society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what benefits do you believe that they produce ***(Please rate according to importance where 1 is not important and 5 is critically important)***

Recreation benefits		Tourism benefits	
Cultural benefits (e.g. link with food source)		Health benefits (e.g. associated with outdoor recreation)	
Environmental benefits (e.g. prevention of land turning to scrub)		Preservation of archaeological/historical sites	
Preservation of rare breeds/breeds specific to the local area		Other – please state below or use space to give details on benefits listed above:	

Q224 Do you believe that grazed habitats and landscapes have resulting negative impacts on society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what negative impacts do you believe that they produce ***(Please rate according to importance where 1 is not important and 5 is critically important)***

Environmental impacts (e.g. disposal of slurry/waste; pollution resulting from increased food miles)		Other – please state below:	
Hindrance to public access (e.g. dog walkers walking through fields of livestock)			

Activities Businesses benefiting from grazed land

Q225 Are there any activities operated on or off the total site/area/holding that benefit directly or indirectly from the area which is grazed on this site/holding? To what extent are these activities reliant on grazed land? *(Please tick and rate as many as apply)*

	Activity occurs	Very reliant	Reliant	Fairly reliant	Not reliant
Bed & Breakfast/Self-Catering Accommodation		1	2	3	4
Recreational activities		1	2	3	4
Tourist activities e.g. visitor centre		1	2	3	4
Educational resource e.g. school visits		1	2	3	4
Pub/Restaurant		1	2	3	4
Meat processing business		1	2	3	4
Farm Shop		1	2	3	4
Direct farm gate sales/Farmers' Market(s)		1	2	3	4
Other – please state below		1	2	3	4
None of the above (Go to Q17)					

Other – please state:

Q226 Have any of the activities you have ticked in Q14 above been introduced in the past 5 years? *(Please tick one)*

Yes [1] No [2]

If 'Yes', for what reasons? *(Please give details)*

Q227 Do you experience any of the following constraints relating to the activities (outlined in Q14 above) which grazed land supports. *(Please tick as many as apply)*

Poor availability of skilled labour		Lack of outlets for products	
Poor availability of business advice/support		Site constraints (e.g. isolated site)	
Marketing constraints		Not applicable	
		Other – please state below:	

Q228 Do you anticipate that any of the activities listed in Q14 above would be introduced on your land in the next 5 years? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please state which activities and for what reasons? *(Please give details)*

Q229 Do you believe that you play a part in bettering the public's (including children's) understanding of the origins of meat and meat products and the link between grazing/farming and food consumption? *(Please tick one)*

Yes [1] No [2]

If 'Yes' in what ways do you achieve this?

Q230 If you host farm visits for schools, how have the number of farm visits changed in the last 5 years? *(Please tick one)*

Increased [1] Decreased [2] Stayed same [3] Not applicable [4]

Response to changes in the red meat industry

Q231 Have any of the following constraints restricted the numbers of sheep/cattle grazing on your site? *(Please tick as many as apply)*

Poor availability of skilled labour		Small field sizes	
Poor availability of business advice/support		Site location (*e.g. isolated sites, time and cost of travelling to sites for stock inspection*)	
Difficulties sourcing livestock		Provision of water	
Handling* of sheep and cattle (*loading facilities*)		Boundary maintenance (*e.g. fences, hedges, gates*)	
Marketing constraints		Presence of scrub	
Lack of outlets for products		Risk / occurrence of vandalism/crime	
Public opinion (e.g. welfare concerns, vegetarianism)		Public liability (e.g. livestock escape onto roads, dog walkers conflict with animals)	
No constraints		Other – please state below:	

Q232 What policy / institutional changes would help alleviate these problems and support the maintenance of grazing and activities which depend on grazed sites? *(Please give details)*

Q233 Do you believe that numbers of sheep and cattle in the East of England have increased or decreased in recent years? *(Please tick one)*

Increased [1] Decreased [2] Don't know [3]

Q234 Have changes in the red meat industry, including intensified competition, changed the way in which you market red meat products from animals grazed on your site? *(Please tick one)*

Yes [1] No [2] Not applicable (Go to Q28) [3]

Q235 Which of the following do you currently use to promote your produce? *(Please tick as many as apply)*

Meat produced locally		Organic produce	
Produce from rare breeds		Products are not actively marketed	
Produce from breeds specific to local area		Other – please state below:	

Q236 Have you made use of any advice or training relating to the marketing of red meat products over the last 5 years in response to changes in the red meat industry? *(Please tick one)*

Yes [1] No(Go to Q27) [2]

Q237 If 'Yes', how would you rate the current provision of advice / training relating to the marketing of red meat products? *(Please tick one)*

Excellent [1] Good [2] Average [3] Poor [4] Don't know [5]

Q238 If you have not used such services **or** have rated them poorly, please indicate the reasons for your answer *(Please tick as many as apply)*

Not aware of their existence/Don't know where to go		Poor quality advice/support/training	
Too expensive		Advice/Training not specific enough	
Too far away to access effectively		Advice/Training available not relevant	
		Other – please state below:	

