



OPPORTUNITIES FOR GREATER LINCOLNSHIRE SUPPLY CHAINS

FINAL REPORT

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***Commissioned by the Lincolnshire Research Observatory on behalf of the
Greater Lincolnshire Local Enterprise Partnership***

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1. INTRODUCTION

Background

- 1.1 This reports sets out the findings of a study of the key sector supply chains in the Greater Lincolnshire economy. The report has been put together by a team of researchers at the University of Lincoln, ADAS and Rose Regeneration. This study has been commissioned by the Lincolnshire Research Observatory on behalf of the Greater Lincolnshire Local Enterprise Partnership (GLLEP).
- 1.2 This report directly relates to two further pieces of work commissioned by Lincolnshire County Council. These are:
- *Learning from our Place in the Global Economy*: to develop an understanding of Lincolnshire's industrial make up and opportunities for growth and inward investment
 - *Opportunities for Innovation within Greater Lincolnshire Traditional Industries*: a study to analyse current innovative practices within traditional industries, and identify barriers to and opportunities for innovation.

Aims and Objectives

- 1.3 The principal aim of this research is to achieve a better understanding of Greater Lincolnshire's major supply chains. The key objectives are to:
- (i) Obtain information from the key sector industries and map their supply chains;
 - (ii) Identify local, regional and global links;
 - (iii) Compare sector models and investigate the issues of local versus external supply chains;
 - (iv) Identify interdependencies in the supply chains of our key sectors and those parts of the chain that are potentially vulnerable and pose a risk to the sector and the local economy as a whole;
 - (v) Identify opportunities for cross sector co-operation;
 - (vi) Identify how the public and private sectors along with the LEP can influence this area and what opportunities to access funding that can assist this process;
 - (vii) Consider the health and care sector due to the opportunities for growth in both the service and manufacturing (goods, medical equipment, pharmaceuticals) supply brought about particularly through Lincolnshire's growing and aging population.

Introduction to the Project Team

- 1.4 This report has been produced by a collaboration of the University of Lincoln, ADAS and Rose Regeneration. The research team comprises:
- Martin Hingley, Professor of Strategic Marketing at Lincoln Business School
 - Liz Price, Senior Research Fellow at Lincoln Business School
 - Gary Bosworth, Reader at Lincoln Business School
 - Gerrit Meerdink, Head of Department for Food Manufacturing and Automation, National Centre for Food Manufacturing (NCFM), Holbeach
 - Mark Swainson, Principal Lecturer, NCFM, Holbeach
 - David Lancaster, Business Manager – Food and Drink, ADAS
 - Vanessa Sturman, Sustainability Consultant, ADAS
 - Ivan Annibal, Visiting Fellow at Lincoln Business School and Director of Rose Regeneration

- 1.5 The University of Lincoln has a long history of working with key sector businesses and representatives across the county, and has previously managed a number of similar studies in Lincolnshire and the East Midlands.
- 1.6 Lincoln Business School has conducted several studies of the local economy, including the *Lincolnshire Economic Strategy 2008-2012*. The University's National Centre for Food Manufacturing at Holbeach engages with food and logistics companies across the local area for training and consultancy. The University also has strong links with the engineering sector, with its School of Engineering having recently been established in partnership with Siemens Industrial Turbo-Machinery.
- 1.7 ADAS is a science-based independent environmental consultancy. ADAS specialises in the agri-food sector, including horticulture, farming, food manufacturing, renewable energy, environmental technology, research and development.
- 1.8 Rose Regeneration is a Lincoln-based consultancy. Rose has a reputation for working closely with local authorities in the fields of economic analysis, policy formulation, and community and rural development.

Structure of this Report

- 1.9 The rest of this report is set out as follows:

Section 2: Our Approach – sets out the data gathered and the method used for the study.

Section 3: Supply Chain Concepts and Trends – introduces some of the supply chain concepts, and recent trends in supply chain management.

Section 4: Greater Lincolnshire's Trade and Export Profile – analysis of the Greater Lincolnshire's key exporting activities.

Section 5: Supply Chain Survey of Greater Lincolnshire – analysis of a quantitative survey of firms across Greater Lincolnshire, which explores supplier relationships, collaboration, and the geographical distribution of customers and suppliers in each sector.

Sections 6- 11: Key Supply Chain Analysis – drawing on qualitative interviews, this section provides a detailed analysis of the supply chain linkages and interdependency in each identified sector, and supply chain vulnerabilities and opportunities for growth.

Section 12: Discussion and Action Points – the opportunities and the influences and barriers for each key sector supply chain. This sets out the opportunities for the short, medium, and longer term, for consideration by the Greater Lincolnshire LEP Board.

2. OUR APPROACH

2.1 This project follows directly from the 'Our Place in the Global Economy' project, which provides a baseline for our understanding of the key identified sectors in Greater Lincolnshire. While the 'Global Economy' study focuses specifically on analysis of secondary data, this research has used mainly primary research to develop a detailed understanding of supply chain issues from a local business perspective.

2.2 The research has been structured around the following five stages of activity:

- (i) Key Expert and Stakeholder Interviews
- (ii) Supply Chain Interviews
- (iii) Supply Chain Survey
- (iv) Supply Chain Focus Groups

2.3 **Key Expert and Stakeholder Interviews:** In conjunction with the 'Our Place in the Global Economy' study, a number of interviews with key sector representatives were undertaken at the start of the project. These included economic development policymakers, experts from the University and partner organisations, and key sector employers. The interviews were used to explore the factors affecting the key sector supply chains, interdependencies between supply chains, and priority areas for investment. Interviews were undertaken with:

- Laura Farr and Jackie Tulley, North Lincolnshire Council
- Helen Thompson and David Robinson, North East Lincolnshire Council
- Doug Robinson, Lincolnshire County Council
- Tony Hill, Lincolnshire County Council
- Neil Corner, Siemens
- Andrew Vaughan, Industrial Chaplain for Lincolnshire
- Mark Swainson, Holbeach Centre for Food Manufacturing
- Jill Stewart, Lincoln School of Engineering
- Phil Considine, Lincoln Business School (Healthcare)
- Jeffe Baker, Associated British Ports (ABP)

2.4 This stage of the research was also used to identify businesses within each of the key sector supply chains to approach for interview.

2.5 **Supply Chain Interviews:** the core component of the research focused on qualitative interviews with businesses to explore the issues affecting the supply chain members and leaders in Greater Lincolnshire. The sampling for the supply chain interviews was based on a 'snowball' method, whereby prospective business interviewees were identified initially through the expert interviews. Businesses approached for interview were then asked to suggest other businesses that they thought might be relevant for the study. These might be suppliers, customers, or firms that they work in partnership with. Businesses were also identified through existing University of Lincoln linkages, such as via the National Centre for Food Manufacturing at Holbeach and Lincoln Engineering School.

2.6 Detailed face-to-face interviews were conducted with businesses within each of the sector supply chains. An interview proforma was developed, and is included as Appendix 1. The interviews covered the following broad questions:

- What products and services do you offer?
- Can you tell us about your links with your suppliers? (local, national, global)
- Who are your customers? (local, national, global)
- How do you collaborate with other companies for producing goods / satisfying customers / sharing equipment / joint purchasing?

- What opportunities do you envisage for collaboration in your sector and outside of your sector for the future?
- Do you work with other companies for training or people development?
- Do you ever direct work to other companies?
- Is there anything that restricts you from collaborating more, inside and outside of the region?
- Are you linked with any trade associations or networks?
- What are the greatest threats to the future success of your business?
- What would help your business grow and thrive?

2.7 Interviews were conducted with businesses across the identified sectors. Because the interviews explored the nature of customer and supplier relationships, some of the information disclosed may be considered commercially sensitive. We have therefore anonymised the business details in our analysis. The broad details of the businesses interviewed are as follows:

Sector	Business	Area of activity
Agri Food	AgFood 1	Grower of arable and vegetable crops
Agri Food	AgFood 2	Supplier of specialist ingredients
Agri Food	AgFood 3	Supplier of fresh potatoes
Agri Food/Manufacturing	AgFood 4	Grower and processor of vegetables
Agri Food/Manufacturing	AgFood 5	Independent retailer
Agri Food/Manufacturing	AgFood 6	Importer and processor of fresh fish
Engineering/Manufacturing	Eng 1	Manufacturer of gas turbines
Engineering/Manufacturing	Eng 2	Manufacturer of electronic components
Engineering	Eng 3	Services gas turbines
Engineering/Manufacturing	Eng 4	Manufacturer of gas purification equipment
Renewables	Env 1	Supplier to offshore wind industry
Renewables	Env 2	Installer of PV cells
Renewables	Env 3	Plastics recycling
Logistics	Logistics 1	International road haulage
Logistics	Logistics 2	Road haulage and warehousing
Logistics	Logistics 3	Retail and distribution
Health and Care	Health 1	Dental practice
Health and Care	Health 2	Medical equipment supplier
Health and Care/Manufacturing	Health 3	Manufacturer of mobility equipment
Health and Care	Health 4	Household building services
Health and Care	Health 5	Care home

2.8 **Supply Chain Survey:** in addition to the detailed qualitative interviews, a quantitative supply chain survey was undertaken. The purpose of the survey was to provide the opportunity for smaller companies to be consulted as part of the study, and to gather a broader perspective on supply chain issues. A series of questions were developed, which were designed to be easy to complete, with mainly tick-box answer options and rating scales. The survey questionnaire is included as Appendix 2 to this report. The survey received a total of 167 responses. The survey was distributed in two ways:

(i) as an annex to Lincolnshire County Council's Quarterly Economic Survey (QES), which is distributed electronically to a large sample of businesses across Lincolnshire. Respondents that had completed the QES were invited to click on a link to complete the Supply Chain questionnaire. This link was also distributed to businesses in North Lincolnshire, North East Lincolnshire, as well as to businesses that attend the Lincoln

Engineering Breakfast and contacts from the GLLEP Renewables Task Group. This survey achieved 118 responses from a variety of sectors.

(ii) as an electronic survey hosted on online survey software by the University of Lincoln. This survey also included questions for the 'Innovation in Traditional Industries' and focused on the agri food sector. The survey was distributed using the National Centre for Food Manufacturing database, and the North East Lincolnshire food sector database. To boost the response to this survey, follow-up telephone interviews were conducted by Rose Regeneration.

- 2.9 Three **Focus Groups** took place to share and discuss the initial findings of the project. These brought together some of the key sector businesses, policymakers and researchers that had been involved in the research so far. To avoid duplication of research, the first two focus groups took place in collaboration with the 'Innovation in Traditional Industries' project and focused primarily on the agri food sector. These were held on 20 March at the National Centre for Food Manufacturing at Holbeach, and 21 March at the Humber Seafood Institute. The final focus group involved companies from the environmental technologies and engineering sector and took place at the Lincolnshire Leadership and Management Centre on 28 March 2012.
- 2.10 The purpose of the focus groups was to (i) begin the dissemination process but will also ensure that our findings were tested in front of an expert audience; (ii) explore initially identified opportunities for inter-connections between the key sectors; and (iii) consider the actions that GLLEP can take to strengthen sections of established key sector supply chains that are at risk, as well as supporting new emerging sub-sectors.

3. ABOUT SUPPLY CHAINS

- 3.1 In order to provide some context for the key issues explored in this study, the following section sets out some key supply chain concepts as well as recent trends and developments in supply chain management.
- 3.2 **Supply Chain Management (SCM) defined:** SCM is the management of a network of interconnected businesses involved in the ultimate provision of product and services to customers. A Supply Chain (SC) encompasses all movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption. The definition of SCM includes all physical (logistic) issues of handling, movement and storage; but also concerns planning, delivery, control, and monitoring of supply chain activities (inventory, forecasting, purchasing and so forth) with the objective of creating net corporate and chain value.
- 3.3 SCM has progressively developed in the last quarter century as many markets have matured and the predominance of 'market making' has been caught up with by the need for cost control and the realisation of the need for not only understanding of business at company level, but at whole chain level; often trans-nationally. Recent economic recession and rising costs in essential areas has forced companies to take a detailed and systematic look at their supply chains, in order to identify and address corporate and chain level inefficiencies. As supply chains often cut across corporate structures vertically and horizontally and involve both in-house and the services of third-party SC specialists, the relationships of involved stakeholders are critical in delivering cost effective SCM.
- 3.4 **A SCM strategy:** must address questions of operating control (for e.g. whether it should be centralised, decentralised or shared); delivery scheme (whether direct delivered or cross dock- i.e. disassembled from supplier delivery and then re-assembled in depot for onward delivery); mode of transportation (e.g. truck, parcel, rail, or intermodal transport- container on a flatcar, ocean freight, airfreight); replenishment strategy (e.g., pull, push or hybrid); and transportation control (e.g., owner-operated, private carrier, common carrier, contract carrier, or 3PL- third party logistic contract service organisations).
- 3.5 **Planning of logistical activities:** Efficiencies in loads (for example, through scheduling of full trucks) are often sought, but there is a trade-off with inventory holding costs to collect and store which may increase total logistics costs. A total systems approach when planning logistical activities helps in managing trade-offs and is key to developing the most efficient and effective logistics and SCM strategies.
- 3.6 **Information:** is critical in SCM and integration of processes through the supply chain to share valuable information, including demand signals, forecasts, inventory, transportation, potential collaboration and so forth. Effective SCM means managing and coordinating the movement of materials, information and funds across the supply chain. Product flow can be uni and bi-directional, but it is essential that information flows both ways freely and effectively.
- 3.7 **Consolidation and centralisation:** There has been a shift (most markedly in FMCG- fast moving consumer goods) from direct delivery to regionally controlled distribution, incorporating regional and national distribution centres. In sectors such as agri-food this marked a change in the balance of power between retailers and suppliers and allowing greater levels of efficiency, reduced inventory levels and lead times. Further efficiencies and cost reductions occurred in FMCGs when retailers used third-party logistics (3PL) services.

- 3.8 **Computerisation:** In the corresponding period of time there has been a substantial development and investment management of information beginning with computerised electronic data information (EDI) to today's computer controlled warehousing, satellite vehicle tracking and radio-frequency identity controlled inventory management (RFID).
- 3.9 **Inventory control:** Simultaneously with computer control, organisations have further reduced inventory levels in the supply chain using just-in-time approaches; instead of bulk deliveries to regional distribution centres. Customers may demand smaller, more frequent deliveries. This step greatly has reduced inventory levels held in regional distribution centres but has also highlighted the increasing impact of logistics on direct product costs, as well as the importance of collaboration within the supply chain as a tactic to minimise costs.
- 3.10 **In Fast Moving Consumer Goods (FMCG):** retailers began to focus on primary distribution to warehouses or regional distribution centres requiring suppliers to channel orders through primary consolidation centres (PCC) operated by third-party firms. Other initiatives have included the development of backhauling of loads to reduce the frequency of returned empty vehicles. Factory gate pricing (FGP)- the ex-works price for a product plus the cost of transport and optimisation by the purchaser, allows retailers greater control of inbound distribution.
- 3.11 **Collaboration:** remains relatively new within supply chains it has been greatly informed by work on collaborative planning, forecasting, and replenishment (CPFR) activities developed in the 1990s. Studies across several industrial sectors including show that collaboration enhances innovation and performance for collaborating firms but demands a collaborative culture (i.e., propensity for collaboration), trust, mutuality, and information exchange as well as senior management support and sufficient resources. Area for collaborative development are, for example, with RFID where RFID tags and transmitters can enhance timely information sharing Internet-based tracking systems; shared pallet networks and regional and the common use of standardised replenishment trays and roll cages.
- 3.12 **Future sharing of Supply Chain resources:** The profusion of third parties in SCM: creates the environment for collaboration across as along the supply, but the direct has been vertical and single customer dedicated and driven by powerful customers (such as retailers) rather than sharing of facilities by suppliers for a range of customers. Some have argued that collaboration will be more likely if external factors such as resource shortages, legislation and social and environmental pressures exert a more pressing influence. Rising commodity and energy costs, combined with increasing environmental legislation, also could force supply channel lead organisations into radical action to manage their costs more efficiently and perhaps pursue more shared SCs.
- 3.13 **4PL:** Such integrated collaboration is termed Fourth-party logistics (4PL). 4PL relies on an outsourcing provider to neutrally manage the entire logistics process for contributory partners sharing facilities. The major restriction to the development of 4PL is a (perceived) loss of power by channel lead organisations that are used to directing distribution services dedicated solely to themselves and who fear loss of control.
- 3.14 **Reduced sourcing and channel power:** Related to the consolidation and centralisation issue is the general business trend and specific supply chain trend towards a reduced-source model. In FMCG, powerful retailers develop exclusive relationships with fewer, favoured, single-source or dedicated partnerships. In turn, suppliers are locked or tied in to the relationship in a type of vertical channel quasi-integration. This owes its origins to the lean-thinking concept pioneered by Toyota in car manufacturing. This approach can bring both benefits in the reduced cost of doing business (transaction costs) between fewer, dedicated channel organisations who work

closely together, and negative implications in terms of power-dependency and exclusion of other players.

3.15 **The ‘top five’ issues in SCM:** According to the Supply Chain Council (SCC) (<http://supply-chain.org/top-supply-chain-challenges>), the current most common supply chain challenges are:

1. **Customer service:** SCM traditionally identifies ‘Six Rights’: Right product in the right quantity and in the right condition with the right documentation to the right place at the right time at the right price. This seemingly straightforward formula is tested by the demands of trade-offs between the components, the challenging and variable demands of customers and the ever-expanding context of global SC service.
2. **Cost control:** Supply chain operating costs are continually under pressure (rising fuel and freight prices, long and global SCs, implementation of new technology, rising labour costs, regulatory requirements).
3. **Planning and risk management:** Supply chains need to adapt and respond to market changes (for e.g. new product launches, global sourcing and corporate chain rationalisation). In addition, supply chain risks must be identified and quantified.
4. **Supplier/partner relationship management:** Complex physical and organisational/ stakeholder networks of business (involving primary, in-process and value-added goods and combinations of own and contract service logistics mean that SCs rely on the quality of the relationships between organisations and effective two-way communications).
5. **Talent:** There is high demand and often shortfall talent to meet the demands of key competencies required for supply chain management roles and the progression of key skill sets need to be managed effectively.

4. GREATER LINCOLNSHIRE'S TRADE AND EXPORT PROFILE

International Ownership of Greater Lincolnshire Firms

- 4.1 Across Greater Lincolnshire, non-UK owned firms account for around 0.6% of the total business population. This is lower than for the wider East Midlands and Yorkshire regions, as well as for Britain overall. Within Greater Lincolnshire, there is significant variation in the proportion of non-UK owned businesses, with North East Lincolnshire and South Kesteven having the largest proportion.
- 4.2 Despite being low in number, the data shown in table 1 suggests that the contribution of non-UK firms to both employment and sales turnover is significant in Greater Lincolnshire. This perhaps reflects the relatively large size of transnational corporations when compared indigenous companies. The contribution of non-UK firms to the economy of North East Lincolnshire is particularly strong, accounting for 33% of all sales turnover. This perhaps relates to the strength of the seafood and chemicals industries in this area, both of which are highly internationalised. Similarly, non-UK firms make a strong contribution to the economies of South Kesteven and North Lincolnshire. By contrast, non-UK firms make a low contribution to employment and turnover in Boston and East Lindsey.

Table 1: Non-UK Owned Firm as a % of Businesses, Employment and Turnover

	% Businesses	% Employment	% Turnover
Boston	0.5	NA	NA
East Lindsey	0.2	1	NA
Lincoln	0.9	1	5
North Kesteven	0.4	3	5
South Holland	0.5	3	7
South Kesteven	1.0	7	16
West Lindsey	0.5	NA	12
North East Lincolnshire	1.0	11	33
North Lincolnshire	0.8	9	15
Greater Lincolnshire	0.6	5	13
Yorkshire and Humber	0.8	16	19
East Midlands	0.9	12	20
Great Britain	1.2	14	36

Source: Count, Employment and Turnover of VAT and/or PAYE based Foreign Owned Enterprises, ONS, 2010

Greater Lincolnshire's Export Profile

- 4.3 We have considered the scale of the key sectors in Greater Lincolnshire by number of employees in terms of the most significant exporting sectors in the East Midlands and Yorkshire and Humberside regions. Because trade data is not available below regional level, we have extrapolated the Regional Trade in Goods Statistics (which shows value of exports) to the Lincolnshire and North/North East Lincolnshire geographies using sector employment data. This enables us to get a big picture view of the number of Greater Lincolnshire employees in sectors with significant exporting profiles. In order to do this, the Standard Industrial Trade Classification (SITC) data has been translated across to BRES 2007 SIC categories. The methodology for this is included as Appendix 3.

4.4 Because Greater Lincolnshire falls into two regions, we have looked at trends in exporting and employment across Lincolnshire in the context of the East Midlands, and North/North East Lincolnshire in the context of the Yorkshire and Humber. We have compared the trade figures against the national average to map any discernible variations between the regional and national scale of trade in each SITC. We have not been able to develop an SIC match for the animal and vegetable oil and other commodities SITCs. However, these form a small proportion of all trade in both the Yorkshire and Humberside and East Midlands regions.

England

4.5 As the graph and table below show, export of manufactured goods – categories 6-8 plus chemicals category 5 - are the major areas of export activity. Machinery and Transport is very clearly the most significant area of export activity. All these categories show a decline in 2009, linked to the worst impact of the recession, but have subsequently all showed an upward trend since then.

Graph 1 – Value of exported goods for England (£ million)

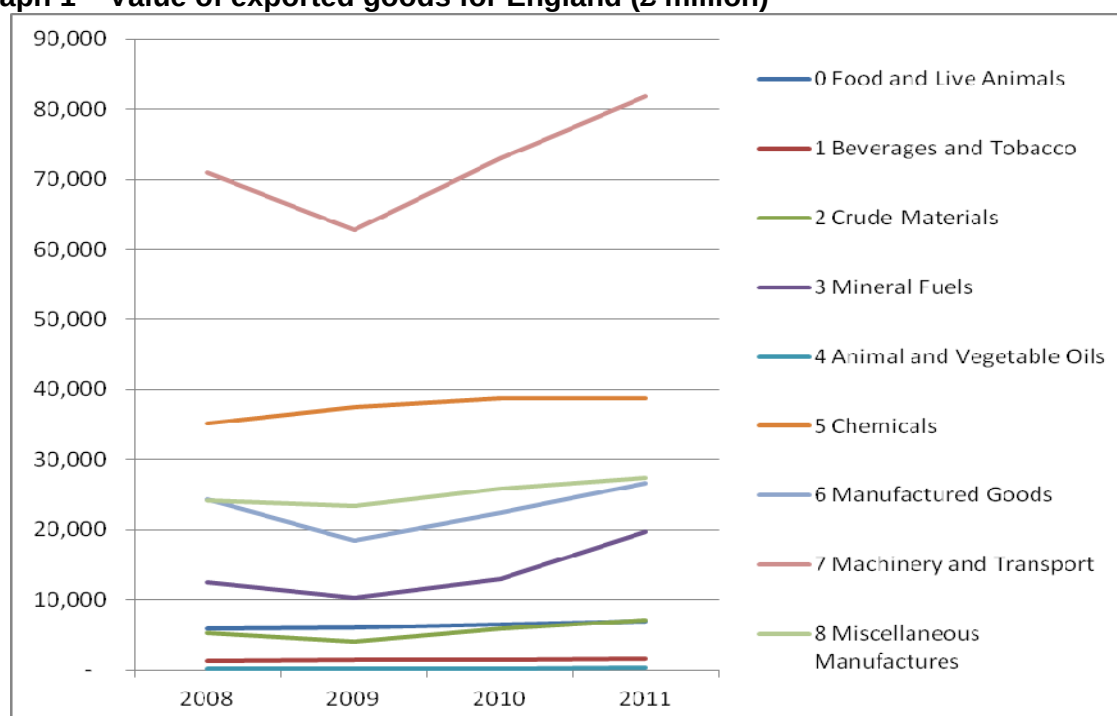


Table 2 – Value of exported goods: England

Figures in £ million	2008	2009	2010	2011
Exports by SITC Section				
0 Food and Live Animals	5,862	6,026	6,409	6,929
1 Beverages and Tobacco	1,236	1,423	1,390	1,627
2 Crude Materials	5,232	4,017	5,822	7,106
3 Mineral Fuels	12,393	10,181	12,917	19,712
4 Animal and Vegetable Oils	189	189	230	297
5 Chemicals	35,208	37,544	38,719	38,752
6 Manufactured Goods	24,242	18,380	22,384	26,695
7 Machinery and Transport	70,930	62,807	72,969	81,873
8 Miscellaneous Manufactures	24,134	23,270	25,848	27,450
9 Other commodities nes	757	777	824	1,073
Total Exports	180,184	164,613	187,513	211,514

The East Midlands

4.5 The East Midlands is similar to the national picture in terms of its export sectors, with one key variation. Food and live animals are a more significant sector; fifth most important compared with sixth for England as a whole. This is important in the context of the high proportion of employees in Lincolnshire employed in the agri-food sector.

Graph 2 – Value of exported goods for the East Midlands (£ million)

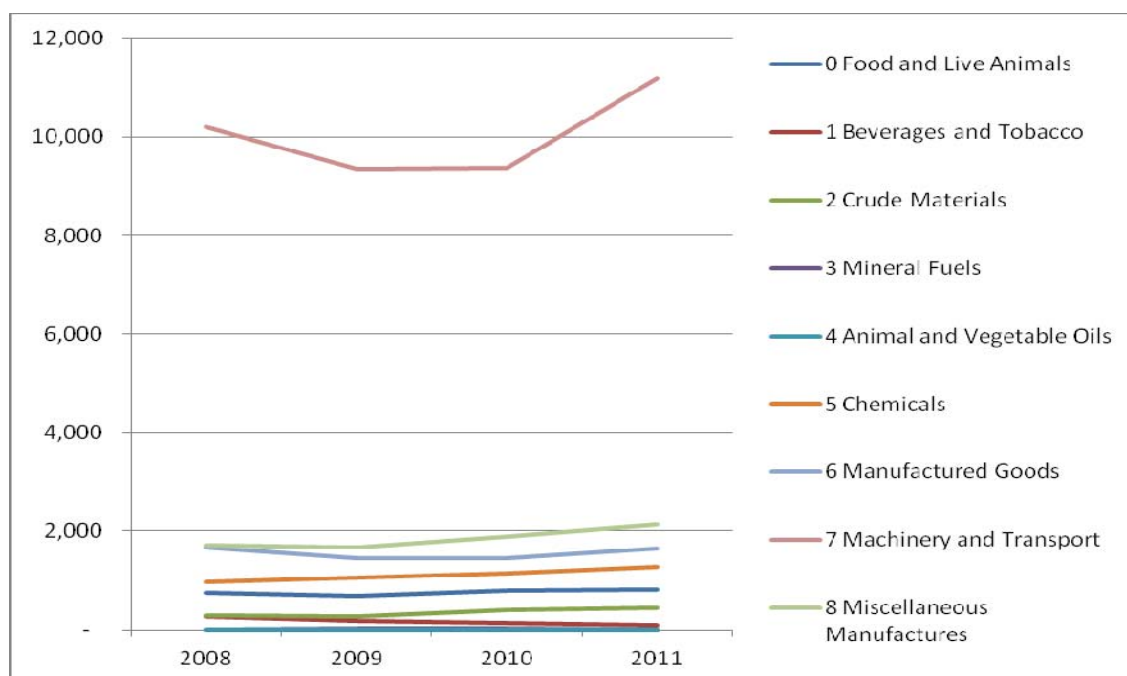


Table 3 – Value of exported goods for the East Midlands (£ million)

Figures in £ million	2008	2009	2010	2011
Exports by SITC Section				
0 Food and Live Animals	745	674	784	813
1 Beverages and Tobacco	257	176	137	98
2 Crude Materials	291	264	395	450
3 Mineral Fuels	10	15	20	14
4 Animal and Vegetable Oils	12	7	6	5
5 Chemicals	974	1,054	1,134	1,277
6 Manufactured Goods	1,667	1,461	1,450	1,655
7 Machinery and Transport	10,215	9,352	9,361	11,181
8 Miscellaneous Manufactures	1,723	1,679	1,891	2,141
9 Other commodities nes	28	41	33	39
Total Exports	15,923	14,724	15,210	17,673

4.6 Trade in the East Midlands has remained fairly constant between 2008 and 2011, at 8-9% of the England figure. After 2009, the key export sectors in the region have not grown as at strong a rate as these sectors nationally.

Yorkshire and Humberside

4.7 Although larger in terms of population and economic scale, the Yorkshire and Humberside region has a weaker exporting record than the East Midlands. It follows the same trend in terms of the significance of manufacturing as the East Midlands and England; its highest category of exports is in Machinery and Transport. Interestingly, this is only a third of the size of that sector in the East Midlands. The importance of

Derby as an international centre, with Rolls Royce, Toyota and Bombardier, accounts for this difference although is not highly significant for this study specifically. A distinctive difference between Yorkshire and Humberside compared to the East Midlands and England is the export of mineral fuels which has grown significantly between 2008 and 2011. This is significant for Greater Lincolnshire in terms of the scale of this sector in North and North East Lincolnshire. This sector has been relatively constant as most of the work of the petro-chemical industry in North Lincolnshire relates to activities linked to UK consumption.

Graph 3 – Value of exported goods for Yorkshire and Humberside (£ million)

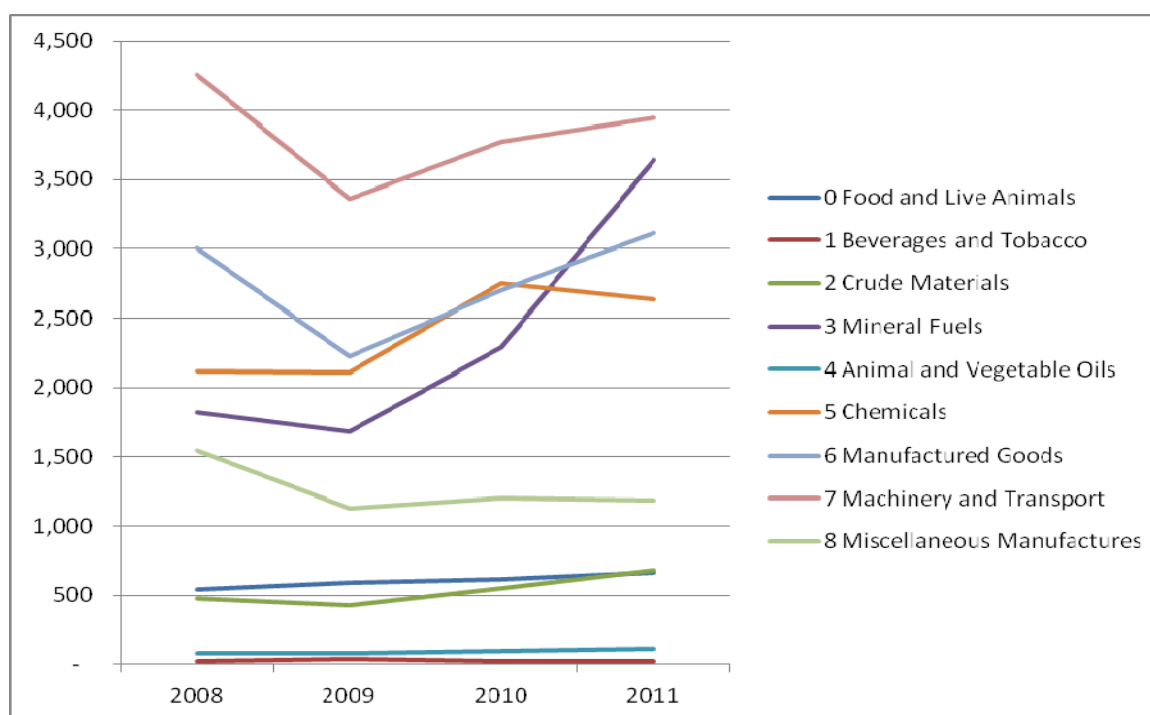


Table 4 – Value of exported goods for Yorkshire and Humberside (£ million)

Figures in £ million	2008	2009	2010	2011
Exports by SITC Section				
0 Food and Live Animals	543	588	615	669
1 Beverages and Tobacco	24	37	20	24
2 Crude Materials	474	428	548	679
3 Mineral Fuels	1,821	1,678	2,291	3,647
4 Animal and Vegetable Oils	78	82	92	113
5 Chemicals	2,115	2,113	2,749	2,640
6 Manufactured Goods	3,009	2,226	2,703	3,116
7 Machinery and Transport	4,260	3,366	3,773	3,944
8 Miscellaneous Manufactures	1,550	1,131	1,199	1,188
9 Other commodities nes	79	45	51	80
Total Exports	13,952	11,693	14,039	16,100

Lincolnshire

4.8 Graph 4 and Table 4 show the estimated value of exported goods for Lincolnshire, using regional export value data which has been extrapolated to county level using sector employment data. It should be emphasised that this analysis provides an estimated value of exports only, as the trend in exports locally may not follow the same trends in employment. Many sectors have seen a downward trend in employment over

the last three years, but export activity has been assisted by favourable exchange rates. Lincolnshire has a relatively small number of employees in the machinery manufacture sector. This is the fourth largest SITC comparator sector by number of employees, but across both comparator regions and England as a whole, comprises the largest area of exporting activity. Lincolnshire has significant numbers of employees in the other manufacturing and chemicals sectors which are key exporting sectors. Lincolnshire's significance as an agri-food employer comes out strongly, and shows the relative importance of this as an exporting sector for the East Midlands compared with Yorkshire and Humberside. The other significant variation between the profile of Lincolnshire and the region is the decline in the number of employees in the manufactured goods sector from 2009. This is in contrast to the regional and national trade picture where the value of trade in this sector has increased significantly. However, this can be attributed to the increasingly technology-driven nature of this sector, which means that the volume of employment is decreasing even if the overall value of exports is increasing.

Graph 4 – Estimated value of exported goods for Lincolnshire (£ million)

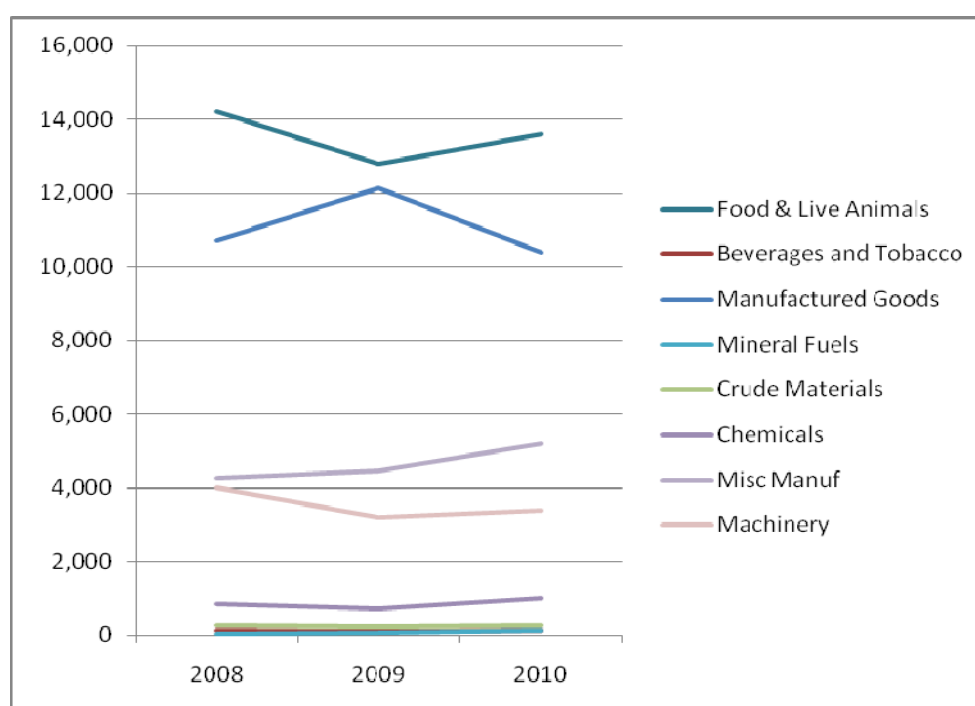


Table 5 – Estimated value of exported goods for Lincolnshire (£ million)

	2008	2009	2010
Food & Live Animals	14,209	12,799	13,582
Beverages and Tobacco	140	113	139
Manufactured Goods	10,700	12,134	10,387
Mineral Fuels	30	57	119
Crude Materials	275	235	250
Chemicals	857	721	1,001
Misc Manuf	4,272	4,459	5,206
Machinery	4,012	3,201	3,371

North and North East Lincolnshire

4.9 The data for North and North East Lincolnshire for key export categories suggests a significant number of employees in the agri-food sector. Whilst food is a relatively small component of the value of exports in Yorkshire and Humber, this suggests North and North East Lincolnshire play a key role in the overall food and live animal trade taking place in the region. Manufacturing is a real strength in this region, with the number of employees in this category (18,864) significantly higher than in Lincolnshire (13,297). North and North East Lincolnshire have 34% of all employees in Greater Lincolnshire but 41% of all those employed in manufacturing export activities.

Graph 5 – Estimated value of exported goods for North and North East Lincolnshire (£ million)

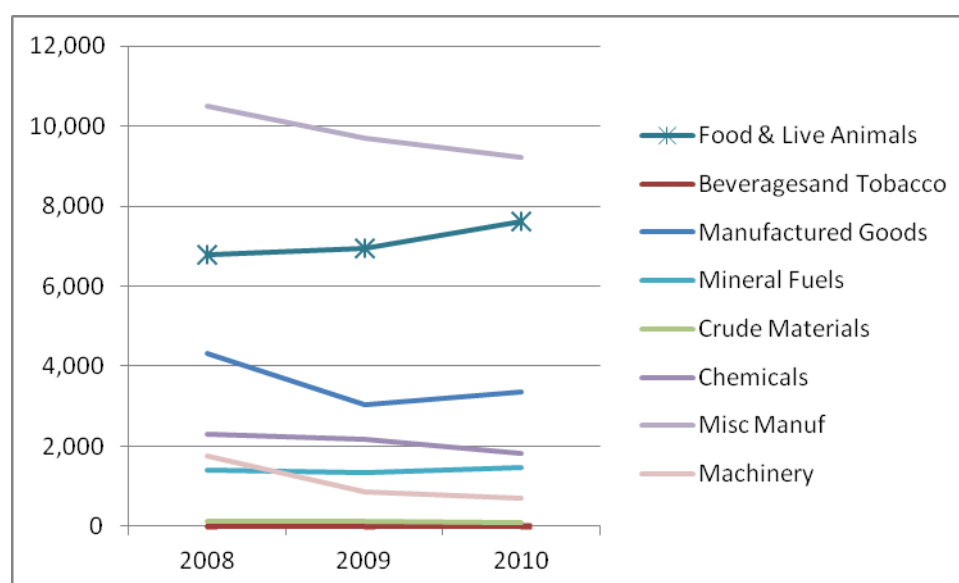


Table 6 – Estimated value of exported goods for North and North East Lincolnshire (£ million)

	2008	2009	2010
Food & Live Animals	6,783	6,956	7,632
Beverages and Tobacco	0	0	0
Manufactured Goods	4,319	3,033	3,358
Mineral Fuels	1,408	1,326	1,468
Crude Materials	106	134	103
Chemicals	2,301	2,187	1,807
Misc Manuf	10,496	9,705	9,232
Machinery	1,742	856	707

Summary

4.10 Taking a big picture view, Greater Lincolnshire has a relatively small number of employees in the key manufacturing sectors which are regionally significant in terms of exporting. The heaviest concentration of these employees is in North and North East Lincolnshire. The one sector where the whole area has a distinctive strength in terms of the number of employees and significant exporting character is agri-food.

- 4.11 There is a clear correlation between the high volume of agri-food jobs in Lincolnshire and the disproportionately significant value of food exports within the East Midlands as a region.
- 4.12 Following the 2008-9 recessionary period, exports have picked up less strongly across the East Midlands and Yorkshire and Humber regions than in England as a whole.
- 4.13 Whilst manufacturing is a real exporting strength across all levels of geography studied, it is still in decline overall in Lincolnshire in terms of numbers of employees.
- 4.14 North and North East Lincolnshire have a significant number of employees in the agri-food sector. This is interesting in the context of agri-food comprising a relatively small proportion of the overall exports within the Yorkshire and Humberside region.
- 4.15 Across Greater Lincolnshire there is considerably lower employment in manufacture of machines, which is the highest sector for exporting at the regional and national level. However, North and North East Lincolnshire do have significant and disproportionately significant levels of manufacturing employees, in the context of Greater Lincolnshire overall
- 4.16 Whilst exporting of mineral fuels is a strength in the Yorkshire and Humber region, this is not felt to be a major driver of the petro-chemical industry in North Lincolnshire, as most of its output is for domestic consumption.

5. SUPPLY CHAIN SURVEY OF GREATER LINCOLNSHIRE

- 5.1 This section provides an overview of the results received from the Supply Chain survey of businesses across Greater Lincolnshire. Detailed tables are included in Appendix 4. The survey achieved a total of 167 responses. It was distributed to all sectors of businesses via the Quarterly Economic Survey and local authority distribution lists, as well as via the NCFM and Humber Seafood databases, Engineering Breakfast, and the Renewables/Environmental Technologies task groups. For this reason, there is representation of businesses from both within the identified sectors, as well as sectors outside the remit of this project such as construction, business services, and retail.
- 5.2 The survey achieved 57 responses from the agri food sector, 12 in the engineering and 13 in the manufacturing sector. A relatively small number of responses were achieved in the logistics sector (7), health and care (6), and renewables (4). We have presented the findings as percentages but, given the small number of responses for some of the sectors, care is needed not to infer these findings to the broader sector populations.

Table 7 – Respondents by Sector Grouping

	Number	Percentage
Agri Food	57	34.1
Engineering	12	7.2
Other Manufacturing	13	7.8
Construction	9	5.4
Business Services	28	16.8
Logistics	7	4.2
Renewable Energy & Env Services	4	2.4
Retail and Other Services	31	18.6
Health & Care	6	3.6
Total	167	100.0

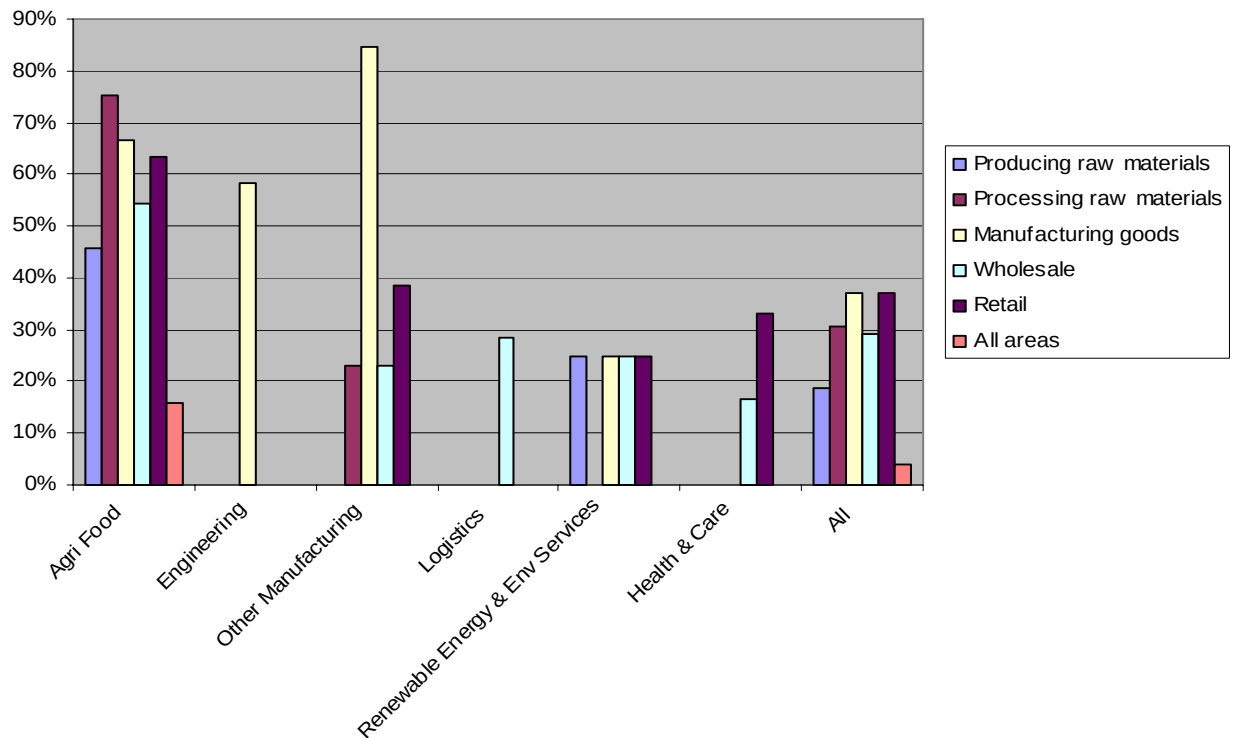
- 5.3 Responses were received from a broad distribution of company sizes, with the vast majority (90%) small and medium sized companies, which employ up to 250 people.

Table 8 – Respondents by Number of Employees

Number of employees	Frequency	Percentage
1-5	74	44.3
6-10	26	15.6
11-50	30	18.0
51-250	20	12.0
250+	16	9.6
No response	1	0.6
Total	166	100.0

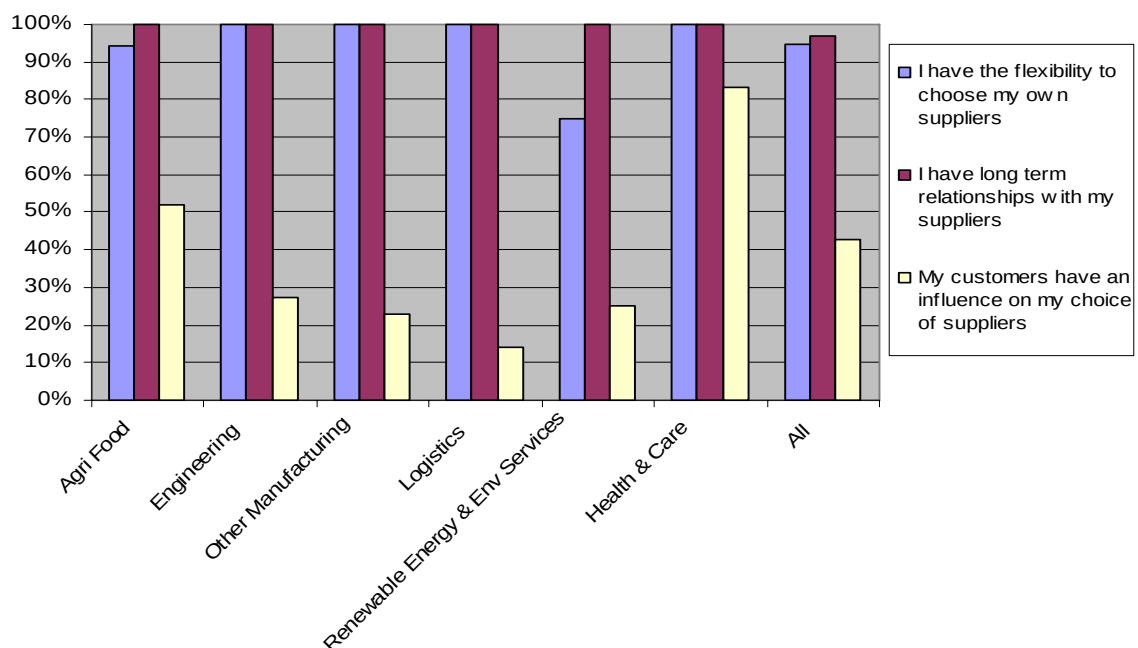
- 5.4 Graph 6 sets out the involvement of the companies in each sector in different stage of the value chain. Of all the sectors, agri food has the highest proportion of companies engaged across more than one activity, with 16% of companies that are involved in all areas from raw material production to retail. Consolidation of companies in this sector means that many companies are engaged in growing, processing, manufacturing, wholesale and retail. This is less evident in the other sectors. For manufacturing, firms are involved in processing, manufacturing, wholesale and retail. For renewable energy, this includes production of raw materials, manufacturing, wholesale and retail. This reflects the cross-sectoral nature of renewable/environmental technology industries, with links to energy production, manufacturing and retail of environmental goods. Health and care companies responding to the survey were primarily involved in wholesale and retail, although the sample of these firms was low.

Graph 6– Involvement in different stages of the supply chain by identified sector



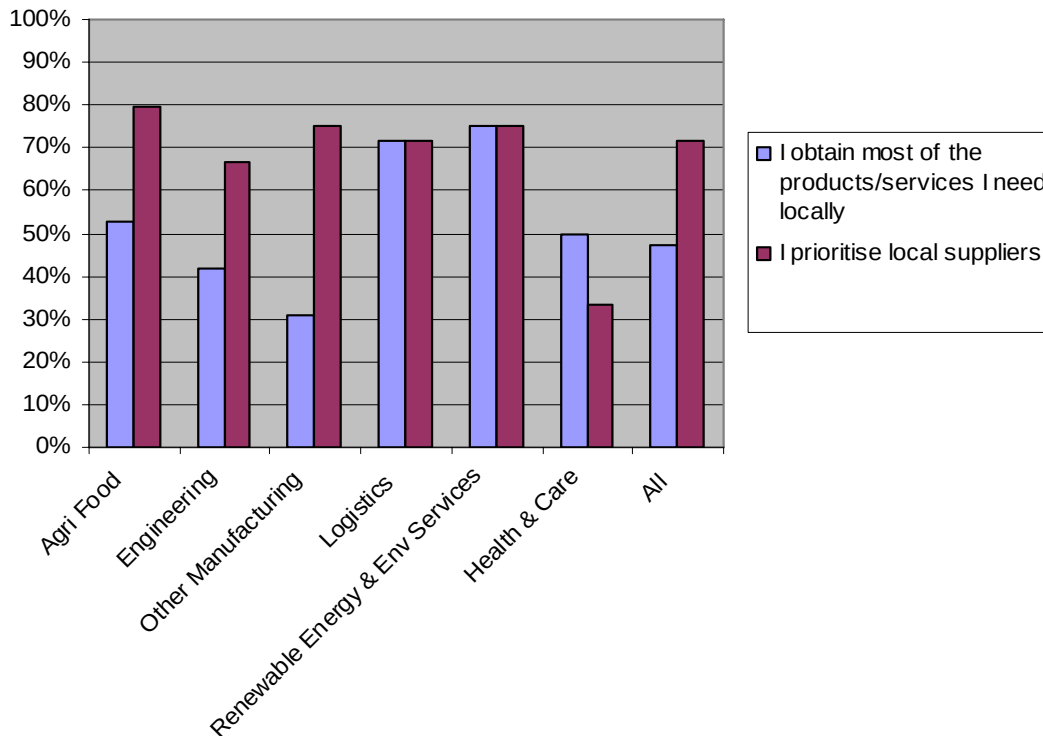
5.5 Graph 7 shows respondents' views on their supplier relationships, with the bars reflecting the proportion that agree or strongly agree with each of the statements. The vast majority (95%) have the flexibility to choose their own suppliers. All respondents in each of the identified sectors stated that they had long term relationships with their suppliers. 43% of all respondents said that their customers had an influence on their choice of suppliers. This was most prevalent in the agri food sector (51%), and in renewables (83%). Qualitative feedback suggests this is due to preferred suppliers lists in the case of agri food, and quality standards (such as ISO) in the case of renewables.

Graph 7- Supplier relationships

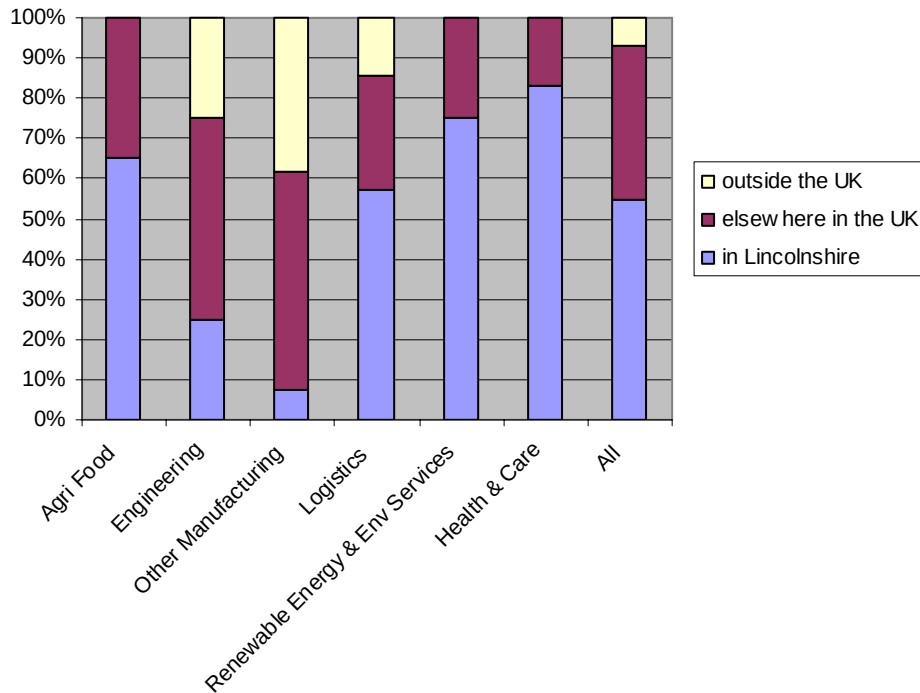


- 5.6 Graph 8 shows respondents' use of local suppliers. Overall, 47% are able to obtain the products/services they need locally, and 71% say that they prioritise local suppliers. Use of local products/services is highest in the logistics and renewables sectors, although the small sample size needs to be considered here. Just over half, 53% of agri food companies, say that they obtain most of their products/services locally compared with 41% in engineering and 31% in manufacturing. This reflects the national and international focus of the engineering and manufacturing sectors. Half of health and care companies use mainly local suppliers, although use of local suppliers for this sector does not appear to be a priority.

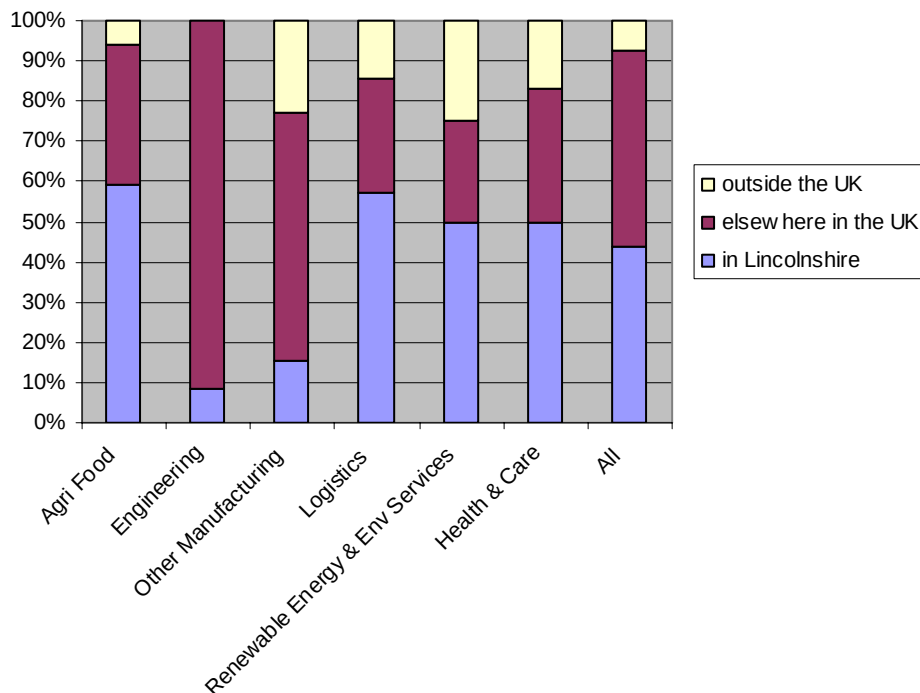
Graph 8- Use of local suppliers



- 5.7 Graph 9 shows where the majority of customers are located, for businesses in each of the identified sectors. For agri food, logistics, renewables, and health and care, more than half of respondents say that the majority of their customers are located in Lincolnshire. These companies also have a strong national customer base.
- 5.8 The picture is very different for engineering and manufacturing, with just 25% of engineering companies and 7% of manufacturing companies saying the majority of their customers are in Lincolnshire. The majority of these companies consider that they have a national customer base, with 25% of engineering and 39% of manufacturing companies having a mainly international customer base.