Q239 Have you made changes to the composition of your livestock (sheep/cattle) in the last 5 years in response to changes in the red meat industry (e.g. introduction of local breeds, increase proportion of rare breeds)? *(Please tick one)*

Yes [1] No [2]

(Please give details)

Q240 How often do you typically come into contact with other farmers/land managers? *(Please tick one)*

Daily [1] Weekly [2] Fortnightly [3] Monthly [4] Less frequently [5]

Q241 Do you work with or share experiences/advice with other farmers/farm businesses in the region? *(Please tick one)*

Yes [1] No (Go to [2]

Q242 If 'Yes' in what way(s)? *(Please tick as many as apply)*

Farmers' Markets

Joint supplier/Consortium

Exchange ideas/advice (formally or informally)

Other – please state below:

and for what purpose(s)? *(Please give details)*

Q243 Have you changed your approach to working with other farmers/farm businesses in the past 5 years as a result of changes in the red meat industry? **[*Interviewer – please ask for any changes in the extent and nature of their collaboration]*** (e.g. would not have worked with others until X years ago, went to markets before but only recently joined supplier consortium) *(Please give details)*

Q244 Have you made use of any advice/training relating to networking and collaboration or asked to be signposted to other members of the farming community over the last 5 years in response to changes in the red meat industry? *(Please tick one)*

Yes [1] No(Go to Q35) [2]

Q245 If 'Yes', how would you rate the current provision of advice / training / signposting relating to networking and collaboration in the farming community? *(Please tick one)*

Excellent [1] Good [2] Average [3] Poor [4] Don't know [5]

Q246 If you have not used such services **or** have rated them poorly, please indicate the reasons for your answer *(Please tick as many as apply)*

Not aware of their existence/Don't know where to go		Advice/Training not specific enough	
Too expensive		Advice/Training available not relevant	
Too far away to access effectively		Other – please state below	
Poor quality advice/support/training			
:			

The Future

Q247 How do you expect the grassland which you currently manage to be used in 5 years time? *(Please tick one)*

No change to current use	[1]	Land converted for chicken/pig production	[2]
Continue to be grazed but under alternative arrangement (e.g. grazing rights let to 3rd party)	[3]	Land given over to arable production	[4]
No livestock grazing but kept as grassland by mowing/cutting	[5]	Land given over to recreational use (e.g. golf, horse-riding)	[6]
		Other – please state Below:	

Q248 What consequences do you believe any land use change, resulting from a reduction in grazing, would have on the grassland areas and wider economy and environment? *(Please tick as many as apply)*

Grassland would turn to scrub		Land put to more profitable use – please state below:	
Change in landscape character			
Loss of biodiversity		Reduction/loss of locally-produced meat	
Inaccessibility/loss of public access		Other – please state below or use space to give details on benefits listed above:	

Q249 What level of impact would a fall in the area of land grazed in the area have on **your** business? *(Please tick one)*

Significant [1] Major [2] Minor [3] No impact [4] Don't know [5]

Q250 What impacts, if any, would a fall in the area of land grazed have on you or your business? (e.g. whole or part of business unprofitable, reduction in public visits) *(Please give details)*

Q251 Do you have any further comments/observations on the livestock industry, grazing sector, and policy support for grazing? *(Please give details)*

Q252 For the purposes of evaluation only, could we ask which age band you fit into? *(Please tick one)*

18-29 [1] 30-44 [2] 45-59 [3] 60+ [4]

END – Thank you for completing this questionnaire

Appendix I Tourism Associations and Local Authorities Quality of Life Questionnaire

The Impacts of Undergrazing (Phase 1 Quality of Life Survey) Tourism Associations/Local Authorities Questionnaire

The impacts surrounding the decline in cattle and sheep farming in the East of England are of concern to the Natural England partnership (The Rural Development Service, The Countryside Agency, and English Nature). These three organisations have jointly commissioned Public and Corporate Economic Consultants (PACEC) and the University of Cambridge to undertake a study which will quantify and value the environmental, social and economic impacts of a reduction in the number of sheep and cattle grazing in the region.

We would very much appreciate it if you could spare the time to answer a few questions which explore the social impacts of grazed habitats, specifically with respect to the links with tourism in the region.

Please be assured that the answers you give will only be reported in aggregate and your contact details will remain confidential and will not be used for any other purpose.

Background

Q253 Name _____

Name of Association / LA _____

Job position _____

Q254 For Which area are you responsible for? (e.g. parish/district/county/region)? *(Please give details)*

_____

Q255 Does your organisation keep a record, either formally or informally, of the areas of grazed land in this area? *(Please tick one)*

Yes (Go to Q5) [1] No [2]

Q256 If 'No', could you identify any areas of grazed land (excluding land used for livestock farming) which are of interest to you in your area? *(Please give details)*

_____

_____

_____

_____

Q257 If 'Yes', please indicate which categories of grazed land you include in this record. *(Please tick as many as apply)*

Land used for livestock farming		Wildlife Nature Reserves	
Land used for other types of farming		Meadows	
Common land		Parkland/Estate land	
Wetlands/River banks		Sites of Special Scientific Interest (SSSI)	
		Other – please state:	

_____

Q258 How important is tourism to the local economies of the area you represent? *(Please tick one)*

Critical [1] Important [2] Average importance [3] Not important [4] Don't know [5]

Grazed Landscapes

As well as their role in local food, cattle and sheep are important because they have created some of our most cherished landscapes over hundreds or even thousands of years through their grazing.

Many of these landscapes provide the habitats for some of our rarest plant and animal species. They often carry environmental designations (e.g. Sites of Special Scientific Interest, SSSIs), in recognition of their regional, national or international importance.

In addition, many of the green spaces near or even within our villages towns, and cities are meadows and commons that were, or continue to be grazed. They form the natural places that people 'escape' to, or walk their dogs in, and so play an important role in the life of communities.

Q259 To what extent are tourism activities in your area *(defined in Q2)* reliant on **grazed** land? *(Please tick one)*

Very reliant [1] Reliant [2] Fairly reliant [3] Not reliant [4]

Please explain the ways in which you believe tourism activities might benefit from grazed land. *(Please give details)*

Q260 Do you have any countryside initiatives which are specifically designed to raise awareness or encourage the appreciation and enjoyment of land used for sheep or cattle grazing? *(Please tick one)*

Yes [1] No [2]

(Please give details)

Q261 Do you use images of sheep and cattle grazing to promote the area? *(Please tick one)*

Yes [1] No [2]

Q262 Do you believe that grazed habitats and landscapes can offer benefits for society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what benefits do you believe that they produce ***(Please rank according to importance where 1 is not important and 5 is critically important)***

Recreation benefits		Tourism benefits	
Cultural benefits (e.g. link with food source)		Health benefits (e.g. associated with outdoor recreation)	
Environmental benefits (e.g. prevention of land turning to scrub)		Preservation of archaeological/historical sites	
Preservation of rare breeds/breeds specific to the local area		Other – please state below or use space to give details on benefits listed above:	

Q263 Do you believe that grazed habitats and landscapes have resulting negative impacts on society? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what negative impacts do you believe that they produce ***(Please rank according to importance where 1 is not important and 5 is critically important)***

Environmental impacts (e.g. pollution resulting from increased food miles; disposal of slurry/waste)		Hindrance to public access (e.g. dog walkers walking through fields of livestock)	
		Other – please state below:	

Q264 Do you believe that numbers of sheep and cattle in the East of England have increased or decreased in recent years? *(Please tick one)*

Increased [1] Decreased [2] Don't know [3]

Q265 What level of impact would a fall in the area of land grazed in the area have on tourism in the area? *(Please tick one)*

Significant [1] Major [2] Minor [3] No impact [4] Don't know [5]

Q266 What impacts, if any, would a fall in the area of land grazed have on tourism in the area? Please include any specific examples which illustrate your points. *(Please give details)*

Q267 What level of impact would a fall in the area of land grazed in the area have on businesses in the area? *(Please tick one)*

Significant [1] Major [2] Minor [3] No impact [4] Don't know [5]

Q268 What impacts, if any, would a fall in the area of land grazed have on businesses in the area?
Please include any specific examples which illustrate your points. *(Please give details)*

Q269 What consequences do you believe any land use change, resulting from a reduction in grazing, would have on the grassland areas and wider economy and environment? *(Please tick as many as apply)*

Grassland would turn to scrub		Land put to more profitable use – please state below:	
Change in landscape character			
Loss of biodiversity		Reduction/loss of locally-produced meat	
Inaccessibility/loss of public access		Other – please state below or use space to give details on benefits listed above:	

Red Meat Consumption

Q270 How important do you believe your organisation is in bettering the public's (including children's) understanding of the origins of meat and meat products and the link between grazing/farming and food consumption? *(Please tick one)*

Critical [1] Important [2] Average [3] Not important [4] Don't know [5]

In what ways, if any, do you achieve this?

Q271 How do you rate the consumption of locally-reared produce in the community? *(Please tick one)*

Critical [1] Important [2] Average importance [3] Not important [4] Don't know [5]

Q272 Does your organisation take steps to encourage lamb and beef consumption in the area? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please give details

Q273 Does your organisation promote **local** lamb and beef produce in the area? *(Please tick one)*

Yes [1] No [2]

If 'Yes', please detail your approach

If 'No', please say why you do not promote local lamb and beef produce in the region

Comments

Q274 Do you have any further comments/observations on grazed landscapes and locally produced lamb and beef products in the region? *(Please give details)*

END – Thank you for completing this questionnaire

Appendix J Walkers and Ramblers Quality of Life Questionnaire

The Impacts of Undergrazing (Phase 1 Quality of Life Survey)
Rambling Associations / Walkers Questionnaire

Phase 1 Quality of Life Survey Public and Corporate Economic Consultants (PACEC), in collaboration with the Department of Land Economy, University of Cambridge have been commissioned by the Natural England partners to undertake a study which will quantify and value the environmental, social and economic impacts of a reduction in the number of cattle and sheep grazing in the East of England.