Graph 9- Where the majority of customers are located

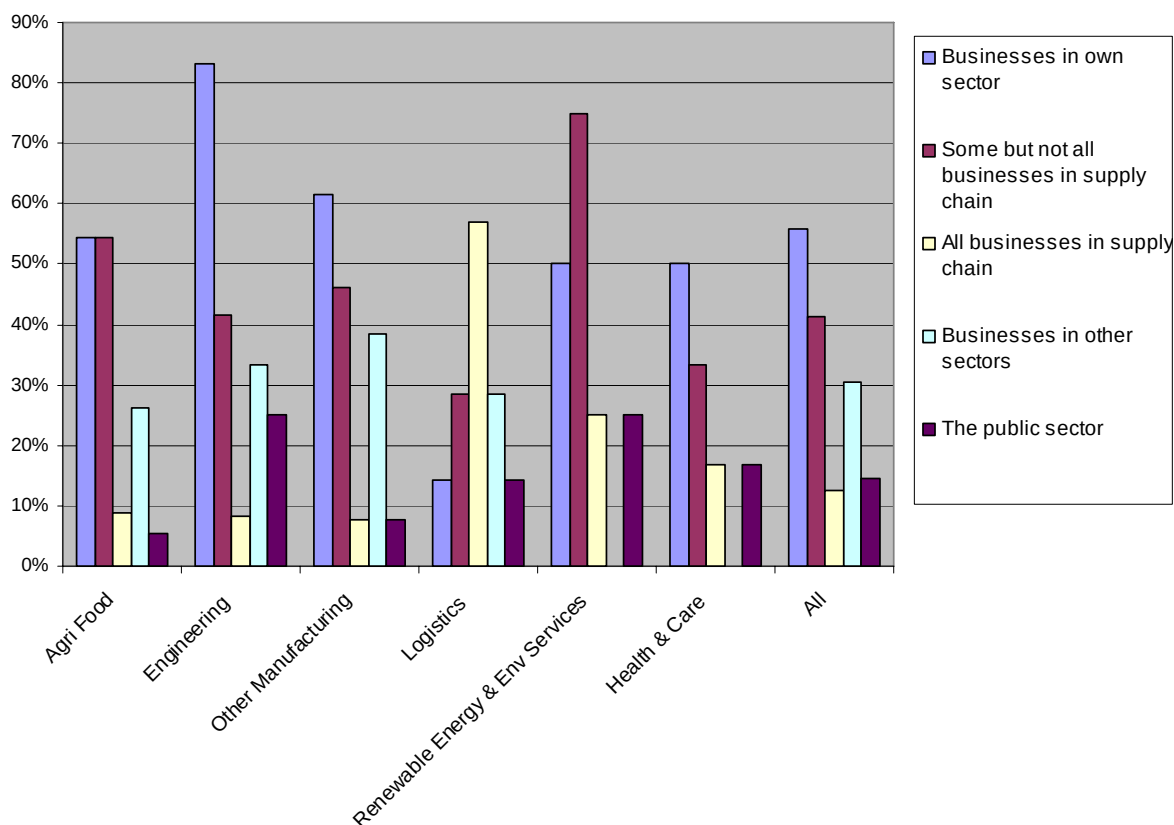
5.9 Graph 10 shows where the majority of suppliers for each of the sectors are located. More than half of respondents in the agri food, logistics, renewables and health and care sector indicate that the majority of their suppliers are based in Lincolnshire. Fewer than 15% of respondents in the manufacturing and engineering sectors rely on a Lincolnshire supply base. The vast majority of all sectors indicate that their suppliers are based mostly within the UK. Around a quarter of manufacturing and renewables companies state that most of their suppliers are based overseas.

Graph 10- Where the majority of suppliers are located

5.10 Graph 11 sets out who businesses collaborate, whether within their own supply chains, sectors, other sectors, or the public sector. The majority of respondents collaborate

with firms in their own sector, and 40% within firms in their supply chain. 12% collaborate with all firms in their supply chain, although this incidence is higher for logistics and renewables. The findings suggest there is little whole-chain collaboration taking place, although in logistics firms are more likely to work alongside both customers and suppliers. Around a third of respondents collaborate with businesses in other sectors, and this is highest for the engineering and manufacturing sector. Engagement with the public sector is highest in the engineering and renewables sector, but relatively low in other manufacturing and agri food.

Graph 11- Who business collaborate with: sectors, supply chains, and public sector



5.11 Tables 9 and 10 set out the views of the respondents on various aspects of Greater Lincolnshire as a location to do business. The tables present the proportion of respondents within each sector that have rated each element good or very good. Across all sectors, the most highly rated elements are availability of labour (58%), proximity to customers (57%), cost of land/premises (60%), and availability of land/premises (53%). The least well rated elements are availability of finance (29%) although many said that this was not relevant to them, digital connectivity (29%), and transport infrastructure (38%).

5.12 There was some variation between the sectors. For example, firms in the engineering sector rated labour availability, skills, proximity to suppliers, and help in complying with regulation, most poorly. Firms in the agri food sector has some of the lowest ratings for digital connectivity and transport infrastructure.

Table 9 – Views on Greater Lincolnshire as a location: supply chain issues

	Availability of labour	Skills within the local labour market	Proximity to suppliers	Proximity to customers	Presence of support sectors	Support in collaborating with other firms
Agri Food	55.6%	46.7%	47.9%	45.8%	54.3%	31.8%
Engineering	27.3%	27.3%	30.0%	36.4%	36.4%	27.3%
Other Manufacturing	75.0%	50.0%	38.5%	30.0%	70.0%	57.1%
Logistics	50.0%	50.0%	71.4%	83.3%	85.7%	60.0%
Renewable/ Env Services	100.0%	50.0%	75.0%	100.0%	75.0%	75.0%
Health & Care	50.0%	66.7%	50.0%	100.0%	20.0%	20.0%
Total	58.1%	48.9%	48.9%	57.0%	52.0%	41.2%

Table 10 – Views on Greater Lincolnshire as a location: other issues

Industry	Help in complying with regulation	Availability of finance	Transport infrastructure	Digital connectivity	Cost of land/ premises	Availability of land/ premises
Agri Food	40.0%	16.7%	35.6%	15.9%	36.2%	31.9%
Engineering	22.2%	14.3%	40.0%	36.4%	57.1%	57.1%
Other Manufacturing	70.0%	28.6%	41.7%	33.3%	66.7%	77.8%
Logistics	60.0%	50.0%	57.1%	42.9%	85.7%	66.7%
Renewable Energy & Env Services	50.0%	.0%	50.0%	.0%	100.0%	75.0%
Health & Care	50.0%	25.0%	16.7%	50.0%	100.0%	80.0%
Total	46.8%	27.8%	37.8%	28.9%	60.5%	53.3%

Summary

- Of all the sectors, agri food companies are most likely to demonstrate involvement in all areas of supply chain activity. This reflects the consolidation of companies in this sector, which means that they are increasingly engaged in all areas of food production, from growing and processing to wholesale and retail. This is indicative of a wider pattern within the agri food sector, with the increasing drive for efficiency meaning that smaller growers and producers are increasingly absorbed within larger companies. It also reflects the role of larger retailers in reducing the number of food suppliers. The implication of this for new, smaller producers is that it can be difficult to compete with large suppliers and negotiate access to retailer supplier chains.
- Across all the identified sectors, the majority of companies feel that they have the flexibility to choose their own suppliers, and that their supplier relationships are long term. However, companies in the agri food and health and care sectors are most likely to feel that their customers have an influence on their choice of suppliers. In the case of agri food, this is due to customers' preferred supplier lists, and in the case of health

and care and environmental activities, specified quality standards have a role to play in determining use of suppliers. Although the sample of the logistics companies was low in this survey, the close relationship of logistics and agri food suggests that logistics customers are also likely to influence their choice of suppliers. Again, this may restrict the opportunity for local suppliers that do not meet these requirements.

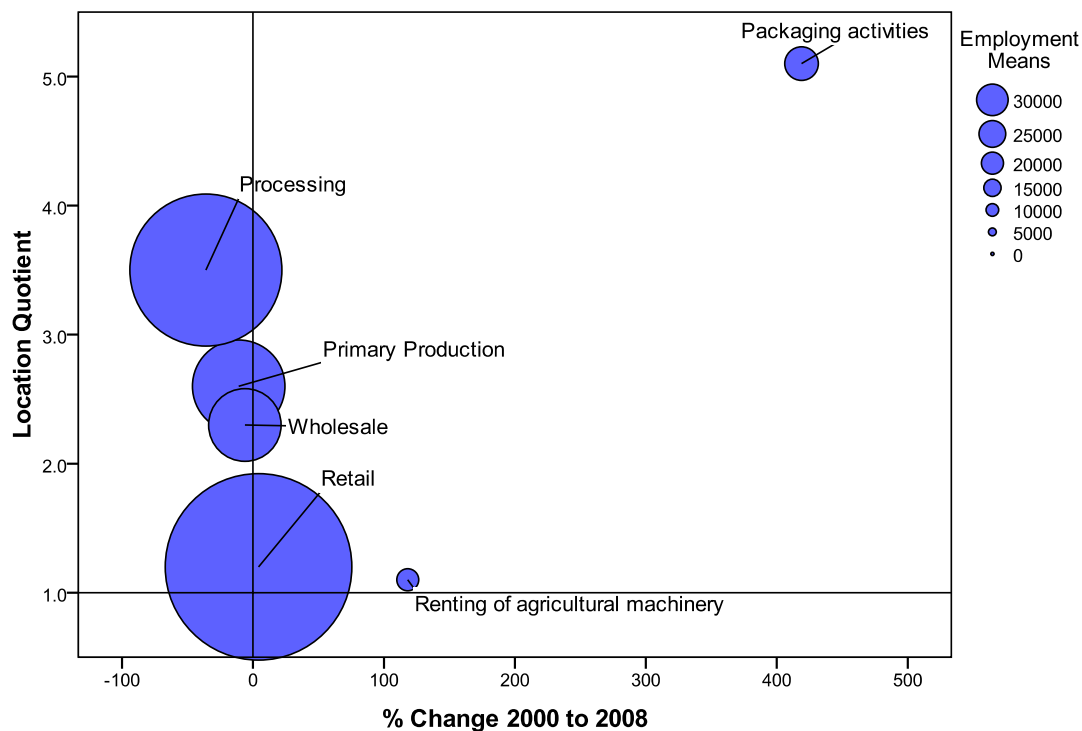
- The majority of companies in the agri food, engineering, manufacturing, and logistics sectors say that they prioritise local suppliers. However, fewer obtain most of their products/services locally. The sectors with the 'least local' supply base are engineering and manufacturing, which is related to the specialist nature of products/services sought, as well as the limited number of these suppliers in Lincolnshire. Around half of agri food companies say that the majority of their suppliers are local, which emphasises the locally embedded nature of this sector, with some processors reliant on local growers for example.
- The agri food, health, and environmental activities sectors have a predominantly local and national customer base. For engineering, manufacturing, and logistics there is a stronger national and international focus. These companies are, therefore, more distant from their customers which suggests that they are less tied to the local area.
- The survey suggests that not a lot of whole-supply chain collaboration takes place across the identified sectors. The exception to this is logistics, where logistics providers tend to provide the link between a supplier and its customer. Sector collaboration is greatest in engineering and manufacturing, while cross-sector collaboration is greatest in environmental activities and agri food. Reasons for a lack of collaboration include commercial sensitivity, not wishing to collaborate with firms that are competitors, and a lack of relevant firms locally. Few companies collaborate with the public sector – mainly those involved in engineering and environmental technologies - which suggests there is scope for this to be developed.
- In terms of sector issues, the engineering sector rates labour availability, skills, proximity to suppliers, and help in complying with regulation, most poorly. The agri food sector seems to be more affected by problems associated with digital connectivity and transport infrastructure. These appear to be a problem for companies located in South Holland, Boston and East Lindsey in particular, as evident through the interview analysis presented in the next section.

6. KEY SUPPLY CHAIN ANALYSIS – AGRI FOOD

Sector Overview

- 6.1 The agri food sector is a major employer in Greater Lincolnshire, accounting for 68,000 or 17% of jobs in the area compared with 9.5% in Great Britain. Greater Lincolnshire has a heavier than average distribution, using location quotients, in the key supply chain areas of primary production, food processing, wholesale and packaging activities. Graph 12 sets out the scale of employment for each of these activities, together with the percentage change between 2000 and 2008, and the location quotient (LQ).
- 6.2 There has been an overall decline in the number of people employed in the agri food sector of more than 11,000 or 14% of jobs across the LEP area between 2000 and 2008. The greatest declines have been in fish processing (-67%), fruit and vegetable processing (-28%), and wholesale of fruit and vegetables (-35%). The primary production sector has seen modest declines of around 1,000 or around 8% of jobs.

Graph 12: The Agri Food Sector in Greater Lincolnshire



Source: Annual Business Inquiry, 2008, Office for National Statistics

- 6.3 While the largest sub-sector of employment is retail, the LQ of 1.2 suggests that this is not a locally distinctive sector; a similar number are employed in food-related retail in Greater Lincolnshire as elsewhere.
- 6.4 Within non-retail related activities, food processing employs the greatest number of people, with just under 20,000 employees engaged in this activity and an LQ of 3.5. Primary production – which includes farm jobs, crop growing and horticulture, and rearing of animals – accounts for more than 12,000 jobs across the area and an LQ of 2.6. Wholesale of products such as grains, flowers, vegetables, fish and other foods is a key sub-sector, employing 8,000 people, which is tied in to processing and primary production activities. Although relatively small in employment terms, ancillary activities such as renting of agricultural machinery and packaging activities are fast growing sub-sectors. Packaging employs just under 2,000 people, having grown four-fold since 2000, and with a location quotient of more than 5.

6.5 Although agri food is an important sector for all areas of Greater Lincolnshire, there are a number of locally distinctive activities which include:

- The food cluster in South Holland, which accounts for 40% of all jobs in the area. More than 3,100 people are engaged in fruit and vegetable processing, and 1,100 in flower and plant wholesale. This is linked to the soil quality of the area which provides good growing conditions for vegetables and flowers. There are also a number of food manufacturing businesses in the area which supply to UK supermarkets and the food service sector. The overall agri food sector in South Holland has declined slightly, by 1,300 or 9% of jobs, between 2000 and 2008.
- The seafood sector based in Grimsby, which employs 2,900 people in the fish processing industry and almost 1,000 in wholesale of fish products. The sector is estimated to be worth £1bn to the local economy, and 70% of UK seafood is processed in Grimsby, which makes it a locally distinctive industry. The number of people employed in fish processing locally has declined significantly, however, and it now employs a third of the workforce compared with 2000.
- Poultry production and processing around North Kesteven, which employs more than 1,100 people in the area, and more than 3,200 across Greater Lincolnshire.

National Context

6.6 **Food:** according to the UKTI, food and drink represents the largest manufacturing sector in the UK¹. This is a sector that is developing an export profile which continues to grow even throughout recession. Key export products include meat, dairy, seafood and value-added grocery products. The sector's principal markets include the USA, Canada and – increasingly – countries in the Middle East and Asia. Recent issues affecting the sector include increasing commodity prices, a drive to increase efficiency and minimise waste by large retailers, and changing customer preferences – such as a reduction in consumption of fresh fruit and vegetables².

6.7 **Farming:** By comparison, farming makes a low contribution to the national economy, at 0.5% of income³. This follows a long-term downward trend in the economic contribution and employment created by the sector. Nevertheless, UK agriculture is closely linked with a number of current big picture issues and opportunities. These include concerns about food security and food quality. Farming has a strong role to play in climate change measures, including energy crops, water use, biomass and wind energy. Farming and local food are closely linked to a growing rural tourism agenda, with farming playing an integral role in how the countryside is perceived, and its ongoing maintenance and amenity⁴.

Focus of Research

6.8 Our research into the agri food supply chain has focused on companies in the agricultural grower, seafood, fresh produce processing, food manufacturer and retail sectors of Greater Lincolnshire.

6.9 The details of the businesses that participated in detailed face-to-face interviews have been anonymised to avoid disclosing commercially sensitive information. These businesses include:

¹ UK Trade and Investment, 2012

² DEFRA, *Food Statistics Pocketbook*, 2010

³ DEFRA, 2010, *Agriculture Statistics*

⁴ AgricultureUK, 2012

- **Agfood 1:** a grower of arable and vegetable crops, with 600 hectares of land in the south of Lincolnshire. Agfood 1 is a family business, which has been in operation since the 1950s.
- **Agfood 2:** a specialist supplier of vegetables and specialist ingredients (such as pureed, roasted, and smoked vegetable products) to retailers and food service groups. Agfood 2 was established in 2000 and is based near Boston. The company currently employs 170 staff.
- **Agfood 3:** supplier of fresh potatoes and prepared potato products to retailers and food manufacturers. The company was established in near Lincoln in 1968, and currently employs 300 people locally, 160 in Scotland, and 140 in Somerset.
- **Agfood 4:** Growers and processors of vegetables, including potatoes, brassicas and onions. The company was established in 1898, and has since expanded and acquired 5 sites across Cambridgeshire and Lincolnshire and one in Spain. It employs 800 people in the UK, and 400 in Spain.
- **Agfood 5:** an independent retailer, which was established in 1861. It employs 2,500 staff and operates 74 food stores across Lincolnshire.
- **Agfood 6:** an importer and processor of fresh Icelandic fish, which was established in Lincolnshire in 1996. Agfood 6 is owned by a New Zealand based company.

6.10 Businesses and stakeholders consulted as part of wider discussions across the three projects, and as part of the agri food focus groups include:

- Simon Dwyer, Seafox
- Kevin Woods and Simon Worth, QV Foods
- Sian Thomas, Fresh Produce Association
- Andy Darley, Grimsby Institute
- Martin Righaul, Growers Association, Louth
- Dave Robinson, North East Lincolnshire Council
- Janet Godfrey, Farmer
- Abbeydale Food Group
- Stevie Jackson, EMDA i-Net
- Helen Scott, Select Lincolnshire
- Amanda Davey, Tastes of Lincolnshire

Local, Regional and Global Linkages

6.11 **Ownership:** Most of the companies that interviewed had been founded in Lincolnshire and their activities continue to be focused in the local area. Only Agfood 4 has its headquarters outside Lincolnshire, although in Peterborough, which is in close proximity. Both Agfood 4 and Agfood 3 have operations elsewhere, with Agfood 3 operating sites in Scotland and Somerset, and Agfood 4 operating a site in Spain. The local ownership of these companies does not reflect the full picture of the Lincolnshire food sector, however. Many local manufacturing firms are nationally and internationally owned, such as Bakkavor, Vion, and Princes. The seafood sector in particular has a strong element of international ownership. For example, Env 6 is owned by a company based in New Zealand.

6.12 **Suppliers:** The suppliers identified from the agri food interviews are shown in the Agri Food Supplier Linkages Table, below. For fresh produce processors and packers, proximity to growers based in the region provides a number of business advantages, particularly around supply and distribution. This is significant for companies such as Agfood 3 and Agfood 4, which source materials from growers in Greater Lincolnshire

as well as from elsewhere in the UK. However, some of the food manufacturers do not identify such links as significant, highlighting the commercial need to be flexible in the sourcing of raw materials.

- 6.13 With regard to the seafood sector, supply of fish is predominantly international with Iceland, Norway and – increasingly – Indonesia and China providing particularly high volumes of supply. In the case of Env 6, however, fish is predominantly imported from Iceland and Norway.
- 6.14 Due to the diversity and complexity of their products, food manufacturers of added value products tend to source their ingredients on a national and international basis. For operational ease/efficiency, food businesses will tend to prefer to be supplied by UK based businesses when the products required are available and at a competitive price. Fresher ingredients (for example chilled vegetables, meats and dairy products) tend to be UK sourced, but it should be noted that there is significant international competition for the supply of all ingredient groups, especially in frozen, dried and ambient delivery formats where loss of some shelf life during transit is not a major issue. For example, Agfood 2 sources the majority of its ingredients, which can range from garlic to sweet potatoes, from overseas suppliers.
- 6.15 Product packaging for all sectors tends to be sourced on a UK or international basis, and following the trend of ingredient suppliers, the packaging industry is increasingly seeing consolidation to fewer larger providers benefitting from economies of scale, but perhaps limiting innovation and R&D for all but the largest customers.
- 6.16 The interviews identified a number of support activities that are supplied from within Greater Lincolnshire, including labour through organisations such as Red Rock and Vital Recruitment. Many of the firms in the south of Lincolnshire state that they employ both UK and Polish/Lithuanian employees. Freight is sourced from both local and national sources, with local providers including Folwer Welch, Browns Transport, Freshlink, and Cartwright Brothers. This emphasises the strong ties between the agri food and logistics sector in Greater Lincolnshire. Other locally used supplies include agricultural machinery and agronomy services. Utilities, cleaning chemical supply, and pest control services tend to be sourced on a national basis.

Agri Food Supplier Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Growers/ Raw Materials: EM Howard, Patrick Dean, Godfrey, Elsom Seeds, numerous farmers in Lincolnshire Packaging: Ultimate Packaging, Paragon Labels Other Services: Ideal Lincs, Folwer Welch, Browns Transport, Freshlink, Burden's Farm Equipment, Hutchinsons, Red Rock, Vital Recruitment, Solstor Transport, Cartwright Brothers
UK	Growers/ Raw Materials: Fountain Foods (Upwell), MDC Foods (Luton), Seminis (Cams) Packaging: Amcor (Worcester) Other Services: Stihl (Surrey), Eco Lab UK, Concordia (YSV) Ltd (Brighton), Interfreight (Felixstowe), Mills and Reeve (Norfolk), Langley Training (Oxfordshire), McLaughan (Scotland), Weston and Sons (Somerset)
International	Growers/ Raw Materials: Weifan Xinsheng (China), Zhucheng Zhongkang (China), Juye Goodfarmer (China), Shandong Weifang (China), Vick Family Farms (USA), Farmpak (USA), Springacre (USA), Coveg (South Africa), Proplum (South Africa), Patrysvlei Farms (South Africa), fish suppliers in Iceland

- 6.17 **Customers:** The customers identified from the agri food interviews are shown in the Agri Food Customer Linkages Table, below. The agri food sector in Lincolnshire has a significant national focus with regard to the distribution of its products, with a national spread of customer locations. Among the companies interviewed, a significant proportion of their customers were based either elsewhere in the UK, and a number had customers outside of the UK.
- 6.18 While business to business interactions do occur across the range of food businesses within Greater Lincolnshire, these tend to be more significant to fresh produce growers where the end product requires further processing or packing before supply to the final customer. This is particularly the case for local suppliers to Agfood 3 and Agfood 4, as well as for local growers such as Agfood 1.
- 6.19 Nationally, key customers for several of the companies that we interviewed (including Agfood 3, Agfood 4, and Agfood 6) are the major retailers. These companies vary in the balance of their customer portfolio, with Agfood 3 predominantly supplying Tesco and Agfood 6 exclusively supplying Waitrose. By contrast, Agfood 4 supplies most of the major supermarkets. While the supermarket chains dominate the agri-food industry, it is unusual for one manufacturer to supply all major retailers at the same time due to retailer preference for sole-supply sites (to ensure a high degree of leverage/purchasing power). Whilst in such arrangements the processor/manufacturer will rely on a relatively small number of customers, there is sometimes seen to be a mutual reliance between retailers and suppliers, especially when the retailer is supplied by the larger food groups/ businesses (a critical size is reached where it would be very difficult to source such high volumes from anywhere else).
- 6.20 On a national basis interactions are also significant to a number of companies where the end consumer is not being supplied directly, but the product supplied is itself an ingredient into a further processed or added value product. Large scale examples of such businesses include Master Foods, Premier Foods, Bakkavor and Northern Foods.
- 6.21 Although the vast majority of customers for the companies we interviewed were national, there was evidence of a growing international linkages brought about the overseas expansion of Tesco. Suppliers of products for further processing also had a number of customers in Europe, such as Unilever, Toro and Heinz.

Agri Food Customer Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Food manufacturers: QV Foods, Vion
UK	Food Retailers: Tesco, Asda, Sainsburys, Morrisons, M&S, Aldi, Lidl, Co-op, Waitrose, Lonsis, Nisa, Budgens Wholesale: Bookers, New Covent Garden Market, Food Service Groups Food manufacturers: Master Foods, Premier Foods, Bakkavor Northern Foods, Kettleby Foods, Baxters, Samworth Brothers, Greencore, 2 Sisters
International	Food Retailers: Tesco (Ireland, Hungary, Czech Republic), Carrefour (France) Food manufacturers: Unilever (Europe), Toro (Norway), HJ Heinz (Holland)

Supply Chain Interdependencies and Collaboration

- 6.22 **Supply Chain Interdependencies:** many retailers are sourcing from dedicated food manufacturing sites in the Lincolnshire region. Whilst typically operated on the basis of high volume supply, the retailer typically benefits from a high degree of leverage upon such business operating terms and conditions. Even where sole-supply sites are not the case, most interviewees cite the dominance of the major supermarket chains as being particularly influential in their sectors.
- 6.23 **Supply Chain Consolidation:** the study has highlighted consolidation of suppliers to most agri-food sector businesses. Economies of scale and an increasingly competitive market is typically leading to fewer larger suppliers. This is exemplified in a number of companies that we interviewed. For example, Agfood 4 acquired a site near Boston in 2008, and now operates across five sites in Lincolnshire and Cambridgeshire. Agfood 7 owns a number of local farms and fresh product companies.
- 6.24 **Supply Chain Integration:** – as our survey suggests, there are examples of whole supply chain integration within the agri food sector. A recent example of this is the announcement that Morrisons is to open a food processing plant in Grimsby. This reflects its decision to process its own fish, rather than to source fish from existing processing companies based in the Grimsby area. It is suggested that other major retailers, such as Tesco and Asda, are considering similar developments.
- 6.25 **Collaboration:** the fresh produce sector is particularly well supported by the Fresh Produce Consortium, Potato Council and a range of specific grower associations. These tend to highlight opportunities for collaboration within the sector. The farming sector is well developed in terms of grower group collaborations in sharing machinery, stores and utilising group purchasing power for the supply of key inputs such as utilities, sprays and fertilisers.
- 6.26 Distribution is sometimes approached on a collaborative basis, often led by the major supermarkets who are seeking the economies of scale in ensuring that suppliers are filling vehicles full on their route to the supermarket distribution depots.
- 6.27 The Humber Seafood cluster is a very well developed collaboration in the Grimsby area. Humber Seafood Ltd includes representatives from NE Lincolnshire Council, Grimsby Institute, Billingsgate Market, Youngs, and Whitby Seafoods, among others. The cluster has been successful in working together on a number of key areas, including education, international trade missions, and hosting seafood summits. The seafood cluster is the largest of its kind in Europe and was awarded 'Best Overall Cluster' by BIS in 2010.
- 6.28 Some food manufacturing businesses interviewed have looked at initiatives for collaborative sourcing, but tend to often find that they are already paying less than the initiative could achieve. Often as a result of the fact that the requirements of each food manufacturing business are complex, and therefore the purchasing models utilised have to be closely aligned and developed to the needs of that individual business to be as effective as possible.
- 6.29 Having said that, there is an overriding theme amongst the businesses interviewed that their operations are so busy there is very little time to be able to apply to developing relationships / synergies outside of the "customer – supplier" direct relationship.
- 6.30 Use of provenance branding is not seen to be widely established across larger processing companies in the region, often due to the fact that many Lincolnshire manufactured products are sold under the retailers' own brand. Select Lincolnshire is working closely with the major retailers in developing a provenance brand for Lincolnshire produce.

6.31 Some further processing businesses have highlighted an interest in developing group sourcing initiatives for aspects such as utilities alongside other Lincolnshire based businesses. Lack of time and contacts are cited as reasons why such ideas have not progressed further to date.

Agri Food Collaboration Linkages

Location	Identified Businesses and Organisations
Greater Lincolnshire	University of Lincoln, Lincoln College, Boston Chamber of Commerce, Select Lincolnshire, Tastes of Lincolnshire, Lincolnshire Forum for Agriculture and Horticulture, Nene Potatoes, Holbeach Marsh, Woldmarsh, Marshland Seafood specific: Humber Seafood Institute Board, Humber Trade Corridor Group. Retailer (supermarket) led supplier distribution collaboration projects have also been identified during this review.
UK	Durham University, CFRA (Campden Food Research Association), FDF (Food & Drink Federation), Langley Training (Oxfordshire), Nottingham University. NFU, range of Fresh Produce Grower associations. EFPF (English Food and Farming Partnerships), Green Shoots, UKTI, Potato Council
International	

Areas of Supply Chain Vulnerability

6.32 **Consolidation of suppliers:** In agriculture many of the smaller growers have dropped out over the past 10 years, mainly due to consolidation of farms. Small haulage businesses are also under pressure due to lacking the economies of scale of larger national competitors, and the fact that retail chains often want to dictate which haulier their suppliers use in an attempt to drive costs down.

6.33 Small packaging supply businesses are also seen to be reducing in the region. Again this is believed to be as a result of economies of scale and supermarkets restricting the number of their accredited suppliers.

6.34 Within the seafood sector there has been consolidation across the sector, from micro-businesses to the large processors. Automation has reduced employment levels but it has also improved productivity. There has also been an increase in the use of agency staff, which may be reflected in the decline in employment figures for the sector.

6.35 **Internationalisation of the seafood industry:** There is further risk of loss of fish processing to Boulogne in France. Consultees suggest that Boulogne has an advantage in the state aid it receives and, as result, has experienced 5 times the level of growth and investment of Grimsby. The threat is for Grimsby to lose fish processing industry share to other ports in Europe, such as Boulogne and Bremerhaven. Birds Eye has already moved to Bremerhaven.

6.36 **Short-termism of contracts:** a major general threat in the agri-food sector is seen to be 'short-termism' in buying decision making: range review and re-tender processes happen at increasing frequencies designed to drive down operating margins. With smaller businesses eventually being unable to compete, the reduction in number of potential suppliers could eventually re-balance retailer power. But in most categories

there is usually still choice for retailers to move their business to, so the outlook is for this approach to continue.

- 6.37 **Increasing international ownership:** some interviewees highlighted that buyers of UK businesses tend to increasingly be from overseas, therefore British businesses need to become more competitive on a global basis, not just on a UK basis. This highlights an additional threat to the region which is that whilst there may currently be many food manufacturing businesses in the area, there is no guarantee that they will always remain in the area, with acquisition and consolidation drivers often having the potential to force closure of manufacturing plants. This is illustrated in the closure of Kerry Foods in Grimsby which was announced earlier this year.
- 6.38 **Barriers to clustering:** Some of our interviewees in the south of Lincolnshire have suggested that Lincolnshire County Council and the district councils, the LEP and industry groups should be engaged fully in the ensuring the long term sustainability of the food cluster in Lincolnshire. However, there is also an acknowledgement that having "industry" fully engaged in this relationship is a challenge, especially large food manufacturers who are so particularly focused on their day to day operations rather than engaging with wider regional networks. This partly relates to the increasing international ownership of food manufacturers, discussed above, in which companies that are headquartered outside of the area may be less interested in engaging with local stakeholders.
- 6.39 **Availability of labour:** access to labour for field and factory operations continues to be a challenge for many businesses.
- 6.39 **Technical skills:** at the higher operational levels businesses are frequently reporting that it is difficult to source the right increasingly technical skills. Companies identify a need for the younger generation to be steered into the right training to provide these skills going forward. Middle and senior management roles are increasingly being seen as having to be "commuted in" to the county.
- 6.40 **Availability and cost of water:** For food growers and processors in the south of Lincolnshire, availability of water is an issue. Although this area is currently in drought, access to water availability is cited as a long term issue and, although a number of solutions have been explored, none has yet been found. Feedback from the agri food focus group suggests that the Environment Agency has restrictions on taking water from local rivers. Agri food businesses stated that irrigation schemes, including pumping water from Norfolk and Suffolk, could be explored.

Other Barriers to Growth

- 6.41 **R&D Facilities:** there is concern that only large multinational businesses have the capability to conduct research themselves, and that SMEs in the region are missing out on R&D opportunities as the UK continually reduces its spend in these areas. Growers in the region suggest that the county should increasingly utilise its agri-food strengths, believing that the county can play a part here in helping allocate support / funding to the food sector (including the need for research and development to promote business competitive advantage and productivity).
- 6.42 **Broadband access and speed:** for agri food businesses in the south of Lincolnshire, access to broadband and the speed of available broadband continues to be a concern.
- 6.43 **Exchange rates:** for businesses sourcing a high degree of their raw materials of an international basis currency movement is a constant threat. Food manufacturers and packers are often seeking to "contract ahead" to ease exchange rate fluctuations.

- 6.44 **Bad debts:** many businesses have highlighted that bad debts from customers is a threat to their own business that has to be monitored carefully. Securing credit insurance is a challenge encountered by a number of businesses.
- 6.45 **Bank interest rates:** are also often flagged as having the potential to pose a challenge to the many businesses who have set up and grown utilising borrowed capital.

Supply Chain Opportunities and Drivers for Growth

- 6.46 **Building on established clusters:** The Humber Seafood cluster is very well developed. However, there is no funding for inward investment activities. The cluster previously had funding from Yorkshire Forward, NE Lincs Council, UKTI, Humber Chamber, but this funding is no longer consistently available.
- 6.47 **Local provenance:** With regard to fresh produce, local provenance (e.g. potatoes from Lincolnshire) does not currently appear to be commonly utilised as a sales strategy. Though there are some supermarkets – such as Agfood 1 who seek to offer a section of goods sourced from the region, and some regional produce groups are seeking to further highlight the sales benefits of “provenance”. Farmers markets consistently provide an outlet for Lincolnshire based small business food products. “Select Lincolnshire” and “Tastes of Lincolnshire” have been seen to have had an impact in marketing local produce and raising the profile of the area.
- 6.48 **Support for smaller businesses:** Some businesses highlight a barrier to collaborating with local businesses is at the stage when regional businesses are extremely small and not yet geared up to supply effectively into larger scale opportunities. Many small businesses in the area would benefit from being offered advice and help in further developing their potential for supply.
- 6.49 **Joint purchasing:** Many Lincolnshire farming businesses are seen to be very collaborative. Examples being the formation of farmers co-operative groups for financial benefit and other supply opportunities. All driven by economics, examples include buying groups set up by farmers to gain economies of scale when purchasing resources such as fuel, fertilisers, sprays and electricity. Some manufacturing businesses have highlighted that they would be interested in initiatives to negotiate utilities and other supply costs with other businesses in the county if this could be facilitated. Time, resource and contacts currently limit the potential for developing such synergies.
- 6.50 **Fresh produce import at Immingham:** It is suggested by some businesses that chilled hubs at the Grimsby / Immingham ports would be beneficial to trade in the region. At the moment, the chilled hubs available are for seafood only.
- 6.51 **Morrisons seafood processing:** Morrisons are locating their seafood processing operation on the Europarc in Grimsby. This is expected to create more than 200 jobs and is a major opportunity for Lincolnshire region based potential suppliers.
- 6.52 **Supplying to local retailers:** There appears to be an opportunity for Lincolnshire agri-food businesses to increase supply to local, smaller retailers in addition to the predominantly major UK supermarket supply routes, which are envisaged to always be the dominant sales driver for the majority of the agri-food sector.
- 6.53 **Export of fresh produce:** There is currently little export of fresh produce but there is believed to be significant potential for this. Consideration of such opportunities will need research and review of markets, transport links and potential to manage exchange rate challenges.

Opportunities for the LEP to support/influence the sector

- 6.54 **Access to R&D:** In Lincolnshire, agri-food companies tend to be more innovative if they are larger food manufacturing businesses driven by competitive retail and food service markets. This innovation typically doesn't filter out to other small companies in the region due to the competitive markets. There is an opportunity for the LEP to facilitate access to new product development and other innovation linked resources for SMEs. This could build upon and highlight a network of specialist providers of such expertise in the region, which includes Grimsby Institute and the National Centre for Food Manufacturing.
- 6.55 Marketing aspects such as packaging and branding have been highlighted as making a significant difference to product value, therefore there is benefit in also working to make such skills available to the SMEs in the region who typically do not hold the knowledge or economies of scale to invest in such aspects alone.
- 6.56 **Linking food clusters/transfer of best practice:** The Humber Seafood cluster is well developed and is recognised as an example of best practice. There is an opportunity to foster linkages between this activity in North East Lincolnshire and the food sector in the south of Lincolnshire. Perhaps a key difference between the two clusters is that the Grimsby cluster is based primarily on seafood, which provides the basis for a strong and focused interest group, whereas the south Lincolnshire cluster incorporates a range of produce, from vegetables and flowers to ingredients and prepared meals. There are a number of areas in which the North East Lincolnshire and south Lincolnshire clusters could share best practice and work together, including promotion of Lincolnshire produce, training, and exploring new international trade opportunities.
- 6.57 **Infrastructure Improvements:** Transport and fuel costs are major issues for the cost of food production. Better roads continue to be an issue for businesses in the south and east of Lincolnshire. By contrast, transport infrastructure is not raised as an issue for the food sector in North East Lincolnshire, which is well connected by motorways. Transport infrastructure could be an issue for the LEP to lobby on as poor road networks are routinely mentioned during business consultations.
- 6.58 **Developing and retaining a skilled workforce:** Attracting labour and higher skilled staff is a constant theme across the businesses interviewed. What keeps food businesses competitive is the technical ability of the workforce. On average the food sector skilled workforce is ageing however. There is a great need to develop the next generation of agri food skilled workers and managers. In this respect, the sector faces similar challenges to the engineering, manufacturing and renewables sector. There is significant potential for a LEP review in this area.
- 6.59 **Highlighting the competitive advantage of food:** A number of businesses interviewed highlighted that the LEP may be advised to accentuate and further support the region's agri-food strengths. Whilst agriculture in Lincolnshire is clearly tied to the land, the further processing / food manufacturing businesses in the county are not as tied. Therefore further encouragement for them to remain within the county via initiatives such as improvement of transport and goods storage infrastructure, business financial and training support would help guard against any food manufacturing drift to other regions. For example, Northamptonshire possesses significant road and rail networks and is seeing an increase in fresh fruit and vegetable processor businesses in that region, possibly to the detriment of Lincolnshire.
- 6.60 **Developing of a buying group "hub":** Agricultural interviewees have highlighted an opportunity for Lincolnshire to be a central buying group "hub" for other less agricultural counties nearby (eg. Nottinghamshire) especially if good road corridors can be identified between the counties.

6.61 **Support for joint purchasing:** as mentioned earlier, some Lincolnshire businesses would be interested in initiatives to negotiate utility and other supply costs with other businesses in the county if this could be facilitated.

Agri Food SWOT Analysis

Strengths ▪ Seafood processing. 70% of UK seafood is supplied from the region. ▪ Lincolnshire has some of the best soils in the UK, providing an advantage to growers in the region. ▪ Significant number of food processors / manufacturers operating in the region ▪ A strong association of Lincolnshire with food	Weaknesses ▪ Availability of labour and skilled staff in particular ▪ Lincolnshire roads perceived as poor and in need of urgent review. ▪ Broadband is a huge issue in rural areas of south Lincolnshire ▪ Limited support for local firms with the loss of organisations such as Business Link
Opportunities ▪ Government incentives to aid businesses, e.g. rates, training grants ▪ Initiatives for agri businesses to negotiate utilities and other supply costs with other businesses in the county ▪ There is currently little export of fresh produce but huge potential for this. ▪ Provenance plays a part and has been an important consumer driver in recent years ▪ There is a need to build on and promote the “Lincolnshireness” of products – such as Grimsby Smoked Fish which has a PGI –and Lincolnshire Sausages	Threats ▪ Reforms to CAP/ Single Farm Payment could be a threat for the future ▪ Water supply for irrigation processing is seen as becoming a major problem for the county. ▪ Loss of food manufacturing jobs due to mechanisation, automation, acquisition & consolidation ▪ Risk of loss of fish processing to hubs in France and Germany that are currently benefitting from significant investment ▪ Labour/skills at all levels require close focus in the county to assure future supply. ▪ Increasing squeeze on margins forcing operations out of business, linked purchasing power of the retailers. ▪ Due to rising costs getting cover for bad debt insurance is becoming a major threat to many packers and processors ▪ Proximity to raw materials is no longer a big draw. The proportion of local foods used by major manufacturers is not a significant factor for remaining in the region

7. ENGINEERING AND ELECTRONICS

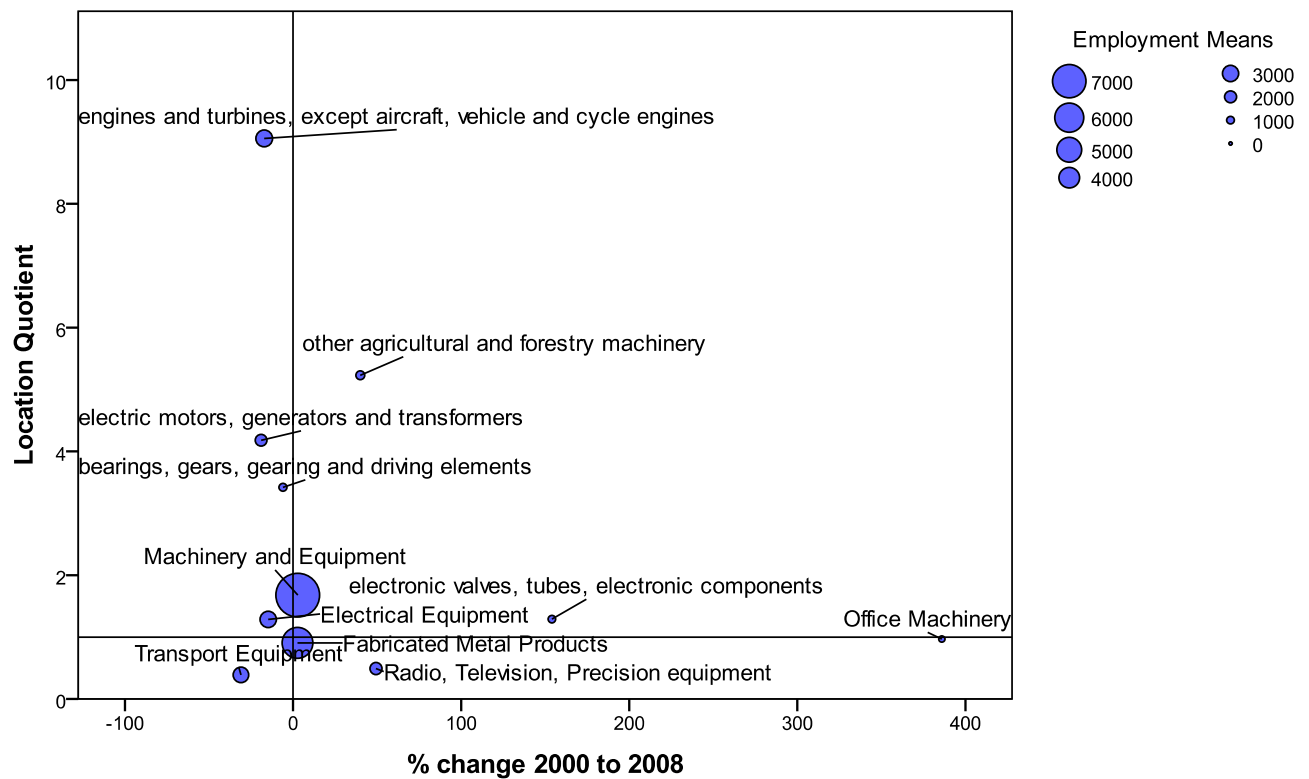
Sector Overview

7.1 The Engineering and Electronics sector accounts for more than 16,000 or 4% of jobs across Greater Lincolnshire. This is similar to the 4.4% employed in this sector across Great Britain. While engineering is a diffuse activity across Greater Lincolnshire, particularly general mechanical engineering, there are a number of localised concentrations of specific engineering activities. These include:

- Lincoln: with a focus on turbine manufacture and electronic components
- Grantham and Stamford: motors and generators
- Louth, Spilsby, Sleaford: agricultural engineering
- North Lincolnshire: metal structures and mining equipment

7.2 There are 1,093 businesses engaged in engineering activity across Greater Lincolnshire. 70% of these are based in Lincolnshire, 17% in North Lincolnshire and 13% in North East Lincolnshire. On average, there are 15 employees per engineering firm, which suggests that this sector is characterised by large employers. The average firm size for Greater Lincoln is 10 employees.

Graph 13: The Engineering Sector in Greater Lincolnshire



Source: Annual Business Inquiry, 2008, Office for National Statistics

7.3 The number of people employed in this sector has remained relatively static across Greater Lincolnshire, with a small decline of 1.4% between 2000 and 2008. This is in contrast to the pattern across Great Britain, where there was a decline of 26% over the same period. This suggests that the local engineering sector is more resilient than elsewhere in the country.

7.4 Some of the key employers in this sector include Siemens Industrial Turbo-Machinery (Lincoln), Dynex Semiconductor Ltd (Lincoln), Bifrange (Lincoln), Tata Construction (Scunthorpe), Wefco (Gainsborough), Grantham Engineering (Grantham), and Invictas

Group (Grantham). Tong Peal (Spilsby) and Howsham Sprayers (Leadenham) are key local agricultural engineering firms

National Context

- 7.5 **Engineering:** the engineering sector makes up around 20% of UK GDP⁵. Our analysis of NOMIS data shows that 1.2 million people, or 4.4% of the national workforce, are engaged in engineering activities. Estimates of the true extent of the sector, when considering R&D and support activities, can be as high as 4.5 million employees (or 15% of the workforce). The high contribution of engineering to the national economy compared with the relatively low number of people it employs provides a clear indication of the overall value created by the sector.
- 7.6 While there has been a long term decline in the number of people employed in engineering nationally (by 26% between 2000 and 2008), the overall output of the sector has grown. Engineering UK attributes the increasing productivity of this sector to a number of international drivers, including climate change and energy security. A key risk for the future of the sector nationally, however, is supply of relevant skills. This is thought to stem from low participation in science GCSEs in schools, and a declining number of engineering graduates.
- 7.7 **Power Electronics:** A recent study by BIS⁶ shows that Power Electronics is a growth industry, with the global market increasing by 10% per year. This growth is being driven a number of factors, including: growth in renewable energy; the increasing electrification of transport; computer and lighting equipment; and other industrial uses. It identifies a number of key challenges for the sector, however. These include: (i) that the power electronics community lacks cohesion and representation; (ii) that the UK needs to become an exemplar low-energy, low carbon economy and to champion the sector; (iii) to continue to promote innovation and collaboration in the sector to ensure the UK remains at the forefront of the power electronics industry; (iv) to ensure a supply of power electronics engineers; and (v) to bridge the gap between universities, start-ups and industry to ensure exchange of leading technology.

Focus of Research

- 7.8 Our research into the engineering supply chain has focused principally on companies in the engineering and electronics sector in Lincoln, although we have incorporated findings from the broader supply chain survey undertaken across Greater Lincolnshire. We have also incorporated findings from research with the agri engineering sector, undertaken as part of the *Innovation in Traditional Industries* project. Detailed interviews were undertaken with the following, which have been anonymised to avoid disclosing commercially sensitive information about supplier and customer relationships:
- 7.9 **Eng 1** manufactures industrial gas turbines which are used for power generation, for pumping oil and gas, and for Combined Heat and Power (CHP). Eng 1 also services the gas turbines that it has previously sold, and this is a key area of its business. Eng 1 employs 1,500 people, with 850 at its manufacturing site and 650 at its service site. It also employs 250 full time contractors.
- 7.10 **Eng 2** manufactures electronic components which are sold to original equipment manufacturers (OEMs). The electronic components are used in three key areas: (i) energy – power transmission, electric grid and renewables; (ii) transporation, marine

⁵ EngineeringUK (2012) Engineering UK 2012

⁶ Department for Business Innovation and Skills (2011) *Power Electronics: a Strategy for Success*

and aerospace; and (iii) industrial uses – automation, processing. Eng 2 employs 310 people in Lincoln, and its Chinese parent company employs more than 5,000 in China.

- 7.11 **Eng 3** services mature gas turbines on behalf of OEM companies. Eng 3 employs 51 people in Lincoln and 8 in Aberdeen.
- 7.12 **Eng 4** manufactures equipment for pollution control. It has two main areas of activity: providing purifiers for military aircraft; and gas purification equipment for industrial plant and power stations. Eng 5 employs 40 people in Lincoln and 50 people in China.
- 7.13 Businesses and stakeholders consulted as part of wider focus group discussions and interviews include:
- Simon Sheldon, Amberjac Projects
 - Ray Newell, Oakwell Management Services
 - Jill Stewart, Lincoln Engineering School
 - Richard Allerton, Lincoln Engineering School
 - Paul Evans, Lincolnshire County Council
 - Andrew Vaughan, Industrial Chaplain for Lincolnshire

Local, Regional and Global Linkages

- 7.14 **Ownership:** The engineering sector in Greater Lincolnshire has a strong national and international focus. Eng 1 and Eng 2 are internationally owned. Eng 1 is a limited company, but also part of an international company which has headquarters in Germany. Eng 2 is wholly owned by a holding company in Canada, but 75% of its shares are owned by a company in China. Eng 3 is a private company which has been based in Lincoln since 1991, and also has a workshop in Aberdeen. Eng 4 is a locally owned private company which has also established a sister company in China.
- 7.15 **Suppliers:** The suppliers identified from the engineering sector interviews are shown in the Engineering Supplier Linkages Table, below. The geographical focus of the engineering supply base is primarily national and international, with evidence of increasing use of suppliers based outside the UK. Many of the companies state that they have hundreds of suppliers, so the suppliers listed in the table are only those that came to mind during the interview. In some cases, companies preferred not to disclose details of all their suppliers due to commercial disclosure restrictions. The supplier linkages table below sets out the suppliers and their geographical distribution aggregated for all four companies.
- 7.16 The companies use a number of local engineering firms for the supply of machining services, coatings and fabrications. A Green Engineering is used by three of the companies for machining services. Rilmac is cited as a key local fabrications supplier, with an onsite presence at the Siemens servicing site. Other local suppliers include Micrometric for laser-cutting services, Minebea for bearings and components, Praxair for specialist coatings, and GSA for machining services. All these companies are based in or around Lincoln, Hykeham, and Gainsborough. Other local suppliers include Aroqua, based in Hykeham, which supplies engineering personnel. Cleaning services and transport services – such as passenger transport, car hire, and haulage – are sourced through locally based suppliers. Utilities – electricity, gas and water – are also key areas of local expenditure.
- 7.17 Many of the companies state that it is not possible to source many of their components and engineering services locally, and that the majority of their suppliers are based in areas of the UK that have a larger and more established industrial base. These include West Yorkshire, Derbyshire, Nottinghamshire, and the West Midlands. RS Components is cited as a key supplier, with thousands of electronic and mechanical

components that can be ordered online. Eng 1 and Eng 3 both mentioned a lack of machining and assembly services within Lincolnshire and across the UK. Suppliers of these services within the UK include Hycrome in Burnley and Chinns in Coventry.

- 7.18 Across many of these companies, international suppliers are increasingly important. For both Eng 4 and Eng 2, their biggest suppliers are their parent/sister companies in China. Eng 2 sources very specialist products, such as silicon, molybdenum and ceramics, from mainly overseas suppliers. Eng 2 identified that its molybdenum supply had recently moved from Europe to China, reflecting a growing trend of materials suppliers 'following the market'. Eng 3 uses mainly UK based suppliers, but has started to source machining services from Romania due to the slow lead time of suppliers in the UK.

Engineering Supplier Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	A Green Engineering, Micrometric, Minebea, Greenray, Rilmac, Praxair, Aroqua, Specialist Heat Exchangers, Siemens Industrial Turbo Machinery, Lincolnshire Loads, Imp Transport, Les Willinghams, GSA Precision Engineering, Pearson Hydraulics, Enterprise Rent a Car, Tom Smart, Executive Cleaning, Castlet Engineering, Hindles, Merlins Transport, DHL, Rhenus, Lyons Haulage, Lynn cabs
UK	CCSR (Alfreton), RS Components (various locations), Routeco (various locations), Blackburn Starling (Nottingham), Scattergood and Johnson (Yorkshire), Farnell (Yorkshire), David Brown (Yorkshire), Chinns Ltd (Coventry), Allen Gears (Worcester), Bibby (Aberdeen), Osbournes (Berkshire), Cullums (Derbyshire), Hycrome (Lancashire), Schenker, Chartered Institute of Purchasing and Supply (CIPS)
International	Zhuzhou CSR Times Electric Ltd (China), Castlet Engineering (China), Carillon and Mayhew (Italy)

Engineering Quantified Supplier Linkages

Business		Percentage of Spend	Number of Suppliers
Eng 1	Lincolnshire	8%	118
	UK	92%	903
	International		
Eng 2	Lincolnshire	13%	
	UK	48%	
	International	39%	
Eng 3	Lincolnshire	5%	
	UK	90%	
	International	5%	
Eng 4	Lincolnshire	2%	
	UK		
	International		

- 7.19 **Customers:** The customers identified from the engineering interviews are shown in the Engineering Customer Linkages Table, below. Among the companies that we interviewed, almost all customers are based outside Greater Lincolnshire. It is important to emphasise that this is true of the companies that were interviewed, but not of all locally based engineering companies. As the supplier linkages table suggests,

many local engineering firms (such as A Green Engineering, Micrometric, Hindles, Rilmac) have a number of local customers. In our supply chain survey a quarter of engineering companies had a mainly Lincolnshire-focused customer base.

- 7.20 For Eng 1 and Eng 3, the main customers are companies that have previously bought gas turbines from Siemens and its predecessor companies. Eng 1 works with companies from 90 countries across the world. The geographical distribution of their customers is determined by the location of oil and gas fields and pipelines. These range from the North Sea to the Middle East, South America, South East Asia and Australia. Although the location of the gas and oil fields is likely to determine the location of both Eng 1's and Eng 3's customers in the future, this is also affected by factors such as the price of oil and gas, and political stability of oil producing countries.
- 7.21 Eng 2 estimates that 83% of its sales are from overseas customers. The majority of its international customers are based in Europe, including key transport companies in France and the Netherlands. Around 39% of sales are to companies in America and China. The geographical distribution of its international customers is changing, with a shift away from America towards the Far East and China, in particular. Eng 2's parent company is becoming its larger customer for components to be used in transport.
- 7.22 Eng 4 supplies to industrial plants and power stations to around 35 countries, working with agents in each country who are familiar with the local laws and cultures. It has a number of key UK-based customers, including defence companies and, and is increasingly working with local UK power stations. A growing market for their pollution control products is biomass, which power station such as Drax are trialling, as well as anaerobic digestion and energy generated from waste.