We would very much appreciate it if you could spare the time to complete this questionnaire, which considers the social impacts of grazed habitats in the region. **Please be assured that the answers you give will only be reported in aggregate and your contact details will remain confidential and will not be used for any other purpose.**

Background

Contact details to be filled in by interviewer: _____

Q275 Name _____

Dog Club / Rambling Association (if applicable) _____

Location / Area covered by association/club _____

Location interviewed (if face-to-face) _____

Q276 How many dogs do you own? *(Please tick one)*

None [1] 1 [2] 2 [3] 3 or more [4]

Q277 Do you have access to a car? *(Please tick one)*

Yes [1] No [2]

Grazed Landscapes

Q278 How regularly do you experience/ pass grazed landscapes on your walks? *(Please tick one)*

Very frequently [1] Frequently [2] Sometimes [3] Rarely [4]

Q279 What do **you** like about walking across grazed landscapes? *(Please tick as many as apply)*

Open spaces		Low level of grass	
Flora & fauna associated with grazing		Nothing	
Seeing sheep / cattle on the land		Other – please state below	

_____

_____

_____

Q280 What do **you** dislike about walking across grazed landscapes? *(Please tick as many as apply)*

Open spaces		Styles/Gates/Grids/Electric Fences	
Flora & fauna associated with grazing		Restrictions imposed by farmer (e.g. dogs must be on a lead)	
Fear/Nuisance of sheep/cattle on the land		Nothing	
		Other – please state below	

_____

_____

_____

_____

Q281 If there are alternative routes, do you actively avoid land grazed by sheep and/or cattle? *(Please tick one)*

Yes [1] No [2]

Q282 Do you believe that grazed habitats and landscapes can offer benefits for **society**? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what benefits do you believe that they produce ***(Please rate according to importance where 1 is not important and 5 is critically important)***

Recreation benefits		Tourism benefits	
Cultural benefits (e.g. link with food source)		Health benefits (e.g. associated with outdoor recreation)	
Environmental benefits (e.g. prevention of land turning to scrub)		Preservation of archaeological/historical sites	
Preservation of rare breeds/breeds specific to the local area		Other – please state below or use space to give details on benefits listed above:	

_____

_____

_____

Q283 Do you believe that grazed habitats and landscapes have resulting negative impacts on **society**? *(Please tick one)*

Yes [1] No [2]

If 'Yes', what negative impacts do you believe that they produce ***(Please rate according to importance where 1 is not important and 5 is critically important)***

Environmental impacts (e.g. pollution resulting from increased food miles; disposal of slurry/waste)		Hindrance to public access (e.g. fear of livestock, fences, farm buildings)	
		Other – please state below:	

_____

_____

_____

_____

Q284 Do you believe that numbers of sheep and cattle in the East of England have increased or decreased in recent years? *(Please tick one)*

Increased [1] Decreased [2] Don't know [3]

Q285 What level of impact would a fall in the area of land grazed in the area have on you and your use of the countryside? *(Please tick one)*

Significant [1] Major [2] Minor [3] No impact [4] Don't know [5]

Q286 What impacts, if any, would a fall in the area of land grazed have on you? e.g. less likely to visit an area *(Please give details)*

Comments

Q287 Do you have any further comments/observations on sheep and cattle grazing in the region? *(Please give details)*

END – Thank you for completing this questionnaire

Appendix K Further Survey Results

K1 Survey of Farmers, Land Managers and Graziers

Table K1.1 Other Agricultural uses of the land

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Hay	27	18	50	50	50	0	0	n/a	n/a
Woodland	23	27	0	0	0	50	100	n/a	n/a
Set-aside	18	27	25	0	0	0	0	n/a	n/a
ELS Countryside Stewardship	14	18	0	0	50	0	0	n/a	n/a
Poultry	14	0	25	50	0	0	100	n/a	n/a
Grass leys organic	9	9	25	0	0	0	0	n/a	n/a
Grassland / meadow	9	0	0	0	0	100	0	n/a	n/a
Number of respondents	*22*	*11*	*4*	*2*	*2*	*2*	*1*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q4B)

Table K1.2 Other Uses of the land

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Horse grazing	27	50	33	20	0	33	0	n/a	n/a
Conservation woodland	23	50	22	40	0	0	0	n/a	n/a
DIY Horse livery	15	0	11	0	0	67	50	n/a	n/a
Horse breeding	15	0	22	20	33	0	0	n/a	n/a
Game Farm	12	0	0	0	67	0	50	n/a	n/a
Making hay	12	25	11	0	33	0	0	n/a	n/a
Free range Chicken	4	0	0	0	33	0	0	n/a	n/a
Forage production	4	0	0	0	33	0	0	n/a	n/a
Arable	4	0	0	20	0	0	0	n/a	n/a
None/nothing	4	0	0	20	0	0	0	n/a	n/a
Number of respondents	*26*	*4*	*9*	*5*	*3*	*3*	*2*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q4C)

9.3.2 We asked those who had no cattle or sheep grazing on their land to explain why. For a fifth of respondents (17 out of 83), their grassland was grazed by horses instead and for 12 out of 83 (and especially those based in Essex), the grassland was used to produce hay. However, it is also important to note that 18% (15 out of 83) said the reason they did not graze cattle and sheep was because it was uneconomic and indeed, one respondent commented that horse-grazing was more profitable. Other reasons given included the difficulties sourcing cattle and sheep or environmental reasons such as the area being too small or being liable to flooding. Also of note is the response of one farmer who now farms intensively indoors and thus no longer uses his grassland for grazing.