Engineering Customer Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Greenray Ltd
UK	Alstom (Stafford), GE Energy (Rugby), ABB (Warrington), British Aerospace (various), Honeywell (various), West Burton Power Station (Nottinghamshire), Drax Power Station (Yorkshire), AEC/Clyde (Burton on Trent), Lodge Cotterill (Birmingham), RWE N Power, Centrica, National Grid
International	Shell, Total, BP, Petrobras (Brazil), Petromas (Malaysia), Pemex (Mexico), Sonotrax (Algeria), ONGC (India), CPC (Russia), Santos (Australia), Zhuzhou CSR Times Electric Ltd (China), SNCF (France), Netherlands Railways, HRC (Belgium), HRC (Germany), Korea Cattral (South Korea), Hitachi (Japan), Mitsubishi (Japan), Area Impiant (Italy), Taqa Bratini (Abu Dhabi), PT Asta (Indonesia), Bruce Power (Canada), Talisman Energy (North Sea)

Engineering Quantified Customer Linkages

Business		Percentage of Sales	Number of Customers
Eng 1	Lincolnshire		
	UK		
	International		
Eng 2	Lincolnshire	0%	
	UK	17%	
	International	83%	
Eng 3	Lincolnshire	0%	0
	UK	30%	3
	International	70%	6
Eng 4	Lincolnshire	0%	
	UK	10%	
	International	90%	

Supply Chain Interdependencies and Collaboration

- 7.23 **Supply Chain Interdependencies:** among the companies that we interviewed there is little evidence of companies being reliant on one or a small number of key customers. The companies have a diverse customer base, with the majority of customers being based outside the UK. Eng 3 is different to the other companies, in the sense that the majority of its customers have been developed as a result of a long-term agreement with Eng 1. This is described in more detail below. Although this is not strictly a 'supplier-customer' relationship, it is a relationship on which Eng 3 depends to secure many of its contracts.
- 7.24 **Supply Chain Integration:** Our interviews suggest evidence of both supply chain integration and de-integration. In the case of the companies with international ownership, there is integration of some functions within the broader company structure. This is evident in the case of Eng 1, for example, which has a centralised HR and IT services provided by its parent company. For Eng 4, its company in China is its most important supplier. In the case of Eng 2, its Chinese parent company is a key supplier and customer. The internationalisation of local engineering companies clearly moves some of their supply chain away from the local and national supplier base.
- 7.25 The relationship of Eng 1 with Eng 3 can be regarded as supply chain de-integration, although neither company would perhaps describe it this way. Eng 3 has a "principal relationship" with Eng 1, which a long-standing agreement which allows Eng 3 to service Eng 1's turbines. This agreement has been in place for more than twenty years. Eng 3, with the approval of Eng 1, services turbines which are older and difficult to service, and so is effectively undertaking this activity on Eng 1's behalf. Other examples include Eng 1's use of contractors, supplied mainly through Aroqua Power Services.
- 7.26 **Collaboration:** there is evidence of collaboration between local engineering firms based around existing supplier relationships. For example, Eng 3 and Eng 4 are working together on a contract to service turbines in Iraq. Eng 1 collaborates with firms elsewhere in the UK in securing new contracts. Eng 2 states that in general it does not collaborate with other engineering firms on securing new contracts. There is little evidence of collaboration in areas such as sharing equipment, data, and logistics. Reasons for limited collaboration on these include the highly specialised nature of manufacturing activity taking place in these companies which means that sharing equipment is not possible.

- 7.27 Another example of supply chain collaboration is the *Siemens Partner Program*, which both Eng 3 and Eng 4 are participating in. This means that these companies must have specified quality standards and, in return, they have access to specific Siemens services and are able to display the Siemens emblem.
- 7.28 Most of the businesses we interviewed participate in the Engineering Breakfast which is hosted by Lincoln City Council and chaired by Andrew Vaughan, the Industrial Chaplain. The Engineering Breakfast has taken place since September 2010, and involves mainly Lincoln-based companies. This forum has discussed a number of sector issues, such as immigration policy, use of Lincoln Engineering School, bids for funding, and the promotion of Lincoln as an engineering centre of excellence. There is little evidence that the Engineering Breakfast has brought about new supplier relationships, but its overall aim is to strengthen the links between engineering companies and improve the opportunity for them to work together in the long term.
- 7.29 Training is an area in which there is great potential for collaboration, but little taking place at present. Siemens currently provides its training in-house, and in collaboration with the University of Lincoln at the recently established Lincoln Engineering School. Greenray are interested in collaborating with Siemens on training, and have had discussions with the Engineering School about this. Eng 2 undertakes most of its training in-house, using national providers but has also engaged with the University of Lincoln on language training and Lincoln College on culture training. Eng 4 has worked with Lincoln College on apprenticeships.
- 7.30 The companies that we interviewed are engaged in R&D, and collaborate with various organisations on this. Eng 2 works with a range of universities on developing new technology. Their projects are funded by research councils, the Technology Strategy Board, and European framework 7. Eng 2 states that it has to engage in R&D to remain competitive, and that it is common for companies in the power electronics industry to collaborate with each other and with universities. Eng 2 collaborates with universities outside Lincolnshire, but has started initial discussions with Lincoln Engineering School. Eng 4 is currently developing a prototype in collaboration with the Ministry of Defence, and is working with Lincoln Engineering School on an EU framework 7 proposal. Both Eng 4 and Eng 3 have participated in business support schemes, such as the High Growth programme and business coaching, funded by the UKTI and emda.

Engineering Collaboration Linkages

Location	Identified Businesses and Organisations
Greater Lincolnshire	University of Lincoln, Lincoln College, Engineering Breakfast Forum, Siemens Advanced Partner scheme
UK	Nottingham University, Sheffield University, Newcastle University, Imperial College, Greenwich University, Loughborough University, PERA (Melton Mowbray), UKTI, EMDA, Centrax (Devon), Manufacturing Advisory Service
International	

Areas of Supply Chain Vulnerability

- 7.31 A number of supply chain issues were identified that pose a potential risk to the vibrancy of the local engineering sector. Clearly, these issues include factors that are within and outside the scope of the Greater Lincolnshire LEP. These include:

- 7.32 **Graduate Engineering Skills:** all the companies that we interviewed identified that there is a shortage of skilled engineers both in Lincolnshire and across the UK. Lincoln School of Engineering has been established, in part, to address the shortage of graduate engineers and to upskill engineers currently employed at Siemens. However, there is still concern about the declining number of engineering graduates across the country, and there are difficulties experienced in recruiting electrical, software, and mechanical engineers.
- 7.33 **Intermediate Engineering Skills:** there is a general shortage of workers who have skills in machining, fitting and assembly work. This is thought to be related to the low number of young people engaging in this activity, and also the limited opportunity for former engineers to retrain and update their skills. The recent proposal for a University Technical College, put forward by the University of Lincoln, Lincoln College and Siemens, aims to partly address this shortage by providing a science and technology training facility for 14-19 year olds in Lincoln.
- 7.34 **Professional Skills:** there is a shortage of workers with general professional skills, particularly in supply chain management. This includes knowledge of buying, warehousing, distribution, and logistics.
- 7.35 **Attraction and retention of skilled workers:** in addition to the shortage of engineering skills within the local and national labour market, many companies find it difficult to attract skilled engineers to Greater Lincolnshire and retain them. This is thought to be related to a number of factors, including a perception that Lincolnshire is peripheral, that it has a limited cultural offer, and a lack of ethnic diversity. It is felt, however, that the development of the University of Lincoln has contributed significantly to the cultural offer of Lincoln in particular, and its sense of vibrancy. The lack of critical mass in engineering is also thought to be a factor. Within the region, it is thought that skilled engineers are more likely to be attracted to Derby, with the presence of Rolls Royce, Toyota and Bombardier.
- 7.36 **Limited/declining local supply base:** the companies that we interviewed identified that there is a low and declining supply base in Greater Lincolnshire. This is partly related to the intermediate engineering skills shortage discussed above, but it was identified that there were very few machining shops left in the area, and few companies able to do assembly work. The internationalisation of the supply base is also thought to have contributed to this. Eng 2 and Eng 3 stated that it could be difficult to get a rapid turn-around for orders with local and national companies, while international suppliers could often deliver an order more quickly.
- 7.37 **Small number of specialist suppliers:** related to the limited local supply base, a number of companies identified that – for certain products – there was a small number of UK suppliers. This has caused difficulties in obtaining specialist products, particularly when there is high demand for other uses. This is the case for silicon, which is increasingly in demand for use in photo-voltaic solar panels. Similarly, Eng 1 stated that although a specialist engineering company had relocated to Lincoln to supply coatings specifically for its products, it had since broadened its customer base and Siemens now had to compete with the needs of its other customers.
- 7.38 **Limited awareness off/ networking with local suppliers:** a number of companies said that they had limited awareness of the local supply base. It was suggested that, although there are some local supply chain relationships, the engineering sector in Lincoln does not really operate as a cluster. Their geographical proximity has been brought about by the GEC legacy, rather than the strength of connections between the companies. The Engineering Breakfast was identified as a useful forum to find out what other companies are doing and to visit the Engineering School. However, it was identified that there was previously a greater level of support for the engineering sector

under *emda*, which had organised a number of presentations and visits that allowed networking to take place at a regional level.

- 7.39 **International ownership:** the high level of international ownership among some of the larger engineering companies in Lincolnshire is both a strength and a weakness. In the case of Eng 1 and Eng 2, for example, international ownership has brought investment that would not otherwise be available if the company was still locally owned. Being part of a larger company brings access to shared resources, expertise, and technology. The reverse of this is that international companies are less tied to a local area, and there is a risk that local sites may become victims of measures to rationalise company-wide operations. This is demonstrated in the closure of subsidiaries of international engineering companies Finnveden in Alford and Minebea in Skegness during the recent recession.
- 7.40 **International competition:** with increasing engineering activity taking place in India and the Far East, there is concern that local companies may not be able to compete in the long term. At the moment, the very specialist nature of engineering in Lincoln is perceived to protect local companies from international competition. However, India and China have an advantage in the availability of labour, cheap wages, and it is felt that they are becoming increasingly engaged in high technology manufacturing. The need to invest in R&D, and to continue to create high technology products, is considered essential for local companies to remain competitive. As Eng 4 stated, *"we need to lengthen rather than shorten supply chains, and continue to find ways to add value"*.
- 7.41 **Cost of international freight:** From 1 March, there has been an increase in the cost of ocean freight from Europe to the Far East of around 120%. This increase was cited as an issue by Eng 4 in particular, which receives containers of supplies from its Chinese company every month. This is a long term trend, and relates specifically to container freight, rather than air freight. As many of the engineering companies we spoke to have a diverse international customer base, it is likely to affect only a small proportion of their business.
- 7.42 **Visa restrictions:** Recent visa restrictions have affected companies that bring staff from other countries for placements and training. This has affected Eng 2 and Eng 4 in particular, both of which have brought staff from China to work and train in their companies in Lincoln. The new restrictions meant that Chinese employees can only stay in the UK for between 1 and 3 years before they must return to China. Eng 2 stated this was causing a brain drain. Additionally, as the Chinese employees they had brought to the UK were working in R&D and at a level where it was necessary to recruit local people to train up and support them, the visa restrictions were effectively denying employment opportunities for local people. Eng 2 and Eng 4 have both worked directly with the UKTI to overcome this problem, and said that it is now largely addressed.

Other Barriers to Growth

- 7.43 There are a number of other barriers and areas of vulnerability which aren't strictly supply chain related but include:
- 7.44 **Peripherality/Connectivity:** as discussed above, Lincolnshire is regarded as a peripheral area, and this is thought to affect the recruitment and retention of skilled workers. When asked about the advantages and disadvantages of being located in Lincoln from a business perspective, the companies identified that there was no clear benefit to being in Lincoln but that its location did not really pose a problem. As these companies are focused on international markets, they are distant from most of their customers, and this would be true regardless of where they were located in the UK. The dualling of the A46 is identified as an important step forward in linking the area to

the M1, and to East Midlands and Birmingham airports. Proximity to Immingham is identified as an advantage, particularly for transport of gas turbines. Broadband connectivity was not identified as a problem for the companies that we interviewed. It was felt important that Lincoln “carries on improving”, in particular ease of travel around Lincoln city centre and the level crossings.

- 7.45 **Lincoln’s Engineering Profile:** it is felt that Lincoln has a low profile as a centre of engineering. For those from outside the area, it may not be clear that Lincoln has a strong engineering base, nor what type of engineering activity takes place here. This is in contrast to areas such as Derbyshire, where there is a strong association with transport engineering. As stated above, this is thought to affect attraction of skilled workers, but it may also affect inward investment.
- 7.46 **Environmental legislation:** the companies that we interviewed manufacture equipment for use in power generation. Although they do not have a strong environmental impact locally, the demand for their products may be affected by legislation to reduce carbon emissions internationally.
- 7.47 **Politically unstable countries and oil prices:** several engineering companies supply to countries that are politically unstable, including Iran, Iraq and Syria. This isn’t a large risk, however, due to the diverse nature of their customer bases. The changing price of oil can also affect demand for servicing activities at both Eng 1 and Eng 3.
- 7.48 **Exchange rates:** as many engineering companies are engaged in export activities, the strength of sterling is important. It is identified that the current value of sterling of around £1 to 1.2 euros is supporting overseas sales. Clearly this may change, although it is something that neither the companies nor the LEP can influence.

Supply Chain Opportunities and Drivers for Growth

- 7.49 **Power Engineering focus:** there is a current focus by the Government on minimising use of fossil fuels. This is evidenced in the Carbon Plan published in December 2011, which sets out actions to reduce emissions in energy production and encourage low carbon transport. Many companies that we spoke to are engaged in activities which seek to maximise the value of fossil fuels, such as Siemens through Combined Heat and Power, and improve the efficiency of power transmission and conversion, such as Eng 2. Amberjac projects, a company based in Grantham that contributed to our focus group discussion, manufactures batteries for electric vehicles. Clearly this focus by the government on low carbon energy provides a real driver of growth for the engineering sector in Greater Lincolnshire.
- 7.50 **Local Alternative Energy Developments:** related to the Government’s focus on low carbon energy is the development of a number of alternative energy initiatives in and around Greater Lincolnshire. These include the development of the Lincs Offshore Wind Farm in the North Sea, with further wind farms planned as part of Round 2 and 3. Coal-fired power stations in the Trent Valley and Vale of York are experimenting with bio-mass, and Eng 4 is already manufacturing equipment that reduces the particle emissions of biomass. When asked about the potential complementarities between the wind and low carbon energy developments, the companies that we interviewed could not identify many relevant opportunities. Eng 1 stated that there would be supply chain discussions with its Wind Power division, perhaps around opportunities to economise between the Lincoln and Humber sites, but that wind turbine and gas turbine manufacture were very different areas of the company’s business. Eng 2 already provides components that are used in wind turbines, but emphasised that supply chains for the manufacture of wind turbines were mainly international. So, while factories that assemble wind turbines may be developed along the Humber, the local supplier opportunities may be limited unless local engineering companies are able to access

these international supply chains. It was suggested that more needed to be learned about the technology used in renewable energy production, and that a sand pit event might enable local engineering companies to learn about and discuss these opportunities in more detail.

- 7.51 **Lincoln School of Engineering:** the newly opened School of Engineering is regarded as a resource which has great potential to support the training and R&D needs of the local engineering sector. The Engineering Breakfast was hosted at the Engineering School in January, which gave local engineering companies the opportunity to see its facilities. At the moment, however, the School is perceived by many local companies as a training facility for Siemens. There is an opportunity to raise the profile of the School among the engineering firms across Greater Lincolnshire. It is also felt that some of the smaller engineering companies are not be able to afford to use the facilities at the Engineering School, and this is something that could be subsidised – subject to availability of funding - in the future.
- 7.52 Engagement in R&D is an activity that is considered essential for Lincolnshire's engineering sector to remain competitive. Again, the School of Engineering is engaging with local companies on this, with a number of European Framework funding bids approved and underway. This is an activity that is likely to develop as the Engineering School becomes more established and develops its research base. The Industrial Power and Energy Research Group is particularly relevant to many of the engineering companies based in and around Lincoln. There are a number of funding streams that could be used to support University-Industry collaboration, including those providing through the Engineering and Physical Science Research Council (EPSRC), Natural Environment Research Council (NERC), the Technology Strategy Board, and the European Commission.
- 7.53 **Cluster Working/Business Support:** a number of businesses mentioned that the engineering sector in Lincolnshire does not really work as a cluster, and that there is limited knowledge of the local supply base. There is a need for greater support for networking and collaboration, particularly in the absence of funding that was previously available through the regional development agencies. The Lincoln Engineering Breakfast is a good example of this, and part of its success comes from its neutral chairmanship by the industrial chaplain rather than by public sector organisations. This means that the forum is not driven by a public sector agenda, but that rather by the needs and interests of its members. There is clearly scope to build on the Engineering Breakfast, perhaps by broadening its geographic scope to include engineering firms around Grantham and into North and North East Lincolnshire.
- 7.54 **Developing Intermediate Skills:** the current proposal for a University Technical College in Lincoln seeks to provide the opportunity for young people to develop skills in science and technology, and to address the shortage of intermediate engineering skills in the area. This is clearly a proposal that the LEP should continue to support, regardless of whether funding is secured at this stage. However, the feedback from some of the companies we interviewed is that the shortage of engineering skills stems partly from the way that engineering is perceived by young people, and the preference for non-science based subjects. Engineering is thought to have a poor image among young people, who consider it to be dirty and factory-based, rather than providing the opportunity for highly skilled and well paid careers. The engineering skills shortage is a national issue, but addressing this at a local level could involve promotion of the sector and associated careers within schools across Greater Lincolnshire. This is something that Siemens is currently doing in the promotion of STEM subjects to local schools, but could be broadened to include other engineering companies.
- 7.55 As well as developing the science and technology skills of young people, there are also latent skills in those that have worked in Lincolnshire's RAF bases, or have previously

worked in and left the engineering industry. These groups may have relevant skills but may need retraining or updating for new technologies. It is important that any future consideration of training provision for the engineering sector, including the University Technical College, includes the opportunity for those that are not currently employed within the sector to retrain and update their skills.

- 7.56 **Promotion of Lincoln:** the low profile of Lincoln, both as a hub of engineering excellence, and as a place to live and work is thought to affect the recruitment and retention of skilled workers to the area. This is partly being addressed by a new campaign to brand and promote Lincoln by Lincoln City Council and VisitLincoln. The vibrancy of Lincoln is a key factor in getting employees and to move to the area and stay. As one of the companies stated, "it's not about working, it's about living". The cultural offer of Lincoln has moved on, yet people from outside the area may have an image that pre-dates the recent changes. The Engineering Breakfast are also exploring the possibility of promoting Lincoln as a hub for 'Energy Engineering'. This would clearly need to fit in with other measures to promote Lincoln and Lincolnshire to inward investors.

Engineering SWOT Analysis

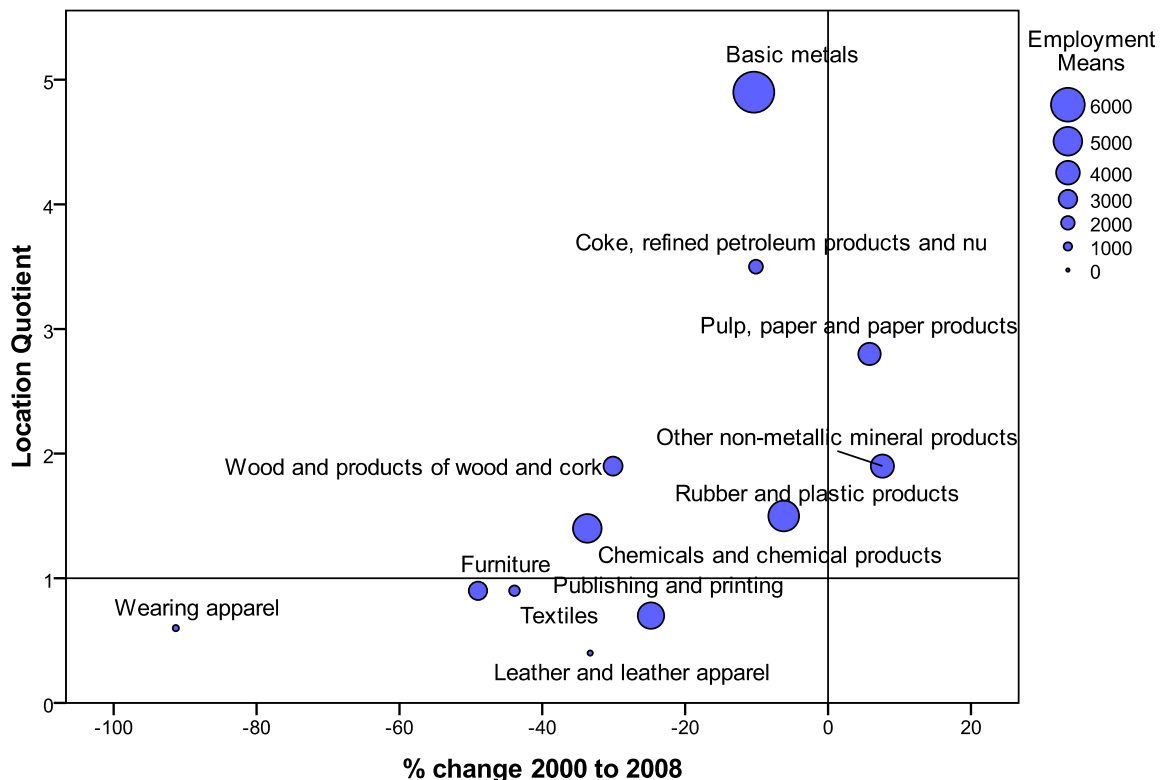
Strengths ▪ A high technology sector, with specialist products and services ▪ Currently strong overseas sales ▪ Diverse customer base, with a growing international focus ▪ Employment levels relatively resilient compared with other manufacturing sectors ▪ Legacy of RAF skills ▪ International ownership of larger firms	Weaknesses ▪ Shortage of graduate and intermediate engineering skills in labour market ▪ Low/declining capabilities for machining and assembly ▪ Limited interaction between engineering companies ▪ Low profile of Lincoln as an engineering centre ▪ International ownership of larger firms
Opportunities ▪ Low carbon and energy efficiency agenda ▪ Lincoln Engineering School – training, R&D ▪ Proposed University Technical College ▪ Engineering Breakfast Forum ▪ Promotion of Lincoln, as a place to live and invest	Threats ▪ Internationalisation of suppliers ▪ Increasing international competition ▪ Varying exchange rates ▪ Supplying to politically unstable countries

8. MANUFACTURING

Sector Overview

8.1 Manufacturing is a key area of activity for Greater Lincolnshire, employing around 27,000 or 7% of jobs across the area compared with 4% across Great Britain. Greater Lincolnshire has a significantly high concentration of jobs in manufacturing basic metals, coke and petroleum, and pulp and paper products. It also has concentrations of manufacturing rubber and plastic, wood and wood products, chemicals, and non-metallic mineral products. Following the trend nationally, the number of people employed in this sector has declined over the last 10 years, by a quarter in Greater Lincolnshire and a third across Great Britain.

Graph 13: The Manufacturing Sector in Greater Lincolnshire



Source: Annual Business Inquiry, 2008, Office for National Statistics

8.2 A key area of activity is metals manufacture, accounting for 5,000 jobs, and focused around Tata Steel in North Lincolnshire. Rubber and plastics account for almost 4,000 jobs, with a concentration around Louth in East Lindsey. Wood products account for around 2,000 jobs, with a focus around Finn Forest, a major wood importing and processing business in Boston. Chemicals and petroleum, which together account for almost 5,000 jobs are both focused around the North and North East Lincolnshire border.

8.3 Other manufacturing activities taking place in Greater Lincolnshire can perhaps be regarded as basic materials processing when compared with the advanced manufacturing activities of the engineering sector. As in engineering, many of these activities are vulnerable to international competition – in particularly, clothes, textiles and leather products, and metals – which explains the long term decline of these sub-sectors locally.

Focus of Research

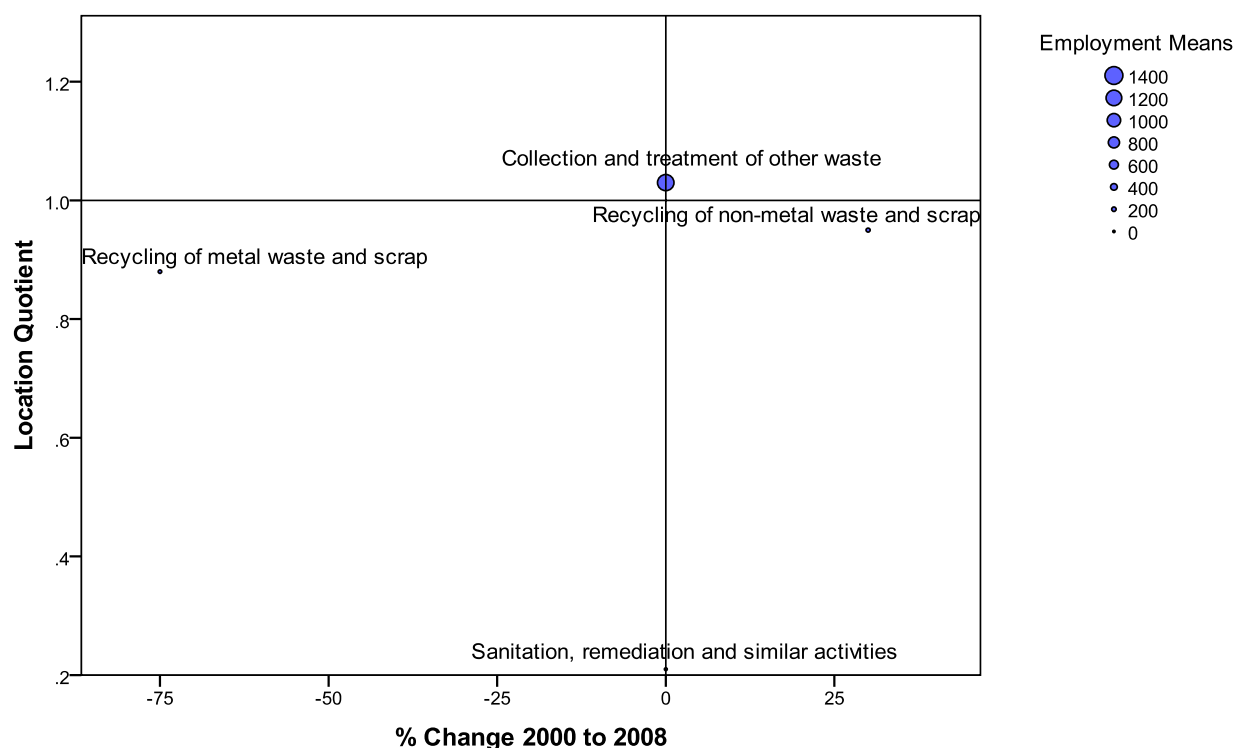
- 8.4 Our research into the manufacturing sector spans companies engaged in a range of activities, from engineering, health and care, and agri food as well as firms engaged in other manufacturing activities. The findings presented in this section draw on the quantitative survey which included responses from thirteen manufacturing companies that are not engaged in the aforementioned sectors.
- 8.5 **Suppliers:** Our survey shows that the majority of suppliers to respondents in the manufacturing sector are based outside Lincolnshire, with 23% having most international supply bases. Just 15% state that most of their suppliers are in Lincolnshire. Their choice of suppliers is not shown to be influenced by customers' requirements, but rather by the need to source specialist products which not readily available from a Lincolnshire or UK supply base.
- 8.6 **Customers:** The majority (54%) of respondents in the sector say that their customer base has a national focus, with over a third having an international focus. This emphasises the exporting role of local manufacturing companies. This is emphasised in the export trade figures which show manufacturing goods are the second most important export from Lincolnshire after agri food, and the most important export for North and North East Lincolnshire.
- 8.7 **Supply chain interdependencies and collaboration:** More than two thirds of respondents in this sector identified that they had long term relationships with their suppliers. The results also indicate a high degree of collaboration with businesses in their own sector, and supply chain. Over a third collaborated with businesses in other sectors.
- 8.8 There was a strong degree of collaboration with other businesses in the areas of new product development (65%), tendering for contracts (64%), and training and recruitment (83%). 45% redirected work to or recommended work to other companies if they were unable to undertake work themselves. There was little collaboration around sharing equipment and joint purchasing (10%) and sharing data or information services (9%). Qualitative feedback from the companies suggests that local collaboration is restricted by a lack of similar businesses locally, the very specialist nature of their activities, and the technically sensitive nature of their products.
- 8.9 **Supply chain issues:** the survey indicates that few manufacturing respondents consider Lincolnshire an advantageous location for proximity to suppliers. Just 39% felt that their location was good for proximity to suppliers. This is similar to the feedback for the engineering sector, which has a mainly national supply base.
- 8.10 Even fewer (30%) consider Lincolnshire an advantageous location in terms of proximity to customers. Again this emphasises the national and international focus of the sector, with strong engagement in export activities. As with the engineering sector, Lincolnshire is distant from many key customers. However, given the international focus of these sectors, there is no truly advantageous location in the UK.
- 8.11 Respondents in this sector rated support for collaboration with other firms rather more highly than other sectors (57%), along with the presence of support sectors such as logistics (70%). Compared with the engineering sector, availability of labour is less of a problem, with 75% rating this good, and 50% rating skills in the labour market good.

9. RENEWABLES AND ENVIRONMENTAL TECHNOLOGIES

Sector Overview

- 9.1 Renewables and Environmental Technologies is a sector which is cross-cutting with other industry sectors. Many of the activities taking place within this sector are either relatively new (such as renewable energy generation) or form part of other activities (such as agriculture, engineering, transport, or construction). For this reason, measuring the sector using standard approaches is difficult, and provides an incomplete picture of the overall sector.
- 9.2 Using relevant Standard Industrial Classifications – which relate mainly to recycling and treatment of waste - it is estimated that 1,600 people across the LEP area, accounting for just 0.4% of jobs. This reflects a very small proportion of the overall activity that is currently taking place in the renewable and environmental technologies in Greater Lincolnshire. This is similar to rate of employment in these activities across Great Britain, with the exception of sanitation activities which have an LQ of just 0.2.

Graph 3: The Renewable and Environmental Technology Sector in Greater Lincolnshire



Source: Annual Business Inquiry, 2008, Office for National Statistics

- 9.3 Existing research conducted by the Renewables and Environmental Technologies task group for the Greater Lincolnshire LEP suggests that there are at least 150 companies engaged in renewable energy and environmental activities across the area. These comprise a wide range of activities, from installers of solar PV panels, to plastics recycling and manufacturers of electric car batteries.
- 9.4 Taking a more qualitative approach, it possible to identify a number of key renewables activities in Greater Lincolnshire:
- 9.5 **Offshore wind:** Greater Lincolnshire, along with the Humber LEP, is in a strong position to benefit from the installation of wind turbines in the North Sea. Offshore wind energy is a fast growing area, and is at a critical time as Round 2 of the UK's offshore

wind installation is underway and Round 3 is currently in planning. The Lincs Offshore Wind Farm, one of several sites in the Greater Wash area, is currently under construction. The site is being developed by Centrica and Siemens Wind Power, both of which are currently based in Grimsby Fish Docks. Long term business opportunities exist in the manufacture, and operations and maintenance of these offshore wind sites.

- 9.6 **Onshore Wind:** the *Low Carbon Energy in the East Midlands* report by Land Use Consultants shows that, of all the counties in the East Midlands, Lincolnshire has the highest potential for low carbon electricity production, based mainly on the potential of onshore wind energy.
- 9.7 **Renewable energy for business and domestic premises:** An increase in demand for more sustainable housing and business means that products and services in the renewables sector have much potential, such as solar PV and ground source heat pumps, recycling and anaerobic digestion. More food manufacturers and farm businesses are using anaerobic digestion (AD) to dispose of their waste and generate energy. An example of this is Branston Potatoes, which has an AD plant at their site in Lincoln, which allows them to save waste disposal costs and improve their environmental credentials. The *Renewable and Low Energy Carbon Study* undertaken by AECOM for Central Lincolnshire Joint Strategic Planning Committee (<http://www.central-lincs.org.uk/energystudy>) shows that there is significant potential across Lincolnshire in the creation of energy from waste wood, energy crops, straw, poultry waste, and AD – particularly in the more rural agricultural areas.
- 9.8 **North/North East Lincolnshire Energy Corridor:** The AECOM study suggests that the current leading geographical focus of renewables activity in Greater Lincolnshire is North and North East Lincolnshire with energy generation from landfill gas, waste and wind. There is also a broad corridor of low carbon energy activity taking place between the ports at Grimsby/Immingham and the coal-fired power stations at Drax and Ferrybridge. This is based around use of biomass which is mixed with coal to reduce the power stations' carbon emissions and use of fossil fuels. Both the coal and biomass are imported at Grimsby/Immingham and transported by rail to the Yorkshire power stations.

National Context

- 9.9 The renewable energy sector is very important in terms of Government legislation and policy planning, with low carbon technology and environmental strategy rising higher up the agenda across the UK.
- 9.10 This is emphasised in the draft National Planning Policy Framework (2011), which states that local authorities should “*Identify and map opportunities for renewable and low carbon energy... have a positive strategy to promote energy from renewable sources and design their policies to maximise renewable and low -carbon energy development...*” Thus, the role of local authorities should be to invest in and identify the opportunities for renewable energy, and increasing the use of environmental technologies. This will in turn generate opportunities for local business.
- 9.11 The UK is at a pivotal point with respect to offshore wind energy, which is highlighted by the Guardian newspaper who quote RenewableUK, the sectors trade association, saying that offshore wind might incur investment of £3bn in the UK supply chain by 2022, which would support more than 45,000 long-term jobs⁷..

⁷ (<http://www.guardian.co.uk/environment/2012/feb/29/wind-power-british-industry?intcmp=239>).

- 9.12 The UK Government has expressed its support for the renewable sector and its importance for the UK economy and environment. However, the industry and government have at times found themselves in opposing positions, due to the reductions in the Feed-in-Tariffs, which are designed to reward the installation and use of renewable energy. The Government has shown its support in a number of ways. Firstly, as part of EU-wide action to increase the use of renewables energy, the Government committed the UK to generating 15% of energy from renewable sources by 2020. Part of this drive is to control energy prices, increase employment in renewable energy sector and to ensure the UK is meeting its carbon reduction objectives, but overall represents strong encouragement for green technologies and renewables.
- 9.13 The Renewables Roadmap, as published by DECC, clearly sets out where the Government believe the priorities lie in order to reach the 2020 target. The technologies they claim have the greatest potential to support the UK in this area are onshore and offshore wind, marine energy, biomass electricity, biomass heat, ground source heat pumps, air source heat pumps and renewable transport. It is energy from wind, biomass and heat pumps that are singled out as having the most potential, especially offshore wind. The latter is targeted because the UK has a massive natural resource to support this and is the world's largest market for this business. Solar PV is next on the hierarchy, along with hydropower and deep geothermal heat and power.
- 9.14 However, despite this support, the renewables industry has a few concerns around Government incentives. In the latest 2012 budget address, the Chancellor, George Osborne, said he wants to see "investment in our world-leading energy sector, including renewables". But the Government is also clear that "environmentally sustainable has to be fiscally sustainable too" as a major priority for the budget is to provide affordable and cheap energy for UK families. In addition, gas is still given major priority in the UK, described as cheaper and cleaner than coal by the Chancellor, with an assertion that this will be the biggest source of energy for the UK for the coming decades. Despite this, support is still clear for renewables in the 2012 budget with initiatives such as introducing a carbon floor price to drive investment in low-carbon energy.

Focus of the Research

- 9.15 Four detailed business interviews were undertaken in the Renewables and Environmental Technologies sector. It must be noted that the companies interviewed are very different and the sector is very diverse. The sector will include renewable energy providers - which can be very different from one another, for example, offshore wind requires a totally different technical expertise to anaerobic digestion – as well as recycling companies, consultancy and any other kind of environmental technology, such as water purification and sewage treatment. Each will therefore have different needs and experiences, and will have been established for varying degrees of time.
- 9.16 Detailed interviews have been undertaken with the following businesses. We have also included feedback from Agfood 3, which is a food company with an on-site anaerobic digestion plant:
- **Env 1:** a supplier of technicians, safety equipment and HSF (hazardous substance free) services to the wind energy sector. Env 1 employs between five and 35 staff, depending on the season, size and number of contracts operating. Established in 2011 and based in Grimsby, NE Lincolnshire.
 - **Env 2:** provides solar PV installations, but has had a more diverse history in past few years in other renewable energy products and services, such as wind, heat pumps and consultancy. They were established in 2008 and employ 24 staff. They are based in near Lincoln.

- **Env 3:** are a recycling business, dealing mainly with PET bottles, but also with a range of other materials. Env 3 was established in 2000 and employs 160 staff. It is based near Lincoln.
- 9.17 Businesses and stakeholders consulted as part of wider focus group discussions and interviews include:
- Simon Sheldon, Amberjac Projects
 - Jill Stewart, Lincoln Engineering School
 - Mike Braithwaite and Amy Steer, Central Lincolnshire Joint Strategic Planning Committee
 - Paul Evans, Lincolnshire County Council

Local, Regional and Global Linkages

- 9.18 **Ownership:** Each of the businesses interviewed had a different ownership structure, demonstrating the range of businesses involved in this sector. Env 1 is a subsidiary of a larger PLC, which is a public company, and the only one of its kind in Grimsby. The PLC owns 80% of Env 1, while a Danish Company owns the other 20%. Env 3 is a private limited company owned by three key venture capital companies, as well as some minor investors. Env 2, the smaller of the three companies, is a private limited company owned by the Managing Director, a local businessman.
- 9.19 **Suppliers:** The suppliers identified from the interviews are shown in the Environmental Technologies Supplier Linkages Table, below. The geographical distribution of the supply base for the companies varies significantly. As stated above, this reflects the very diverse nature of the environmental technologies sector. Env 1's supply base is mainly national, Env 2 obtains more of its supplies from international suppliers, and Env 3 receives a high proportion of its supplies from within Greater Lincolnshire.
- 9.20 Env 1's supply requirements are mainly based around the training of staff which involves several types of specialist training, recruitment of engineers who make up the bulk of their staff and hotels for engineers to stay in near the sites they work on. Training is one of the single biggest spends, where they use four or five different companies. If they can use local ones, they will do so, but the need for such specialised training means looking outside the county. However, all the companies they use for training are UK based and are SMEs. The local suppliers they use are in Grimsby, where Env 1 is also based. Their sole client, Siemens Wind Power, requires that on top of generic offshore wind training, that their technicians receive 'Siemen-specific' training, which Env 1 are charged for by Siemens. This makes Siemens a special case in being both a customer and a supplier. As Siemens is their sole customer, this specialist training increases their dependence on, and commitment to, Siemens.
- 9.21 Siemens supply their own technicians on the whole, so on the occasions they come to Env 1 for technicians, Siemens require very specialist skills. This has resulted in Env 1 being unable to source their own employees locally; only two employees are local. Conversely, Env 3 is able to source most of its employees locally, however, the directors of the company come from further afield, such as Scunthorpe, which implies a lack of specialist skills in the Lincoln area. While Env 2 have managed to employ all their staff from the local Lincoln area, they have had to invest significantly in training to ensure their staff could provide the right skills for the business.
- 9.22 Env 2 have very few UK suppliers, in proportion to their turnover, even though the UK is able to supply them with solar PV panels. Their main spend is on hi-tech components for solar PV installations and these are currently sourced from Western Europe, as the price is competitive compared to UK suppliers. This demonstrates, however, the potential for the UK (and possibly for Lincolnshire), to take advantage of this market.

Obviously the development of any hi-tech manufacturing base requires many different facets.

- 9.23 Env 3 also look to Western Europe for a significant quantity of their waste plastic, as well as all across the UK. This is due to the nature of the business and their inability to capture the majority of the local supply of waste plastic, as potential suppliers are often caught up in long-standing contracts with other businesses that they are loyal to. Their main suppliers tend to be MeRFs (Materials Recovery Facilities), as well as contractors of local authorities, for example, Bifa.
- 9.24 From those companies interviewed, it is understood that when businesses are selecting suppliers, they consider quality, price and their own cost reductions, practicality and supporting the local economy, and generally in that order that is supporting the local economy is the last consideration. All the businesses use several local suppliers, even if they do not supply the bulk of their supplies. Lincolnshire can clearly support some of this sector, but not in the specialist supply areas that are required. For example, Env 2 source all their solar PV panels and specialist components from Germany, but they are able to use a local supplier for their electrical wiring. Env 3 have very few of their main suppliers for plastic waste in Lincolnshire, as the area would not provide enough material for their business, but they still use local suppliers for supply of engineering work, electrical goods and electrical equipment. Quality and price has meant that companies like Env 2 have had to turn to Western Europe (Germany and Denmark) for specialist equipment and products in renewables. The Asian and British markets cannot compete in this sense (anecdotally, the Asian market is much lower quality).
- 9.25 There is huge potential for the supply bases of the businesses within the renewables sector to diversify if they chose to broaden their services. Their supply chains could also become more localised, but at present the need for very specialist skills and products requires these businesses to source from outside the local area, which was especially noted for Env 1 and Env 2 for the majority of their supplies.

Environmental Technologies Sector Supplier Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Hindles, Spot-on Electrical, CPC, AAA, a local recruitment company, Hammond and Taylor, Cromwell Tools, Holsalls, Platinum, Apollo Engineering, MSI (Modular Silo Industries)
UK	Doncaster Cables, EON, recruitment company in Manchester, Private companies in Hull, Aberdeen and Northshields, Fleetwood Nautical College, Hota College, NARC, TAG, KPMG, UK Hotels in general, Survitic
International	Conergy, SMA, Avasco, Schueco, Maersk, Siemens

Environmental Technologies - Location of suppliers and percentage of turnover

Business		Percentage of Business Turnover	Number of Suppliers
Env 1	Lincolnshire	25	3
	UK	67	8
	International	8	1
Env 2	Lincolnshire	37	5
	UK	0	0
	International	62	4
Env 3	Lincolnshire	86	
	UK	14	
	International	0	

9.26 **Customers:** The customers identified from the interviews are shown in the Environmental Technologies Customer Linkages Table, shown below. The renewables sector, from our consultation, would appear to be prone to dependence on single customers. This causes feelings of instability, for two main reasons; the company is dependent on the stability of their major customer; and they are restricted in terms of business strategy by their customer's demands. Env 1 is an example of such a business, which currently relies solely on Siemens, as a single customer. This is partly due to the UK wind market being dominated by Siemens; for example, Siemens are currently set to control ~87% of the market for Round 2 of UK offshore wind power installation. However, Round 3 is open to competition, so planning for the future and opportunities to develop a more diverse customer base is essential in making Env 1 more stable and less dependent. However, Env 2 and Env 3 manage to keep a broader customer base, and can do so, due to the nature of their business.

9.27 Env 2, out of those interviewed, is the business with the most local customers and with the largest quantity of customers. This would be expected due to the nature of their business supplying to both domestic and business premises. Only 5% of their business last year came from outside the Lincolnshire. There is currently significant demand within Lincolnshire for renewable energy across schools, farms, hospitals, domestic and commercial clients. Although customers will generally be one off purchases for each type of renewable energy installed, as the county develops, more sustainable buildings and renewable energy installations will be required.

9.28 Env 3 have been able to sell their products (their main one being PET bottle preforms) to several clients, and their customer base stands to grow as more drinks and plastics companies require lower cost and more environmentally friendly bottles. Their biggest client is Coco-Cola, but unlike Env 1, they do not have such a large dependence on them, despite stringent customer demands. Env 3 are in discussion with other large drinks companies such as GSK and Britvic, who they might supply. The nature of their business means that they can have customers world-wide, and indeed have an office in Hong Kong, with two employees, to take advantage of the global market. Env 3 also has a small sales office in Newcastle, consisting of five staff.

9.29 Env 2 will continue to diversify their portfolio of products and services again, as although they had large number of customers last year, most were as a result of Government support with Feed-in-Tariffs; the basis of which is now changing. While the changes to Feed-in-Tariffs has caused some uncertainty for Env 2, they have been able to get around this by diversifying (for a second time) into other renewable energy markets and sustainability products. However, they still feel that all parts of this sector are dependent on Government legislation and support which is changeable and inconsistent, and therefore makes business planning challenging.

9.30 The following tables list the suppliers, customers and collaborators of each of the renewables and environmental technologies businesses that were interviewed. These have been divided into the local area (Greater Lincolnshire), the UK and International. The tables, therefore, give an idea of the scope of supply chains in Lincolnshire, and to what extent they are dependent on businesses outside the local region. The tables below the 'Linkages' tables, which quantify supplier and customer linkages by percentage of business turnover, specifically for each business interviewed, give a more definitive picture of supply chain dependencies geographically.

Environmental Technologies Sector Customer Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Mountain Recycling, Housing Associations, schools, churches. Domestic clients, farms, commercial clients
UK	APPE, Sharpk, Coco-Cola/APla, Constar, Signod, small number of farms, schools etc for solar power
International	Siemens Wind Power

Environmental Technologies - Location of customers and percentage of turnover

Business		Percentage of Business Turnover	Number of Customers in last financial year
Env 1	Lincolnshire	0	0
	UK	0	0
	International	100	1
Env 2	Lincolnshire	95	356
	UK	5	19
	International	0	0
Env 3	Lincolnshire		
	UK		
	International		

Supply Chain Interdependencies and Collaboration

9.31 **Supply Chain Interdependencies:** The businesses interviewed do not depend on a small number of suppliers, although they do depend on certain regions for supply, such as Western Europe for solar PV equipment, as the UK could not compete on price. Customers, however, are a very different case. As previously discussed, Env 1 have a dependence on just one customer, Siemens, which leaves them feeling vulnerable. In addition, the work they receive from Siemens is seasonal, as there is very little work in the winter in offshore wind energy. Env 1 remain a necessity to Siemens as long as Siemens cannot provide the expertise offered to them in-house, which again is uncertain.

9.32 Env 2, while having over 300 one-off customers last year, find that this customer base is dependent a single piece of Government support with the Feed-in-Tariffs. Having previously been a much more diverse business, they will be able to take this path again

with ease. However, they still insist that all parts of the renewable industry are dependent on Government incentives to a degree, leaving them in an uncertain position. While they know which areas they want to diversify into, such as solar PV and heat pumps, making them less vulnerable, they still need to wait until announcements from the Government are made final. For example, by April, properties with Energy Performance Certificates of D or above will be eligible to receive the Feed-in-Tariff. However, this is only 50% of the market, potentially reducing their target customer base.

- 9.33 Env 3 seems to have the least dependence on particular customers and ongoing government support, but perhaps partly due to it being a business dealing in a more mature market of waste recycling in comparison to renewable energy. Their customer base continues to grow, as does their business, which they said doubles each year.
- 9.34 **Collaboration:** as is evident from the interviews, the businesses do collaborate, or at least know that this will be very important in the coming years. For example, Env 1 believe that business in the wind energy sector will be done more as 'packages', so partnerships will be essential. These packages might be supplying both technicians and transfer vessels together, for example. Env 1 currently works with Wind Power Support who provides services in offshore wind power, especially in the transport and site management areas. This partnership allows them to offer a more complete service. If the UK is to be competitive in the wind industry, collaboration will be pivotal going forward in order to offer the best skills and services to clients. Collaboration should be encouraged and catalysed in order to ensure Lincolnshire, and the rest of the UK, can take full advantage of the current and imminent opportunities in wind power.
- 9.35 Conversely, Env 2 does not feel the need to collaborate to any large extent. Env 2 did attempt to collaborate with the local District Council on renovating derelict houses to EPC Band C, installing heating systems, solar PV and providing insulation. However, the project was held up by local government red tape, in areas such as ownership rights, rules around housing associations and rights for councils. This is an area of great potential as housing shortages, as well as quality of housing, are current problems within Lincolnshire. Such a project would also create jobs for the local economy. The hold up in planning permission has meant Env 2 will probably undertake the project alone and self invest. This may not be an option for other renewable businesses with a smaller turnover than Env 2, and thus Government red tape could be seen to be hindering the local economy.
- 9.36 As the example of Env 2 demonstrates, businesses can be put off collaboration, but going forward, there needs to be support for businesses in this area. The renewables sector is both new and rapidly changing, and collaboration would mean adapting to these changes in legislation and the economic climate. It is possible that more opportunities to collaborate should be presented to businesses. Trade associations could have a significant role to play in collaboration, and indeed already work in bringing companies together. For example, Grimsby Renewable Partnerships is an organisation of five companies working together in wind energy, which has been in place for the last four years. Env 1 are part of this, as are Grimsby Institute, Grimsby Fish Dock Enterprises and North-East Lincolnshire Council. This is meant to promote the area to attract large corporations like Siemens, Centrica and RES, who dominant the wind market in the UK. The Partnership met with Siemens and Centrica in the past year to gauge what is required of them to work with these large players. The partnership is now being rolled out to include other professionals, such as lawyers and accountants, and other organisations that can offer skills to the wind industry. The aim is to offer an alliance of services that can be taken to existing and prospective customers. Env 1 mentioned, however, that many businesses want to be a part of this network, but are unsure how to access it, so ease of joining partnerships is essential going forward.

9.37 The anaerobic digestion (AD) plant at Agfood 3 is a good example of where the agri-food and renewables businesses could potentially collaborate. AD plants installed by food manufacturers and agri food businesses can take on waste from smaller businesses and farms, subject to logistical issues, to dispose of the waste, and to potentially use the waste as a fertiliser, applied to land. This would be aligned to environmental targets for the region, as well as supporting the local economy.

9.38 Other barriers to collaboration include local politics in a disjointed county. There is little history of cooperation between Lincolnshire, North-East Lincolnshire and North Lincolnshire. However, there is the potential for significant wind energy trade in Lincolnshire, therefore business needs to be attracted to the region. Joining up communities, especially in areas such as onshore wind, will give a more localised advantage to the region. It is essential that if the local region utilises wind power, that they assist the local economy by contracting the local businesses that provide this service to undertake the work.

Environmental Technologies – Collaborative Linkages

Location	Identified Businesses and Organisations
Greater Lincolnshire	AGRI-CYCLE, Wind Power Support Ltd, Grimsby Renewables Partnership, Team Humber Marine Alliance
UK	Renewables UK, Framework for Renewables, WRAP
International	APRO

Areas of Supply Chain Vulnerability and Barriers to Growth

9.39 **Barriers already identified:** the GGLEP Renewables Task and Finish Group, in their 2011 report, set out the barriers for the sector. These are listed below so that this report can discuss and add value to these issues:

1. Planning permission for wind turbines:
 - a. The issue of the MOD and radar height restrictions.
 - b. A lack of understanding from the public and planning committees on the issues that surround wind turbines.
2. A lack of suitable facilities at Grimsby for the expansion of the offshore wind market.
3. A shortage of skilled staff, especially in regard to maintenance technicians for wind turbines.
4. Need to 'formalise' the market. There is plenty of room to grow renewable energy crops without compromising food production - but farmers need some certainties before they will commit valuable land or invest in seed/plant to grow biomass.
5. Issues in relation to the lack Standard Industry Classification (SIC) codes for the renewable/environmental technology sector

9.40 **Uncertainty around Government Legislation:** the renewables and environmental technologies sectors are still relatively new and businesses are still assessing the opportunities and the market demands. Much of this sector is tied up with government incentives, which seems to be one of the biggest issues for the sector, because of a lack of consistent approach by government. There is a climate of uncertainty, so while

businesses are aware they need to diversify, they are still awaiting Government announcements in order to decide the best way to develop their business strategy. Env 3 is a business with this experience, which has the ability to diversify, but cannot implement their strategy until they are sure of Government decisions. All the businesses expressed that more consistent legislation would make them feel less vulnerable, as would increased leniency in planning restrictions, which appears to be a significant factor in why other European countries are starting to outcompete the UK in some areas of the renewables sector.

- 9.41 **Skills for new Industries:** Skills in the renewables sector are essential to address in order to ensure a stable future in the sector that the local economy can benefit from. As the sector is new, it can be difficult to find the staff with the right qualifications, and even in those cases, further training has to be provided to staff once recruited. The prospect for the sector is only that it will continue to grow, and more specialists will be required. It is very important that schools, higher education, further education colleges and universities in Lincolnshire are addressing this sector as a career choice for their students and introducing them to these prospects. The cost to businesses for training their staff are significant. For example, Env 2 have had to provide training in solar PV for their staff, all of which are local. While a figure was not obtained for this training, Env 2 described the cost as 'significant'. This money is capital that could be re-invested into the business to help it grow. If the area had more skills in the renewables area, some of the money spent on training could be saved and re-invested into the business.
- 9.42 **Lack of collaboration:** As previously mentioned, partnerships which allow companies to provide packages of services to be offered will put the county at a competitive advantage. Currently, the lack of collaboration between companies may be acting as a barrier to Lincolnshire becoming a leading county in the sector. More collaboration could mean that companies could come together to offer a more complete and convenient service to clients, which may have the affect of being able to offer more price competitive products and services. This may be assisted by a joined-up approach by Lincolnshire, North Lincolnshire and North-East Lincolnshire, to provide an area wide focus on the opportunities in the renewables sector.
- 9.43 **Planning permission:** the speed by which planning decisions are identified as a barrier to the competitiveness of the sector in Lincolnshire. Env 3, while having a good relationship with, and good support from, the County and District Councils, expressed that government agencies, for areas such as planning permission, have held up the expansion of their business. Similar sentiments were shared by Env 1. The GGLEP could assist businesses in securing planning permission and perhaps brokering discussions with government agencies.

Supply Chain Opportunities and Drivers for Growth

- 9.44 **Opportunities already identified:** the GGLEP in its 2011 report outlined the top opportunities for growth in the sector as follows:
1. Lincolnshire has the potential to establish itself as a leading renewable county, able to export skills elsewhere in the UK.
 2. Growth in Anaerobic Digestion (AD) due to Lincolnshire having a large amount of intensive livestock and vegetable producers. Huge potential to use AD to improve efficiencies of farms and estates and reduce use of nitrogen as an arable input.
 3. Improved technology and understanding surrounding wind turbines gives the potential to expand wind energy within Lincolnshire.

4. The introduction of the Renewable Heat Initiative (RHI) gives the potential for expansion in the renewable heat energy market, in particular biomass supply, making it far more commercially viable.
 5. The expansion of offshore wind, especially around the south bank of the Humber
- 9.45 **Localised supply chains:** Lincolnshire needs to ensure that it can compete within a global market in this sector. While the UK is a leader for renewables in the technology they use and their ambitions for cutting carbon and utilising renewables, there is far more scope for more localised supply chains, especially in the case of renewable technology components, which are currently sourced mainly from Germany and Denmark. It is important that the UK is more competitive in price, which could be achieved through strategic collaboration in providing more cost effective packages of products and services for clients.
- 9.46 **Promoting the low carbon economy:** the renewables sector offers a unique opportunity to Lincolnshire in that it will both create growth in the local economy, as well as ensure the county is sustainable in line with Government targets and the drive for low carbon business. Local Councils should therefore be encouraging the uptake of low carbon technologies and work with these businesses that provide those technologies. Lincolnshire should continue to build on its track record in developing renewable energy businesses, which was demonstrated by all businesses interviewed; Env 2 were the first in the county to offer solar PV and wind power, and who are also part of the Government Framework for Renewables, which only seventeen companies qualified for; Env 3 has doubled in size every year despite operating in a recession; Env 1 is a leader for supplying highly skilled technical specialists.
- 9.47 **Supporting high growth environmental technology companies:** the whole renewables sector provides opportunities for businesses to diversify. Env 3, while it will not diversify as such, continues to find larger customers to supply so as to grow the business. Env 1 was created by its parent company in order that they could have several different businesses underneath it, and can therefore diversify from wind at the opportune time. However, this diversification will not happen for at least another two years, but may be essential as they are vulnerable with Siemens as their sole customer. Env 2 have had the experience of diversifying from the start, and will most likely repeat that initial diversification. While this may be in response to Government legislation, it provides an opportunity for a wider customer base and to achieve more stability in their business.
- 9.48 **Inspiring Young People:** the sector itself is growing globally and many opportunities present themselves. It will be an area of increasing interest for young people, and therefore there is an opportunity to influence education at an early stage to ensure that careers in this area are being considered.
- 9.49 **Promoting collaboration:** Trade associations should be aided by the GGLEP to run workshops and seminars for those considering entering the sector, as well as people who may know very little about the sector. There is an opportunity for the GGLEP to have closer interaction with trade associations and networks to ensure they are reaching the right local people. Env 1 is a good example of a business sourcing most of its specialists outside the region as the right skills cannot be found locally. Trade associations could also have more of a role, alongside the GGLEP, in holding briefing sessions for businesses on Government legislation. A better understanding of this could mean businesses are less trepidatious in proceeding with their strategies, and could also mean more partnerships would be sought.
- 9.50 In the same vein, there are massive opportunities in the potential for collaboration, which could be strongly aided by the GGLEP and trade networks. Ensuring businesses

are partnering to make use of complementary skills and services, especially for the wind industry would widen customer bases, and therefore make businesses less vulnerable to both one dominant customer and government legislation.