Table 9.5 If you have answered 'no', please give reasons why cattle/sheep are not kept on the grassland you manage (Please give details)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
Only horses/ponies	20	29	18	0	8	21	33	n/a	50
Uneconomical	18	21	18	18	8	21	33	n/a	0
Making hay	14	**29**	9	9	0	14	0	n/a	0
Not part of business plan	11	11	9	18	8	14	0	n/a	0
Haven't got any	7	0	9	18	17	7	0	n/a	0
Set a side land	5	4	18	9	0	0	0	n/a	0
Not enough demand	5	4	0	18	0	7	0	n/a	0
Too many regulations	5	11	9	0	0	0	0	n/a	0
Too small an area	5	7	0	0	8	7	0	n/a	0
No cattle / sheep available	4	0	0	9	8	7	0	n/a	0
Not allowed by DEFRA	4	4	9	0	8	0	0	n/a	0
Produce Arable crops	2	4	0	0	8	0	0	n/a	0
Liable to flooding	2	0	9	0	0	7	0	n/a	0
Fruit growers	2	4	0	0	8	0	0	n/a	0
Lack of water	2	4	9	0	0	0	0	n/a	0
Only grow Flowers	2	4	0	0	0	7	0	n/a	0
Discontinued stock	2	0	0	0	0	7	0	n/a	25
Horses more profitable	1	0	0	0	0	0	33	n/a	0
Public access would be restricted	1	0	0	0	8	0	0	n/a	0
6 Metre margins	1	0	9	0	0	0	0	n/a	0
Used for bloodstock	1	0	0	9	0	0	0	n/a	0
Now an indoor intensive farmer	1	0	0	0	0	0	0	n/a	25
None/nothing	1	0	0	0	0	0	0	n/a	25
Don't know/don't want to say	1	0	0	0	8	0	0	n/a	0
Number of respondents	*83*	*28*	*11*	*11*	*12*	*14*	*3*	*0*	*4*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q10A)

Table K1.3 If known, what is your nearest area of grazed land (beyond the area of grazed land which you manage)?

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Danesburty Park, Welwyn	5	0	n/a	7	0	n/a	0
Lode farm brightlingsea	5	25	n/a	0	0	n/a	0
Hulls hill farm	10	0	n/a	14	0	n/a	0
Goose Farm great gidding	5	25	n/a	0	0	n/a	0
New barns farm	5	0	n/a	0	0	n/a	100
Shelley Village	5	0	n/a	7	0	n/a	0
Herne willow farm toddington	5	0	n/a	7	0	n/a	0
Marsh farm south wooden ferrers	5	25	n/a	0	0	n/a	0
Bures	5	0	n/a	7	0	n/a	0
Sible Headingham	5	0	n/a	7	0	n/a	0
Ickworth park	5	25	n/a	0	0	n/a	0
Grange farm tillbrook	5	0	n/a	7	0	n/a	0
Home farm Wrest Park silsoe	5	0	n/a	7	0	n/a	0
Hall farm Attleborough	5	0	n/a	0	100	n/a	0
Old Hall Farm Forncett St Mary	5	0	n/a	7	0	n/a	0
R. Carter Stowupland	5	0	n/a	7	0	n/a	0
Cullens High Hill farm Nettlestead	5	0	n/a	7	0	n/a	0
Neighbour	5	0	n/a	7	0	n/a	0
Don't know/don't want to say	5	0	n/a	7	0	n/a	0
Number of respondents	*20*	*4*	*0*	*14*	*1*	*0*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q12A)

Table K1.4 And what is the distance of this land from your own? (miles)

	Statistics of all respondents. (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Median	0.8	1.0	4.0	0.5	1.3	0.1	0.3
Mean	1.5	1.3	4.0	1.2	1.3	5.0	1.5
Min	0.0	0.0	1.0	0.0	0.5	0.0	0.0
Max	20.0	20.0	7.0	13.0	2.0	15.0	5.0
Responses	67.0	6.0	2.0	49.0	2.0	3.0	5.0

Source: PACEC Survey of farmers, land managers and graziers (Q12B)

Table K1.5 Please name the abattoir that you or your grazier normally use- Farms located in Bedfordshire

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Colchester Market	100	0	n/a	100	0	0	100
Number of respondents	*4*	*0*	*0*	*3*	*0*	*0*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q38A)

Table K1.6 Please name the abattoir that you or your grazier normally use- Farms located in Cambridgeshire

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Thradstone market	33	0	n/a	**50**	0	0	0
N.U. Gagen	33	0	n/a	**50**	0	0	0
Dovecote	33	0	n/a	**0**	100	0	0
Number of respondents	*3*	*0*	*0*	*2*	*1*	*0*	*0*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q38A)

Table K1.7 Please name the abattoir that you or your grazier normally use- Farms located in Essex:

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
C Humpries, Gt Leighs	50	100	n/a	43	0	0	0
Colchester Market	20	0	n/a	**29**	0	0	0
C Byford	20	0	n/a	**29**	0	0	0
Hempbies	10	0	n/a	**0**	0	100	0
Cheales	10	50	n/a	**0**	0	0	0
Coleman	10	50	n/a	**0**	0	0	0
H.G. Blake	10	0	n/a	14	0	0	0
Number of respondents	*10*	*2*	*0*	*7*	*0*	*1*	*0*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q38A)

Table K1.8 Please name the abattoir that you or your grazier normally use- Farms located in Hertfordshire:

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
St Merryin, Devon	20	0	n/a	20	0	0	0
Martins	20	0	n/a	20	0	0	0
Thradstone market	20	0	n/a	20	0	0	0
Dawn Meats	20	0	n/a	20	0	0	0
Evans	20	0	n/a	20	0	0	0
Number of respondents	*5*	*0*	*0*	*5*	*0*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q38A)

Table K1.9 Please name the abattoir that you or your grazier normally use- Farms located in Norfolk

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
H.G. Blake	86	0	n/a	86	0	0	0
Dovecote	14	0	n/a	14	0	0	0
Chitty's food group	14	0	n/a	14	0	0	0
Number of respondents	*7*	*0*	*0*	*7*	*0*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q38A)

Table K1.10 Please name the abattoir that you or your grazier normally use- Farms located in Suffolk

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Lamberts	40	0	n/a	40	0	0	0
C Byford	20	0	n/a	20	0	0	0
Pick Stock, Ashby	20	0	n/a	20	0	0	0
Bungay	20	0	n/a	20	0	0	0
Number of respondents	*5*	*0*	*0*	*5*	*0*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q38A)

Table K1.11 Do you experience any of the following constraints relating to grazing sheep/cattle on your site? (Please tick as many as apply)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Boundary maintenance	47	33	50	51	25	33	29
Low prices for produce	46	44	50	46	**100**	0	29
Public liability	29	22	33	30	25	33	29
Risk / occurrence of vandalism/crime	23	33	25	22	25	0	29
Marketing constraints	22	11	17	22	75	33	0
Provision of water	22	33	**0**	27	25	0	0
Handling* of sheep and cattle (loading facilities)	21	11	25	21	50	33	0
Poor availability of skilled labour	20	22	33	19	25	33	0
Lack of outlets for products	18	0	8	20	100	0	0
Site location	15	0	17	17	25	0	0
Public opinion (e.g. welfare concerns, vegetarianism)	14	22	25	12	25	0	0
Difficulties sourcing cattle/sheep	13	33	17	**9**	50	0	14
Small field sizes	12	**33**	0	14	0	0	0
Presence of scrub	9	0	0	11	25	0	0
No constraints	9	0	8	10	0	0	14
Poor availability of business advice/support	3	0	8	2	25	0	0
Other	8	0	0	9	0	33	14
Number of respondents	*116*	*9*	*12*	*81*	*4*	*3*	*7*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q27A)

Table K1.12 Other constraints which are experienced

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Loss of small abattoirs	19	n/a	25	18	0	n/a	n/a
Very wet site	19	n/a	0	27	0	n/a	n/a
No 'large animal' vets in the area	13	n/a	25	9	0	n/a	n/a
Over regulation of industry	13	n/a	25	9	0	n/a	n/a
Lack of profit	13	n/a	0	9	100	n/a	n/a
Over regulated	13	n/a	25	9	0	n/a	n/a
Local farmer manages the animals	6	n/a	0	9	0	n/a	n/a
Manage constraints of the countryside	6	n/a	0	9	0	n/a	n/a
Identification tags and paperwork to manage livestock	6	n/a	0	9	0	n/a	n/a
Escalating transport costs	6	n/a	0	0	100	n/a	n/a
Lack of local markets	6	n/a	0	9	0	n/a	n/a
Rare breeds lose value through age	6	n/a	0	9	0	n/a	n/a
Impossible to produce 3 year old beef	6	n/a	25	0	0	n/a	n/a
BCMS	6	n/a	25	0	0	n/a	n/a
Beef and lamb scheme	6	n/a	25	0	0	n/a	n/a
Number of respondents	*16*	*0*	*4*	*11*	*1*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q27B)

Table K1.13 Do you experience any of the following constraints relating to the business activities (outlined in Q53 above) which grazed land supports. (Please tick as many as apply)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Not applicable	48	n/a	n/a	45	33	n/a	75
Lack of outlets for products	28	n/a	n/a	27	67	n/a	0
Poor availability of skilled labour	14	n/a	n/a	18	0	n/a	0
Marketing constraints	10	n/a	n/a	9	33	n/a	0
Poor availability of business advice/support	7	n/a	n/a	9	0	n/a	0
Site constraints	0	n/a	n/a	0	0	n/a	0
Other	21	n/a	n/a	23	0	n/a	25
Number of respondents	*29*	*0*	*0*	*22*	*3*	*0*	*4*

Source: PACEC Survey of farmers, land managers and graziers (Q55A)

Table K1.14 Other constraints relating to the business activities which grazed land supports:

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Planning regulations	50	n/a	n/a	50	n/a	n/a	n/a
Lack of money	25	n/a	n/a	25	n/a	n/a	n/a
Lack school interest; health & safety	25	n/a	n/a	25	n/a	n/a	n/a
Number of respondents	*4*	*0*	*0*	*4*	*0*	*0*	*0*

Source: PACEC Survey of farmers, land managers and graziers (Q55B)

Table K1.15 What policy / institutional changes would help alleviate any of the problems you have highlighted above and support the maintenance of grazing? (Please give details)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Support system for grazing animals	14	33	0	15	0	0	0
Less threat of penalties for things which are not a crime	12	0	0	18	0	0	0
Redirection in regulation and paperwork	11	17	20	8	0	50	0
Better price for finished product	11	17	0	13	0	0	0
Flexibility to spray/fertilise/graze when needed	9	0	20	8	25	0	0
Weather dependent	5	0	20	3	25	0	0
Facilities for small scale producers	5	0	0	8	0	0	0
Supplying grassland with no constraints	5	0	0	5	25	0	0
Scrap the legislation governing home kills	4	0	20	3	0	0	0
Better local slaughtering facilities	4	0	0	3	0	0	100
Get rid of the name 'Natural England' it is misleading	4	0	0	3	25	0	0
More flexibility with spraying and haymaking	4	0	0	5	0	0	0
Ability to re-seed environmental areas	2	0	20	0	0	0	0
Better understanding of welfare interests	2	0	20	0	0	0	0
Farm audits for individuals	2	0	0	3	0	0	0
Production based landscape creation	2	0	0	3	0	0	0
Ending of some Environmental schemes	2	0	0	3	0	0	0
Make it easier to divert footpaths	2	0	0	3	0	0	0
Abolish imports from all other countries	2	0	0	3	0	0	0
Less supermarket thuggery	2	0	0	3	0	0	0
Temporary accommodation during feeding period	2	0	0	3	0	0	0
Reduction in grazing rights	2	0	0	0	0	50	0
Seasonable availability of grazing	2	0	0	3	0	0	0
Understand the individuality of each holding	2	0	0	3	0	0	0
The farmer best knows how to manage his own farm	2	0	0	3	0	0	0
Have to maintain sward for grazing	2	0	20	0	0	0	0
None/nothing	12	50	0	10	0	0	0
Don't know/don't want to say	2	17	0	0	0	0	0
Number of respondents	*57*	*6*	*5*	*39*	*4*	*2*	*1*

Source: PACEC Survey of farmers, land managers and graziers (Q30A)

Table K1.16 What would happen to the proportion of the annual weight of meat you produce which is sold to farmers' markets or sold as 'locally produced meat' if the number of grazing animals in the region fell? (Please tick one)

	Percentage of all respondents (by Principal role)								
	Total	Essex	Suffolk	Norfolk	Cambs	Herts	Beds	Other	Unknown
It would fall	22	40	33	25	13	0	0	0	14
It would rise	19	30	33	25	13	0	0	0	0
It would not change	59	**30**	33	50	75	100	**100**	100	86
Number of respondents	*58*	*10*	*9*	*16*	*8*	*2*	*5*	*1*	*7*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q76)

Table K1.17 Do you have any further comments/observations on the cattle/sheep livestock industry, grazing sector, and policy support for grazing? (Please give details)

	Percentage of all respondents (by Principal role)						
	Total	Land manager	Land conservationist	Farmer	Grazier	Other	Not known
Grassland and grazing contribute to biodiversity	14	0	0	**24**	0	n/a	0
Gradual reduction in livestock	9	0	0	10	100	n/a	0
Lack of skilled stockmen	9	0	0	14	0	n/a	0
Livestock involves a lot more work than cereals	9	0	0	14	0	n/a	0
Government regulations/red tape discourages livestock	6	0	0	10	0	n/a	0
Low investment in East Anglia	6	0	0	10	0	n/a	0
Have to graze as condition of grant	6	50	100	0	0	n/a	0
Need a good supply of economically viable cattle	6	0	0	5	100	n/a	0
Too many constraints and too much paperwork	6	0	0	10	0	n/a	0
Completely dependent on the market/lack of profitability	6	0	0	0	0	n/a	20
Government to consult with people in the industry not academ	6	0	0	0	0	n/a	20
The public want cheap meat	6	0	0	5	0	n/a	10
Vets are a problem in this area	3	0	0	5	0	n/a	0
If local abattoir were to close would stop lamb production	3	0	0	5	0	n/a	0
No direct involvement with the stockman	3	50	0	0	0	n/a	0
It can already be seen that horses and hay produce a mess	3	0	0	5	0	n/a	0
Dairy cattle are a major source of beef calves for grazing	3	0	0	5	0	n/a	0
Unless the price we get doubles England won't be farmed	3	0	0	5	0	n/a	0
Help with disease control & Welfare obligations	3	0	0	5	0	n/a	0
The livestock market appears to be improving	3	0	0	5	0	n/a	0
Do not use chemicals or artificial methods	3	0	0	5	0	n/a	0
Sheep help keep the grass good for horses	3	0	0	5	0	n/a	0
Lack of a coherant national agricultural policy	3	0	0	5	0	n/a	0
A lot of grazing land is on the flood plain	3	0	0	5	0	n/a	0
Labour cheaper and less rigorously enforced elsewhere	3	0	0	5	0	n/a	0
Young generation not going into farming	3	0	0	5	0	n/a	0
Contract farming only in future, large farmers	3	0	0	5	0	n/a	0

surviving							
Lost £10000 worth of stock when the new SFP came in	3	0	0	0	0	n/a	10
Graziers who do not own the land are let down by the scheme	3	0	0	0	0	n/a	10
Landlord is helping with diversification	3	0	0	0	0	n/a	10
Landlords keep the SFP	3	0	0	0	0	n/a	10
Markets and abattoirs too far away	3	0	0	0	0	n/a	10
Suckler calf production currently unavailable	3	0	0	0	0	n/a	10
Too much paperwork	3	0	0	0	0	n/a	10
None/Nothing	6	0	0	5	0	n/a	10
Number of respondents	*35*	*2*	*1*	*21*	*1*	*0*	*10*

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of farmers, land managers and graziers (Q79A)

Appendix L How to read PACEC survey results

9.3.3 Standard PACEC survey tables use the question given in the survey as the Table title (Businesses affected by Factor X). The name of the survey (Survey of employers) and the question number (Q9) are given in the source at the foot of the table. The options given in the question (greatly affected, slightly affected and not affected) are given as row headings.

Table 9.6 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)

9.3.4 Standard PACEC survey tables usually show percentages of respondents. It should be remembered that the percentages given only apply to those who responded to the question – those who did not answer the question are excluded.

Table 9.7 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)

9.3.5 The first numeric column contains the rounded percentages of all respondents who gave each of the answers given as row headings (in this case one third of respondents gave each of the three replies). Because the percentages are rounded to the nearest whole number (1/3 is given as 33%), this can have the effect that a group of rounded numbers may not add up to 100% (e.g. 33% + 33% + 33% could total 100%)

Table 9.8 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)

9.3.6 Another reason the percentages in a column do not add up to 100 is because multiple responses are allowed (respondents can be affected by any combination of Factors A, B and C).

Table 9.9 Businesses affected by different factors

(Multiple responses allowed)	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Factor A	33	**50**	**40**	**10**	**10**
Factor B	33	**60**	**10**	**50**	**10**
Factor C	25	**10**	**40**	**10**	40
None of the above	25	**25**	**10**	**35**	**45**
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q8)

9.3.7 The remaining columns give analysis for different subsets of respondents. The type of subsets used is given in the overall column title ("by location of business"), and the individual names are given as column headings (North, South, East and West).

Table 9.10 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)

9.3.8 Numbers in each column refer to the percentage of respondents who gave each of the answers (20% of those in the south were greatly affected, 40% were slightly affected and 40% were not affected). Each column can be compared with the total column to the left (more respondents in the south are slightly affected and not affected, whereas fewer are greatly affected).

Table 9.11 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)

9.3.9 While the tables report the percentages of *respondents* in a particular (column) category, the primary interest in the analysis of *all* those in a particular category (whether or not they responded to the survey). The numbers given in the tables are the *best estimates* (on the evidence available from the survey) of the proportions of all those in each category who would have given a particular response. However the *true proportion* may be different from these numbers. The margins of errors are given in the table below. When 600 people are interviewed, the margin of error is +/- 4 percentage points, so 33% could be between 29% and 37%.

Table 9.12 Businesses affected by Factor X

Number of responses	1000	600	384	267	196	150	119	96	43	24
Margin of error (% points)	3	4	**5**	**6**	**7**	**8**	**9**	**10**	**15**	**20**

Source: PACEC

9.3.10 In some cases, therefore, when the *proportion of respondents* with a certain response (e.g. "Not affected") in a column (North – 30%) is quite similar to the number in the total column (33%), it is possible (more than one chance in 20) that there is no difference between the *proportion of the population* in the relevant categories. In these cases figures are given in plain type.

Table 9.13 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)

9.3.11 However, in other cases, when the *proportion of respondents* with a certain response (e.g. "Not affected") in a column (South – 40%) is quite different to the number in the total column (33%), it is very unlikely (less than 1 chance in 20) that there is no difference between the *proportion of the population* in the relevant categories. In these cases figures are given in bold type.

Table 9.14 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)

9.3.12 However, the amount by which the *proportions* have to be different depends on the number of responses, so it is possible that two numbers in a table may be the same, but one is in bold and the other isn't because there are more responses in the first column than in the second.

Table 9.15 Businesses affected by Factor X

	Percentage of all respondents (by location of business)				
	Total	North	South	East	West
Greatly affected	33	**50**	**20**	40	**20**
Slightly affected	33	**20**	**40**	**45**	40
Not affected	33	30	**40**	**15**	40
Number of responses	600	200	200	100	100

A number is shown in bold where, taking into account the margin of error due to sampling, we are 95% certain that it is different from the number in the left hand total column (using a Chi-Squared statistical test)
Source: PACEC Survey of employers (Q9)