9.51 Accessing international supply chains: It was clear from speaking with Env 1 that offshore wind is a big opportunity which Lincolnshire must work hard to secure. There are several opportunities from installing and servicing wind turbines, to the manufacture of parts. As Lincolnshire is on the coast where many turbines will be installed (for the remainder of Round 2 and all of Round 3), it is crucial for Lincolnshire's economy that they have a share in some of this business. Currently, a significant proportion of component manufacture is set to take place in Denmark, but there is the potential for much of the assembly of parts to take place in Hull. However, this is not yet secured, and it is therefore important that the GLLEP assists in securing some of the work for Lincolnshire businesses. The Humber region has additional opportunities in that the manufacture of turbines by Siemens and ABLE is due to take place there. This means that the area will become more important and give benefit to the supply chains locally. Another significant opportunity in wind power, other than the manufacture and assembly, is operations and maintenance, as the wind turbines, once built, are expected to last for twenty-five years. This will provide regular work that the area can benefit from, and the area has skills locally that could provide this service. For example, Siemens already employ many people in the region for regular maintenance work. It is estimated that there is one direct employee per turbine, and this is thought to contribute to four or five indirect jobs, as maintenance includes the operation of the transport vessels, onshore coordinators and maintenance managers, to name a few. It is therefore essential that this opportunity is exploited to grow the local economy and stabilise local supply chains.

9.52 North/North East Lincolnshire Energy Corridor: Our research for the 'Lincolnshire in the Global Economy' report suggests that there is great potential for the further development of the M180 Energy Corridor, which links the Humber ports with the power stations in the Trent Valley and Vale of York. This is an historic trade corridor which is based on the import and transport of coal to the power stations. However, there has been increasing use of biomass imported through Grimsby and Immingham, which is being used by power stations to reduce use of fossil fuels. This study has identified local supply chain activities brought about by this growing activity. This is exemplified by the case of a Lincoln-based engineering company, Eng 4, which is providing technology to Drax and Ferrybridge power stations to reduce the particle emissions associated with biomass. There are further opportunities for agri food companies in Lincolnshire in the supply of biomass, including wood chips, poultry litter, and straw.

Ways in which the Greater Lincolnshire LEP and influence or support the sector

9.53 The Renewables and Environmental Technologies sectors are relatively new and are still assessing where the best opportunities exist. The sector needs support to grow going forward as it has been, and still is to a degree, very dependent on legislation from Government. This legislation has stimulated the market, but as this sort of legislation, such as the Feed-in-Tariffs, is phased out, more support to help the sector thrive will be required. Skills and education in the UK have not yet caught up with the sector, and the UK, according to the businesses interviewed, is out-competed by the rest of Europe on technical skills and price.

9.54 It has been previously identified by the Greater Lincolnshire Local Enterprise Partnership (GGLEP) Renewable Task and Finish Group that now is the time for Lincolnshire to establish itself as a leading county for renewable technologies. For example, the UK is a world leader in renewables, especially wind energy, but the supply base for materials continues to be overseas. Other issues for the sector include Government red tape and planning permission, for example, businesses being

disallowed from carrying out work on certain buildings, the need for a more robust business strategy to deal with the changing sector, competing with overseas corporations, and dependence on one customer or one piece of Government legislation, which greatly increases the risk faced by the business. The sector is only set to grow in the future, as there is increasing demand and incentives for renewable energy. It will therefore require significant support going forward, both from Government and business networks to ensure the services they offer are wide enough that they do not depend on one customer and one piece of legislation, and that there are enough skilled workers in this sector in the UK to feed into the businesses.

9.55 Our recommendations for ways in which the Greater Lincolnshire LEP could support the continue growth and vitality of the sector include:

- Stimulate collaboration by enabling networking events focused upon the sub-sectors with the Renewables and Environmental Technologies sector, and cross-sector linkages with Engineering and Agri Food
- Develop more programmes in schools, higher and further education, and local universities, which highlight careers to young people in the renewables and environmental technology sector. Provide more options to these young people for how they can develop these skills relevant to the sector.
- Increase understanding of Government legislation, especially in areas such as the Feed-in-Tariffs, and what the implications could be in the long term and short term. Potentially workshops could be held on the subject. These may encourage companies to make contingency plans so they are not just depending on piece of legislation.
- Local government and authorities could provide help in gaining planning permission, for example, for projects such as domestic housing renovation.
- GGLEP should focus specifically on imminent growth areas, such as Round 3 or the offshore wind installation for the UK.

Environmental Technologies SWOT Analysis

Strengths ▪ Location, especially for wind energy, biomass, and biofuel ▪ Sector already established in Lincolnshire ▪ Linkages to the Industrial Power and Energy Group at Lincoln Engineering School	Weaknesses ▪ Lack of specialist skills within local labour market ▪ Limited number of local suppliers ▪ Dependence on government legislation and incentives ▪ Difficulty in gaining planning permission for new renewable initiatives and support infrastructure
Opportunities ▪ Round 3 offshore wind energy ▪ Siemens wind turbine manufacturing site in Hull, and ABLE Energy Park ▪ M180 Energy Corridor ▪ Government focus on the environmental sector, and associated incentives ▪ Collaboration across Greater Lincolnshire and Humber LEPs ▪ Collaboration between the renewable and engineering sectors	Threats ▪ Dependence on a small number of customers ▪ Inconsistency of government legislation and incentives

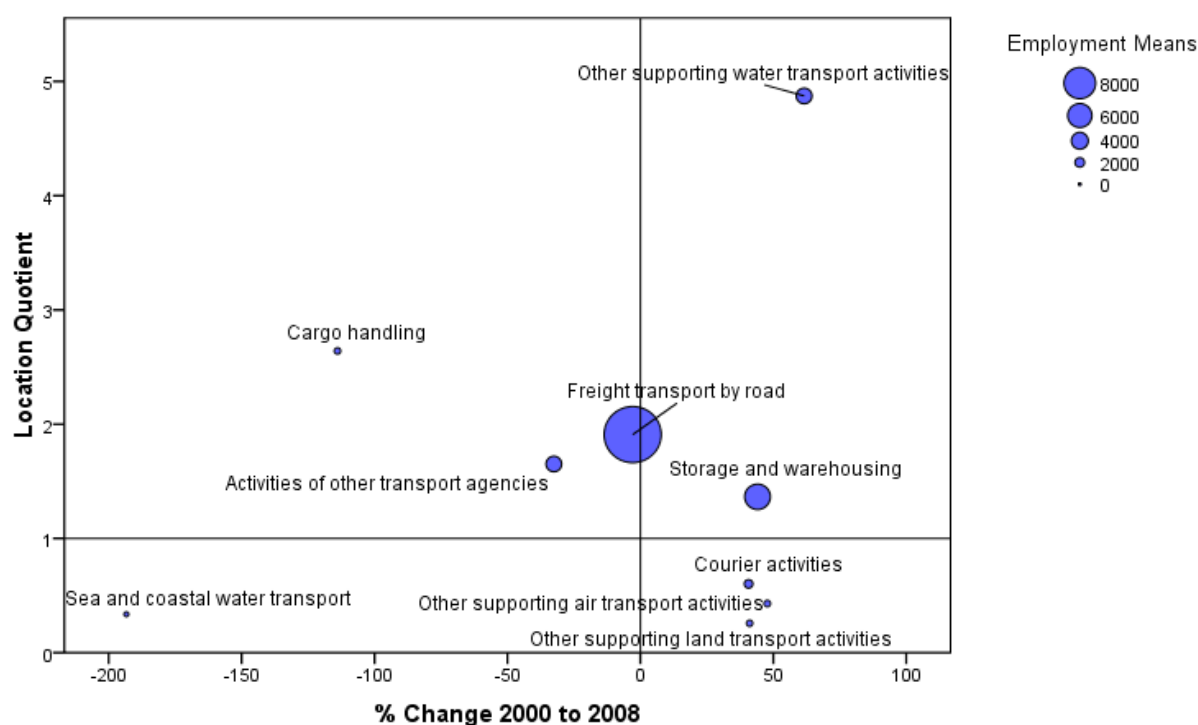
10. LOGISTICS

Sector Overview

10.1 Logistics activity accounts for just over 14,000 or 3.8% of jobs across Greater Lincolnshire. This is higher than the average for Great Britain, at 2.4%. The area has higher than national average employment in activities such as freight transport by road, cargo handling, storage and warehousing, other supporting water transport activities, and activities of other transport agencies, and this is an area of growth.

10.2 Freight transport by road is the largest logistics activity, accounting for almost 8,000 jobs, and with a geographical focus in South Holland and North East Lincolnshire. There is a clear link between logistics and agri food production in these areas. The activity with the highest location quotient is supporting water transport activities, which is concentrated around Grimsby and Immingham. Storage and warehousing is a fast growing activity, increasing by 79% between 2000 and 2008, and concentrated in North Lincolnshire.

Graph 15: The Logistics Sector in Greater Lincolnshire



Source: *Annual Business Inquiry, 2008, Office for National Statistics*

10.3 As one would expect concerning an industry whose role is to connect, move, store and haul for other business sectors, the presence of logistics is universal in the Greater Lincolnshire region. However, there are some distinction geographic areas of activity, and these include:

- The ports at Grimsby and Immingham in North East Lincolnshire
- Clustering around fish and food processing, petro-chemicals and renewables in North East Lincolnshire
- Humberside Airport in North Lincolnshire
- Clustering around steel manufacturing in North Lincolnshire
- Clustering around the agri-food industry in South Holland and Boston
- The smaller ports in the south of Lincolnshire at Boston and Sutton Bridge

- 10.4 The Greater Lincolnshire region has good international linkages via the ports of Grimsby and Immingham (the busiest commercial port in the UK), and Humberside International Airport. There are short sea-shipping port facilities at Boston and Sutton Bridge in the south of the county. These facilities only have small tonnage compared to the Humber ports but do have unused capacity.
- 10.5 The logistics sector in Lincolnshire has an internal, national and international focus. This is often determined by sector that logistics providers are engaged with. The engineering sector is, for example, more likely to be driven by export, so logistics infrastructure is oriented around movement of finished goods out of the region (via the ports and access to major national road trunk routes). Agri-food is a multi-tiered set of businesses which use logistics services incorporating haulage, storage and consolidation, within the region and beyond.

National Context

- 10.6 Nationally, the logistics sector is identified as an important sector in its own right, accounting for 9% of national GVA, but also an important enabler of other sectors. The logistics sector is vital to the success of other key business activities, such as food and farming, manufacturing, energy, and retail. The Department for Transport, in its review of the logistics sector in 2011, sets out five key opportunities to support the sector. These include facilitating the development of rail freight interchanges, improving road and rail capacity and connectivity to ports, promoting the image of the sector at a local level, reducing unnecessary regulation, and attracting high calibre recruits. The report also states the sector has a key role to play in reducing carbon emissions⁸.
- 10.7 A neighbouring region, Northamptonshire, is an interesting comparator, as employment activity and growth in logistics in this region makes it one of the most significant areas of the country for logistic activity. This reflects the central location of Northamptonshire, its strategic distribution parks, access to key motorways and rail hubs at Corby and Daventry. This logistical advantage also gives Northamptonshire a competitive advantage in food, and the county is host to major food manufacture and distribution. The trend towards consolidation in food production and distribution (driven by powerful national retailers and international brands manufacturers) further emphasises the relative advantage of Northamptonshire as a location, with its strong logistics focus, and to some degree consequent disadvantage of Lincolnshire, with its 'off-centre' location and some poorer trunk roads.

Focus of Research

- 10.8 Detailed interviews have been undertaken with three businesses that are specifically engaged in logistics. These are described below. The findings from interviews undertaken for the Global Economy project have also been incorporated into this section, as well as the feedback from the agri food and engineering/renewables focus groups. These include feedback from Associated British Ports and Seafox.

About the Companies

- 10.9 **Logistics 1:** a third generation family business principally involved in international road haulage. The client base is large engineering/ manufacturing businesses. The company is based in Lincoln and has 75 employees.
- 10.10 **Logistics 2:** a logistics service organisation to the food industry offering transport, warehousing and warehousing services. The principal offering is in consolidation of

⁸ Department for Transport (2011) *The Logistics Growth Review: Connecting People with Goods*

fresh produce and chilled fresh and ambient manufactured products from local suppliers delivered to customers, who are principally national retailers, but also wholesalers, food service and further processors. Logistics 2 is a significant employer in the south of Lincolnshire.

- 10.11 **Logistics 3:** Are an independent retailer with more than 200,000 members and 2,500 staff employees. From a logistics perspective they deal with national and international supply via their own trading group and directly with local suppliers.

Local, Regional and Global Linkages

- 10.12 **Ownership:** The three organisations represent a wide range of ownership structures. Logistics 1 are a classic family-owned SME business that has grown in size and significance over their history. Logistics 2 are a limited company that has expanded from its Lincolnshire origins as a third-party distribution service company, handling the chill-fresh products of locally based food suppliers and manufacturers. Logistics 3 is a member owned retail society, but is also part of a national UK Group.

- 10.13 **Customers and Suppliers:** The customers and suppliers identified from the interviews are shown in the Supplier Linkages and Customer Linkages Tables below. All three companies are distinctly Lincolnshire origin businesses. However, all represent the specific trend in this study of businesses having strong UK national customer associations, perhaps more significant than their local supply chains. Logistics 1 has strong Lincolnshire origins, but provides logistical services to large national manufacturing/engineering businesses outside the area and are solely focused on export on behalf of these clients. Local supply comes only from provision of labour, vehicle maintenance and fuel. Logistics 2 has South Holland origins and their customer base is local/ national and international businesses based in Lincolnshire and neighbouring counties and serves primarily retailing and food service customers. As their food manufacturer customers have grown and consolidated the Lincolnshire based operation has become part of larger business serving national food suppliers and large retailers. International supply and sale are both relatively limited (with the exception of some supply from The Netherlands) as the company is focused on home produced perishables fresh foods for the national market.

- 10.14 In terms of suppliers, Logistics 2 only rely locally on areas such as labour and maintenance services and like Logistics 1, capital equipment (such as vehicles) is national / international in source. Logistics 3 is, as a significant regional retailer the most 'Lincolnshire-centric' from a customer perspective, but from a supply and logistic point of view is mostly buying and distributing national / international grocery and associated products via their national trading group. However, they also have close and complex local supplier relationships due via the range of their operations which in addition to grocery retailing spans, for example, pharmacy, funeral services, petrol forecourts and post offices.

Logistics Supplier Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Ford and Slater, Crossroads Commercial, Premier Foods, SME local food suppliers, Ideal Lincs, Jaguar cars
UK	Cooperative Retail Trading Group
International	Volvo, Scania

Logistics Customer Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Siemens, Lincolnshire-based food producers and manufacturers
UK	Tesco, Asda, Morrisons, Co-op, Waitrose, food service companies, food wholesalers, Caterpillar, John Deere
International	

Supply Chain Interdependencies and Collaboration

- 10.15 **Supply Chain Interdependencies:** Concentration and rationalisation among customers of logistics organisations is a long-term trend. This is as common in the agri-food industry, where consolidation of large retailers and brand manufacturers is as prevalent as in the general manufacturing and engineering sectors, and this has put added pressure on logistics companies:

'Fifteen years ago business was more spread across a range of 'blue chip' customers, none of which was particularly dominant, but as UK manufacturing has contracted many of these businesses have disappeared (for example, Courtaulds and ICI) or are no longer in the UK. UK manufacturing has declined'. Logistics 1

- 10.16 Concentration of business has also seen the progression of the development of international business taking over UK and local organisations. This too has a knock-on effect on logistics. Some sectors have been affected more than others by this. In agri-food for example, the south of the county is less affected, with a need for food businesses to be close to the 'growing raw material'. With ambient food goods and the 'seafish cluster' of the north of the region, raw materials and finished goods can be produced in areas of comparative advantage outside of the region (and country) more easily. Transnational companies, therefore, may divert business elsewhere and this has a follow on effect for the logistics industry. This does not mean, however, that powerful food brands manufacturers and retailers would not also consider sourcing fresh produce outside of South Holland:

'A risk to the region is that there is no guarantee that major food groups will stay in the county. The past advantages of "proximity of raw materials" to the point of production are no longer as big a draw as in the past. The proportion of local foods used by main manufacturers is getting less and less'. Agfood 1

'A potential threat is whether there is continuity of demand for products from this area'. Logistics 2

- 10.17 **Collaboration:** There is some engagement between logistics organisations that are based within the region and suppliers of good and services within the region. However, with the exception of readily identifiable 'clusters' (for example, in fresh produce in the south of the region and seafish in the north), industrial supply chains often lie outside of the region (for example, in much of engineering) and often overseas (as with renewables). Logistics organisations may be part of national international concerns and their regional operations are part of a bigger offer serving customer further afield. Even in the core 'clustering' area of fresh produce and chilled food, there is the potential and risk of movement of at least some of that business, as a result of national/ international orientation of suppliers and customers (as well as the changing national identity of big business). As a result logistics services are, again not necessarily wedded to clustering in the region, with the exception of some local labour, some vehicle and buildings maintenance services, fuel supply and so forth. Major capital spend may well be outside of the region:

'Currently, with the exception of Siemens, all our customers are based outside of Lincolnshire, but the most significant spend (wages, fuel, etc) is spent inside Lincolnshire'. Logistics 1

'In the last 10 years the nature of the suppliers have become 'more national', but the mix and make up of the suppliers' business is pretty much the same..... But we have to be a national business to meet the needs of their (primarily national retailing) customers'. Logistics 2

- 10.18 There is a lack of shared capacity in logistics (shared storage, management and distribution and backhauling of materials on behalf of multiple clients). This is of course not an issue concerning products for which clients or their customers are not direct competitors, and there are not only potential cost savings, but also environmental benefits from using shared facilities for produce going to the same retailers, or using shared transport to deliver linked products such as food and flowers. For some interviewees this is a possible area for development, and a *'Scope for collaboration amongst key players and logistics opportunity'*.
- 10.19 However, the potential for increased sharing of logistics, does not factor in the issue of the influence of power in supply chains and the desire of overriding vertical control by channel power brokers for whom financial and environmental economy derived from shared facilities may be less important than control.

Areas of Supply Chain Vulnerability and Barriers to Growth

- 10.20 **Effects of retailer power on agri-food distribution:** Within some aspects of the food industry, collaborative logistics is already commonplace. Logisticians responsible for primary distribution (collection and consolidation of produce from suppliers for onward distribution to supermarket retailers RDC- Regional Distribution Centre store delivery systems), operate on the basis of efficient full loads. This means bringing together of product bound for different and competing retail customers on the same load and consolidation in depot for drop-offs at different retail customers' RDCs as, according to Logistics 2, 'an integrated 3rd party logistic solution for manufacturers' and retailers'. However, competitiveness in supermarket retailing (the predominant customers of the regions and nation's food suppliers') may prevent further development of integration of logistical services in the cause of both cost and environmental savings. Supermarket retailers are the dominant players in the UK food chain, and enforce a controlling influence back down the supply chain through logisticians and intermediaries. In an ever cost-conscious era retailers are driving efficiency savings in distribution.
- 10.21 **Factory-gate pricing:** One of the contentious areas is 'factory-gate pricing', introduced by retailers to force suppliers to quote for the cost their goods 'ex-factory', not the cost of logistics. This allowed the retailers to nominate their own logisticians, arrange collection of the goods by nominated companies, and therefore suppliers could not build in cost for delivery, and this causes tensions for suppliers and pressure on local, perhaps smaller hauliers:
- 'The trend in the last 10 years in primary distribution is for retailers to have the manufacturers' sell their product to them minus the cost of transport, which they then sub-contract to distribution specialists'. Logistics 2*
- 10.22 Factory gate pricing, therefore is an important issue in moving control of logistics away from in-house facilities of suppliers and local, small haulage businesses and towards larger, and perhaps less locally-based operators, whose fortunes are tied to large and influential national customers.

- 10.23 **Retaining competitive advantage:** Large retail customers may look to do business with large international suppliers and that has consequences for South Lincolnshire sourced and distributed fresh produce. Many of the larger food manufacturing businesses in the region are already part of national/international groups. For some logistics and intermediary businesses this means smarter 'relationship development' in order to achieve logistical efficiencies and 'whole chain collaboration', to position themselves more strategically for the retail chains that they serve. This could be achieved by collective economies in the supply chain, and through building value adding relationships with local suppliers in an integrated whole-chain approach:-
- 10.24 *'It is highly competitive and cost focused and customers' will move for cheaper supply arrangements, so we have to protect ourselves through contractual arrangements and through relationship development'.* Logistics 2
- 10.25 *'We put a lot of effort into designing lean end to end supply chains. You cannot get the efficiency from this without collaboration....So we are attempting to build up a whole chain relationship: with the farmer, Agfood 4 in the middle, and the retailer customer. So we can strengthen the bonds in the supply chain'.* Agfood 4
- 10.26 **Road problems in Greater Lincolnshire:** Sub-regional issues concerning road transport are the most problematic identified issue for logistics. Population centres in the north and west of Greater Lincolnshire, such as Grimsby, Scunthorpe, Lincoln and Grantham, are relatively well connected to other regions by motorway or dual carriageway road. Recent improvements to the A46 have improved access to the A1, the Midlands and beyond. Further planned (for example, Lincoln's eastern by-pass and work on the A18-M180) and in-progress road developments (the A46 link to M1) will improve connectivity within and to outside of the region.
- 10.27 However, the Greater Lincolnshire area has an inheritance of historic and not necessarily regionally cohesive transport and communication routes; where in the case of major trunk road network in particular, these go around rather than directly through the region:
- 'Transport connectivity is variable in the county. Grantham and Stamford area is good, Lincoln poor, and there are problems in the south of the county. Inter-county communications are poor. It is quicker to go outside the county to travel north-south Lincs'.* Engineering and Renewables Focus Group
- 10.28 **Lincoln road transport issues:** Lincoln has notable traffic congestion difficulties, especially entering and leaving the city at peak times, as exemplified by the following comments:
- 'The Lincolnshire road network needs upgrading. Getting out of Lincoln to go anywhere is a nightmare. Whichever direction the fleet leave the depot is a traffic congestion problem'.* Logistics 3
- 'The level crossings (across the high street in Lincoln) are not good for business'.* Eng 1
- 10.29 **South and east region road transport issues:** Boston, Spalding, Skegness and Louth, are more remote from large population centres and served mainly by single carriageway roads, on which there are notable problems:
- 'Many of the regions roads have suffered from years of neglect. A15 and A17... both have problem issues. Need dual carriageways often to ensure effective movement of goods into, through and out of the county'.* Agfood 1

'A16 and A17 need dualling'. Agfood 4

'The A16 should be dual. With high volume of logistics and farm traffic it can also be dangerous'. Logistics 2

10.30 **A less than 'ideal' location?:** For some respondents in the interviews and focus groups, Lincolnshire was not necessarily the first choice of 'ideal' location. Some organisations were located in Lincoln for reasons of 'historic accident' and organic growth, but the less than perfect location in terms of transport connectivity and logistical infrastructure did not mean that it made sense to relocate and perhaps the location had other advantages in terms of, for example, preferential labour and other costs and pleasant living for employees. The argument that Northamptonshire offers the 'ideal' location for logistics activities, may have some truth with respect to consolidation and onward distribution of fast moving consumer goods, but the same may not apply to high value goods in high tech engineering. Further, for companies such as Logistics 1, the changing economic fortunes brought about by relentless consolidation in business means that the importance of location of logistics facilities changes on the turn of a contract won or lost.

10.31 In the agri-food industry and for those providing logistic services to the sector, good transport infrastructure is more of an issue (and particularly for those the south of the county) which could be a barrier to business development and investment. Cluster proximity issues are still (despite the threats identified above) more of a determining factor in business location and logistical access, such that organisations need to be close to the source of production.

10.32 **Attracting the best people:** An associated issue (in part) is a link between poor road infrastructure and the ability to attract the best quality management. Some interviewees reported difficulties of Lincolnshire competing with other regions for managerial staff in logistics and other areas of the business, in part for reasons of road accessibility.

'In Boston, we have a real problem recruiting good quality senior management. The roads are the problem. Senior managers are people who have a choice about where they will work, so for example; if they could live in Stamford and have a nice easy journey to Boston, we wouldn't have a problem'. So persuading people to move to work in Boston area is a real problem'. Agfood 4

'If we attracting key staff from competitors, these will come from outside the area (the logistics industry is strong in the midlands), so have to attract them from these areas and if managers don't wish to stay locally for the long term, they will commute rather than relocate'. Logistics 2

Supply Chain Opportunities and Drivers for Growth

10.33 **Opportunities in key distribution centres:** Concerning the role of the seaports within the region. The view from interviews and focus groups was that the ports in our area are under utilised and under-developed and business may be lost to other European ports that offer better facilities and market themselves more effectively. In particular, it is identified that a chilled food hub is needed at Immingham to enable import of fresh produce:

'We need chilled hubs at the port (Immingham). At the moment, these are just for seafood but we need them to be able to import other fresh produce. There are 2 million tonnes of agri-food imported to the UK, but all but a few tonnes come into the southern ports'. Agfood 7

- 10.34 **The proposed road rail hub:** The hub located in Spalding is envisaged to move produce off road and onto rail and bring environmental and business benefits to organisations in the agri-food cluster. Clearly rail can never be a replacement, for road transport, which is and will remain the predominant method of delivery. But rail could become part of the multi-modal mix for the region and add-value concerning long distance transshipment both within the UK and for imported goods in tandem with better utilisation of the region's seaports. It is expected that planning application for the Spalding rail hub will be submitted in 2013, with a view to construction in 2014:

'The idea is to time it with the upgrade of the line that goes through Spalding which goes Peterborough to Doncaster. There are a lot of savings to be made if the hub can be put in at the same time as the line upgrade'. South Holland District Council

'We can give suppliers the ability to integrate into the rail network (take vehicles off the road) and improve the environment by putting product onto rail. Distributing by rail to Midlands, North of England, Scotland etc'. There is also a lot of container movement (from Felixtowe) so this could be done more directly to Spalding by rail with new hub. The environmental argument for the rail hub is strong'. Logistics 2

- 10.35 There were other, more mixed views from the interviews and focus groups, from those who were more sceptical of benefits to Lincolnshire and UK business. Views included that rail was seen as a benefit only when concerned with long distance rather than the more typical 3 hour delivery time for UK destinations, the cost of double handling onto road transport, and the increased benefits for those importing to the UK over local businesses. Many agri-food and particularly fresh produce organisations are operating a seasonal business, where they utilise local production in the peak English season, but also bring in and add value to imported produce (perhaps produced by their own overseas businesses) throughout the year. The rail transport hub could of course be an advantage concerning the transport of produce long distance from for example, southern Europe, but of course efficient rail transport may also act in competition with local produce:

'There is not as much enthusiasm for it as when first announced. If it is going to cost £1bn to develop, there are better things to spend money on'. Agri-Food Focus Group

- 10.36 **Growing logistics sub-contracting in the region:** Industrial sectors and logistics specialists in the region will sub-contract logistics services to smaller and 'owner-driver' business, and this is a relatively recent and buoyant trend in comparison to other comparable UK regions. The reason for this could be the large demand for logistical services in agri-food and relative shortage of qualified drivers. Logistics 2 for example, build-in a requirement for sub-contracting haulage in order to manage the seasonal peaks and troughs of fresh food demand.
- 10.37 **Logistical support for niche market development:** Much could be done to substantiate the image and network ties of the important agri-food sector in the region, and to recognise its contribution to employment and economic and creative output on a local and wider stage. There are some (relatively niche) opportunities for integration of the mainstream food sector for which greater Lincolnshire is such a major supplier and the innovation in speciality and regional foods. Logistical infrastructure and practice can have a role to play in the development of this sector (which also may influence other significant sectors for the region (for example, food-oriented engineering, packaging and tourism).
- 10.38 **Local consolidation on agri food:** Logistics 3 are pioneering local purchasing in addition to national/ international supply through its own group. Products from local suppliers are brought into its own distribution centre using a third party distribution

hub. For Logistics 3 in the last 10 years the market for local products has grown tremendously (from a small base) and has double digit growth year on year. It is not a massive part of the business, but is growing. This in tandem with successful development regionally of Tastes of / Select Lincolnshire indicates a growing interest in sustainable local and speciality food and drink within the region, but as yet this has not been matched by essential logistical infrastructure that is inevitably geared around the large supplier and customer model.

Opportunities for the LEP to support/influence the sector:

- 10.39 **Road improvements identified as a priority:** from the interviews and focus groups, consensus is that support and guided influence with respect to logistics should focus on infrastructural issues. Inevitably road planning and investment is expensive, long-term and subject to regional competitiveness for funding. However, in this study, road improvement was the key area seen as requiring attention:
- 10.40 **'Support for multi-modal connectivity:** The private sector proposal for the Spalding area rail hub has been backed by South Holland District Council, who are urging LCC support. Their preferred site is at Deeping St Nicholas. Logistics 2 have indicated that they would operate the site if it gets the go-ahead. The development is clearly an attempt to improve intermodal transport, to keep and attract businesses in the Greater Lincolnshire region (particularly in the agri-food sector) that could go elsewhere and benefit from perhaps better connected areas. There are potential benefits in multi-user collaboration in multi-modal and road traffic reduction, however, agreement is by no means universal, with a corresponding need to match rail investment with road infrastructural improvement. The local impact of potentially increased imports and organisations which may be focused on supply and consolidation of products from outside of the region needs to be understood. The planning, and local authority economic scrutiny process is still ongoing, and the LEP should be fully engaged and informed of this process and its implications. Similarly, support should be made to underpin opportunities to develop our sea ports with corresponding multi-modal infrastructure that can underpin the Greater region's strengths (for example, in chill food networks).
- 10.41 **Logistics management and skills development:** There is a skills gap in logistics. This is related to issues of Lincolnshire (more specifically, parts of Lincolnshire) being less than accessible. But further, it is a problem to attract higher managerial staff. The LEP is advised to work with diverse agencies to promote the positive aspects of relocation to Lincolnshire as well as support specific investment in logistics skills training and logistical management development through higher education initiatives. An existing strength exists via the University of Lincoln and RAF/ MoD in Defence Logistics and there are clear opportunities for cluster synergy in skills and higher management requirements between defence and other principal Greater Lincolnshire clusters.
- 10.42 **Cluster development:** The logistics industry is an important glue that binds clustering activities in many of the Greater Lincolnshire's other key industrial sectors. Support for shared, collaborative and multi-modal facilities can action cluster connectivity, for example in the agri-food chain, to bring together primary producers, manufacturers and large retail customers outside of the region. Further, there may be possibilities for cross-cluster learning concerning best practice, technology transfer, supply chain cost analysis and whole-chain value adding (for example, between military, engineering and agri-food logistics) and the LEP would be advised to support this. Clustering will be further enhanced through access to logistics support for SME businesses in the region, for example, concerning assistance in accessing logistics skills advice and development of consolidation services. A good example of this would be with respect to the niche but growing speciality food sector (under the

auspices of Tastes of / Select Lincolnshire). The LEP would be advised to consider the implications for SMEs as a result of investments in multi-modal centres in the region, and encourage 'piggybacking' consolidation facilities for SMEs associated with some of the large-scale logistical infrastructural projects identified.

Logistics SWOT Analysis

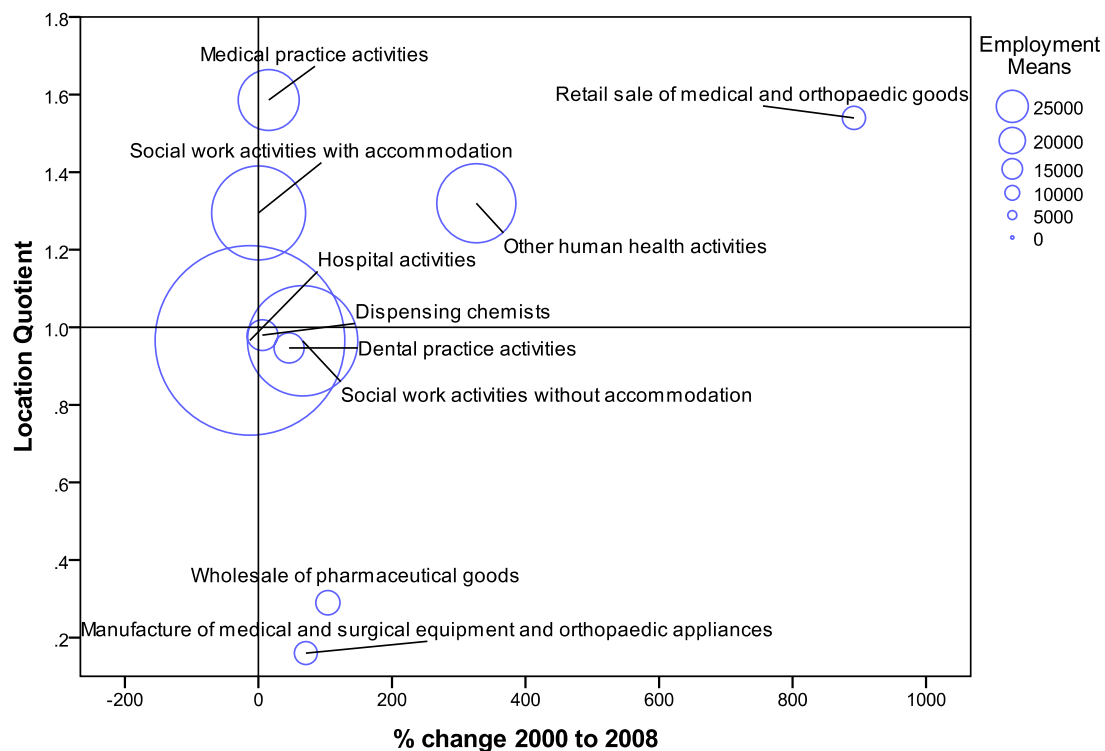
Strengths ▪ Proximity to primary production in fresh produce ▪ Key logistic specialisms (e.g. in chill temperature/ fresh food) ▪ South of county notably a major distribution hotspot ▪ North of county significant distribution centre around steel ▪ Proximity to seaports ▪ Success of environmental controls / efficiencies on vehicles	Weaknesses ▪ Poor road infrastructure in hotspots and in particular the south and east of the region ▪ Lack of 'multi-modal' connectivity (road-rail-seaports) ▪ Key industrial sectors present but less developed integrated networks around them ▪ Difficulties in attracting skilled workers (drivers) and managers
Opportunities ▪ Integrated development of sea ports ▪ Development of logistic infrastructure in north (e.g. ABLE logistic park) ▪ Actioning of clustering and 'whole' chain integration ▪ Rail hub ▪ Shared / collaborative logistic facilities ▪ Development of alternative/ hybrid fuel ▪ Local food identity, development and distributive hubbing for 'sustainable food chains' ▪ Development of business opportunities for local airport ▪ Engagement with University for development skills/ higher education specific to logistics management	Threats ▪ Better connected (neighbouring) UK regions ▪ Loss of business to better connected countries (ports and other logistical infrastructure) ▪ Further consolidation in key industries leading to depletion of local business networks ▪ Risk of loss of business through acquisition and disposal policies of transnational businesses ▪ Rising costs of industrial land ▪ Rising cost of fuel/ cost of fuel duty ▪ Rising cost of local authority business rates ▪ Competition from international hauliers

11. HEALTH AND SOCIAL CARE

Sector Overview

- 11.1 The health and care sector offers opportunities for growth in both the service and manufacturing (goods, medical equipment, pharmaceuticals) supply brought about particularly through Lincolnshire's growing and aging population. Data shows that across the Lincolnshire LEP region there was a growth of 16.8% in jobs across the health and care sectors between 2000 and 2008, confirming its potential as a contributor to the performance of the regional economy. The sector is a significant local employer, providing more than 55,000 or 14% of jobs. At the same time, the health and care sector is facing considerable political and organisational change with the introduction of personal care budgets.
- 11.2 Graph 16 shows the employment in key health and care supply chain activities. There are a number of activities which have an LQ similar to the national average; that is the prevalence of this activity in Lincolnshire is similar to elsewhere. These include hospital activities, dental practice activities, dispensing chemists, and social work activities without accommodation. Greater Lincolnshire has a low representation of manufacturers of medical equipment, and wholesale of pharmaceutical goods. However, since 2000, a niche growth area has been retail sale of medical and orthopaedic goods. This activity employed 12 people in 2000 and 119 in 2008. This activity has increased across Greater Lincolnshire, which perhaps reflects the ageing nature of the population.

Graph 16 – Health and Care



- 11.3 The “Excellent Ageing” report (2011) identified that 40% of the Lincolnshire population is over 50, compared to 34% in the UK as a whole and this is set to rise in Lincolnshire to almost 50% by 2033. The latest Nomis statistics show that North Lincolnshire (25.5%) and Lincolnshire (22%) both have higher proportions of their population who are retired compared to the UK average (16.7%). By contrast, just 15.3% of the NE Lincolnshire population is retired.

- 11.4 The Wanless Social Care Review (2006) identified that in 2002, around 900,000 older people were considered to have high levels of need, according to the standard assessment of being unable to carry out one or more of the main activities of daily living (being able to wash, dress, feed, toilet, walk and so on). A further 1.4 million older people had low levels of need. Over the 20 years to 2025, the Review projects a rise in the number of older people who do not require care of 44%, a 53% increase in those with some need and a 54% increase in those with a high level of need. Based on expert analysis commissioned for the Review, these increases reflect a future where population health improves due to moderate reductions in obesity and other 'lifestyle' conditions, as well as the introduction of effective new treatments or technologies.
- 11.5 In the longer term, the growing and ageing population requires more strategic re-thinking of business opportunities in the sector. An ageing population has traditionally been seen as a problem but projects such as "Excellent Ageing" recognise that it can also provide some new opportunities. In rural economies, firms that are not considered part of the health and care sector may be able to provide new services or tailor their existing services more closely to the needs of people with care needs.

National Context

- 11.6 Personal budgets are an allocation of funding given to users after an assessment which should be sufficient to meet their assessed needs. Users can either take their personal budget as a direct payment, or – while still choosing how their care needs are met and by whom – leave councils with the responsibility to commission the services. Or they can take have some combination of the two (communitycare.co.uk).
- 11.7 The NHS is looking for new ways to stimulate innovation, and one approach is seen to be the encouragement of smaller firms, with greater capacity for innovation, to access NHS commissioned contracts⁹. The Department for Business, Innovation and Skills Strategy for Life Sciences (2011) takes this further with additional funding announced for medical research, a commitment to offer patients access to novel treatments and a new "Early Access Scheme" to accelerate the speed and efficiency of routes to market.
- 11.8 The changes to the NHS that will see Strategic Health Authorities and Primary Care Trusts abolished clearly leave many questions that cannot be answered until the effects of these changes filter down through the sector. However, in a letter to the NHS Commissioning Board Authority, the government emphasises that, "The first – and overarching – objective is to design the Board so that it transfers power to local organisations". This will create new opportunities for some in the private sector and there will be new challenges for the delivery of public health-care that will require new skills or the re-positioning of skills with potential for organisations that are on the ball to gain a first mover advantage in the new policy environment. As part of the localising agenda, Clinical Commissioning Groups will have the freedom to work with whomever they want to in securing support for commissioning health services. CCGs are expected to have full control of local commissioning and to be established by April 2013.

Understanding Healthcare Supply Chains

- 11.9 Supply chain theories have developed apace in recent years, with a growing recognition of the value of strategies that relate to an entire supply chain. However,

⁹ www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_131784.pdf

knowledge of supply chains in service businesses is still relatively scant¹⁰. For the healthcare sector, the adoption of traditional industrial supply chain management practices is seen to be especially problematic. In a special issue of the *Journal of Supply Chain Management* focused on the healthcare sector, De Vries and Huijsman¹¹ note that complex technologies, multiple stakeholders, a dynamic internal and external environment and distinctive characteristics of health care operations all add to these challenges.

11.10 An earlier US study by Burns¹² identified a set of key supply chain challenges faced by the healthcare sector. These include:

- Constantly evolving technology resulting in short product life cycles and high costs for physician preference items
- Difficulty in predicting frequency, duration and primary diagnoses for patient visits and the associated product requirements
- Lack of standardisation for healthcare products
- Lack of capital to build a sophisticated IT infrastructure to support supply chain management efforts
- Inadequate business education and SCM capabilities among hospital-based buyers.

11.11 Many of the issues can be seen to provide potential problems for the healthcare sector in Lincolnshire. Pressures for NHS reform and new budgeting for patient care only adds to the uncertainty at the current time. Extended to social care provision, especially in a largely rural county, the challenges of providing services in ways that enable patients to stay independent by living at home adds further logistical and cost challenges.

11.12 The complexity of health care supply chains is well described by Reha Uzhoy who notes that the health care delivery system consists of multiple independent agents, such as insurance companies, hospitals, doctors, employers, and regulatory agencies, whose economic structures, and hence objectives, differ and in many cases conflict with each other. Both supply and demand for services are uncertain in different ways, making it very difficult to match supply to demand. This task is complicated because demand for services is determined by both available technologies or treatments as well as financial considerations. Decisions made by one party often affect the options available to other parties, as well as the costs of these options, in ways that are not well understood. This leads Uzhoy to conclude that a centralised approach to controlling the entire system is not viable although centralised decision models may be useful for coordinating the operations of segments of the larger system.

Focus of the Research

11.13 Interviews have been conducted with policy experts, educators, researchers, care commissioners, medical practitioners and private business operators in the sector to understand the major issues from each perspective. For the private sector business interviews anonymity was assured but brief descriptions are provided below:

11.14 **Health 1:** A private practice established in the late 1990s and based in central Lincoln. They employ 2 practicing dentists and 8 other members of staff. They

¹⁰ Baltacioglu, T., Ada, E., Kaplan, M. Yurt, O. and Kaplan, Y. (2007) A new framework for service supply chains. *The services industry journal* 27(2) 105-124.

¹¹ De Vries, J. and Huijsman, R. (2011) Supply chain management in health services: an overview. *Supply Chain Management: An International Journal* 16(3) 159-165

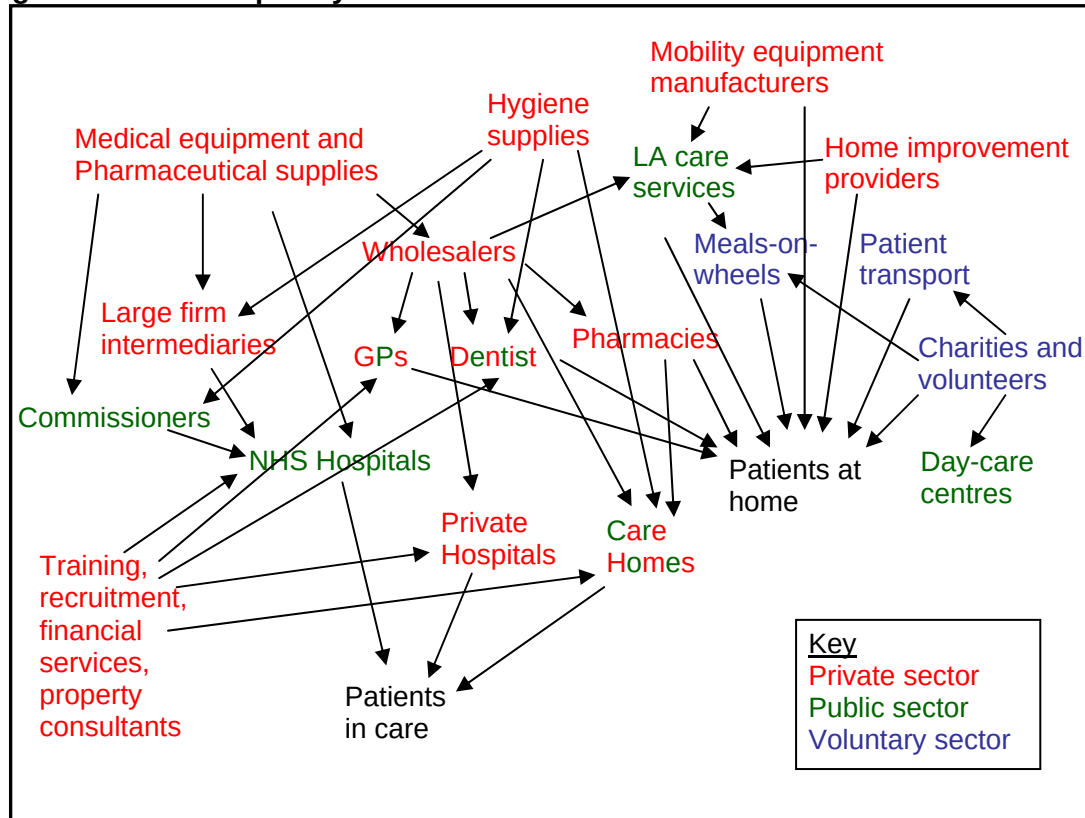
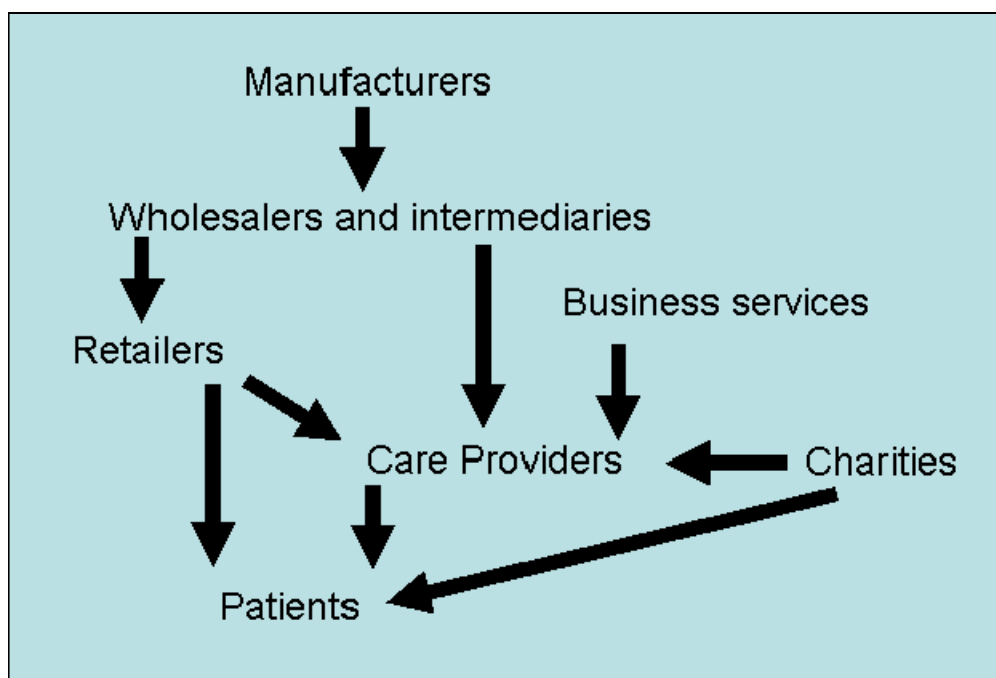
¹² Burns, I. (2001) *The Healthcare Value Chain*, Jossey-Bass, New York.

specialise in implants and cosmetic dentistry as well as carrying out more routine work.

- 11.15 **Health 2:** A family owned business, established in 1935. The company has expanded to include four retail Pharmacies, employing seven pharmacists as well as growing Occupational Health and First Aid, Surgical and Medical supplies activities.
- 11.16 **Health 3:** A family run business based in West Lindsey making mobility aids, specialist furniture, bathing aids, nursing and medical equipment. These are sold primarily to the private home and residential care markets.
- 11.17 **Health 4:** a charity that provides household building, maintenance and security services to vulnerable residents across Lincolnshire. They were set up in 2006 and now employ four case workers and five building surveyors directly, with a range of contractors delivering services on the ground.
- 11.18 **Health 5:** The care home has 26 rooms for residential care and also offers day-care facilities. It employs 28 members of staff (a mix of full and part time) and the business is privately owned. It is located in a large village in West Lindsey.
- 11.19 Interviews were also undertaken with a number of sector 'experts' and stakeholders, including:
- Tony Hill, leader of the LEP health and social care task force
 - Niro Siriwardena, a health care researcher and practicing GP
 - Phil Considine, researcher and course leader of MSc in commissioning at Lincoln Business School.
- 11.20 In the short term, key challenges are to introduce more competition into the sector and to understand the barriers that local businesses face in winning contracts. With the introduction of Personal Budgets, new opportunities are expected to emerge and interviews will also be used to understand how this is expected to impact the sector.

Local, Regional and Global Linkages

- 11.21 Rather than linkages between individual businesses, the key to understand this sector is to understand the inter-relationships between different types of organisations. Figure 1 illustrates the composition of this sector in its broadest sense. The sector is represented by the British Healthcare Trades Association (BHTA) which has over 400 companies' members ranging from a small, local showroom selling items such as scooters, wheelchairs, bathlifts and stairlifts, to the largest manufacturers and suppliers in the UK producing and distributing a vast range of products. It is therefore highly complex and includes both manufacturing and service-based activities.

Figure 1a - the complexity of the Health and Social Care Sector**Figure 1b - A simplified supply chain for health and social care**

11.22 As well as the complexity of the sector overall, Figure 1a illustrates the myriad interactions between private, public and voluntary organisations. Public, private and voluntary organisations operate in many parts of the overall health care sector meaning that the effective delivery of services relies on the different types of organisation working effectively together. It is also difficult to divide these inter-organisational relationships into distinct tiers of activity because of the diversity of types of business/service that can be included under each heading of the simplified supply chain diagram indicated in Figure 1b. In the research, we have identified manufacturers that are also intermediary suppliers and retailers that supply patients

directly as well as a range of different care providers. The complexity is further increased by the need for commissioning bodies to address competition concerns and regulations to protect the “consumer” who is often not well placed to make market-based decisions.

11.23 Figure 1a also illustrates that the supply chains focus in on local patients and their needs. Lincolnshire based manufacturers at the top will have supply chains that emanate out of the region as well but the flow of products from the top right through to patients will seldom be retained within any one locality. The growth in the number of end users in Lincolnshire will therefore not necessarily feed back into opportunities higher up the supply chain, beyond those with first hand contact with the patients.

11.24 **Suppliers:** The supplier linkages tables below are for all the businesses that we have interviewed in the health and care sector, so aggregated across them rather than for each individual company. There was a distinction drawn between technological or niche product needs, where suppliers were not expected to be found locally, and lower value or generic services where local supply chains were most used. In some instances, the technical aspect of the service could easily be developed by local firms, such as a specialism in building clean rooms, if they recognise the added value to this sector. These findings reinforce the findings of our supply chain survey, which suggests that firms in the health and care sector were least likely to prioritise local suppliers.

Health and Care Supplier Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	Core services such as waste disposal (Cory environmental), maintenance (local plumbers and electricians) , accountants etc Occasional specialists located nearby (e.g. lifting equipment sourced from company in the same village and specialist dental equipment from a firm in Lincoln, but in each case, just chance that they are co-located.) Also see figure 1.
UK	Specialist clinical waste disposal (PHS, White Rose) Specialist building needs for a sterilised room (Essex based company) Nottingham Rehab Services, based in Ashby-de-la-Zouch. Major suppliers to the NHS through commissioning. They are also seen as direct competition by smaller local manufacturers being established market leaders in supplying to the NHS regionally. Pharmaceutical companies. E.g. Glaxo-Smith-Klein. Specialist surgical equipment and IT systems that need to be licensed by the NHS are provided by a relatively small number of firms. Training Providers for care home (Buckinghamshire/Norfolk)
International	Pharmaceutical and medical supplies companies – although connections with firms in Greater Lincolnshire tend to be channelled through UK-based wholesalers.

11.25 **Customers:** The customers identified from the interviews are shown in the Health and Care Customers Linkages Table, below. As noted above, the sector is divided into the direct care services where customers are primarily locally-based and the manufacturing and support services, where firms look outside of local and regional

borders to meet the required market scale to remain viable. Growth beyond a regional context can be accelerated by developing relationships with business customers with a nationwide presence.

Health and Care Customer Linkages Table

Location	Identified Businesses and Organisations
Greater Lincolnshire	For wholesalers and firms that deal directly with end-user customers the focus for trade in the Greater Lincolnshire area.
UK	Manufacturers of healthcare equipment need to trade beyond the region. Specialist care home developers have expanded to work beyond the region, partly influenced by supply chain connections to national providers.
International	One NE Lincolnshire firm reported having 2 contracts to supply firms in Northern Ireland after a response to their advertising in a trade journal. A Lincoln based private dentists has clients in Spain and Scotland, although they only target the local catchment area.

Supply Chain Interdependencies and Collaboration

- 11.26 The supply chains in the health and social care sectors are highly complex, as illustrated in figure 1a above. The major distinction for private sector firms is not spatial, but about whether they are selling to public/private organisations. The NHS offers the potential for larger volume contracts but the barriers created by the economies of scale associated with established larger players in certain markets can restrict opportunities for Lincolnshire businesses. One respondent explained that the only way to penetrate the NHS in his business' line of work was to offer niche products that other mainstream suppliers are not producing.
- 11.27 Across Lincolnshire, the NHS commissions healthcare services for some 270,000 patients. As the leading player in the sector, their activities are clearly integral to the opportunities for other firms to penetrate supply chains. Tendering has been criticised for prejudicing against smaller firms or start-ups, an issue that is being tackled in the County Council but remains of concern across the sector.
- 11.28 Many leading players in the sector are tied into supplier arrangements over which they have little control. For example, in the retail branch of the sector, national chains like Boots are governed by head office decisions. Similarly, in NHS trusts, there is little room for local firms in the medicines and medical supplies supply chains as these are dominated by larger companies, often with overseas bases to minimise costs.
- 11.29 Few firms had international connections. The one who reported trading with Northern Ireland made no efforts to trade outside of Lincolnshire but explained that sometimes people saw their advertisements in the trade journals. With a more targeted approach towards other regions with above-average demand for healthcare services or below-average supply, there should be real opportunities for expansion in the wider national and international markets. Being at the forefront in terms of demand for healthcare services, especially for older people, Greater Lincolnshire needs to develop a reputation for excellence in this field if it is to become a significant value-adding sector that can support positive trade beyond the region.

Health and Care Collaboration Linkages

Location	Identified Businesses and Organisations
Greater Lincolnshire	Two firms supplying different essential products to care homes team up based on personal connections to improve their marketing. Referrals of patients between NHS and private sector relies on personal relationships as well as official channels.
UK	Home Improvement Agency working with similar organisations in Norfolk. Dental practice referring clients to private-sector specialists in Nottingham. Nottingham Rehab Services, although competitors for some firms, work in partnership with a LHIA and regularly recommend their services to clients
International	Nothing identified

Areas of Supply Chain Vulnerability and Barriers to Growth

- 11.30 Dominance of large international companies:** While some firms see their major hurdles between themselves and their customers, one business owner highlighted the increasing dominance of large pharmaceutical companies as another threat to their business. The supply of products from one of the big international firms is reportedly channelled through approved wholesalers, of whom there are only three in the UK, the nearest for the NE Lincolnshire firm interviewed being in Grimsby. This maintains their competitive advantage but has both time and service delivery implications for local pharmacies, with potential threats to patients should the situation continue to disadvantage smaller, peripheral suppliers.
- 11.31 Internationalisation of medical supplies:** Conversations with a medical supplies company just outside of the GLLEP boundary showed that the manufacture of many goods is increasingly outsourced to Eastern Asia where regulations are more relaxed. These products are still quality-tested in the UK to ensure their suitability for safe medical use but this is evidence that the healthcare sector is not immune to the same global pressures as other areas of manufacturing.
- 11.32** While internationalisation is a threat to some firms, it provides opportunities to others. A private dental practice and a care home both source products from a range of suppliers, often identified from Internet searches. Where suppliers are international, they are able to identify UK-based wholesalers and make a direct approach to source the products that best meet their needs. This identifies the importance of a strong web-presence for suppliers, something that is not so strong for many Greater Lincolnshire firms in this sector.
- 11.33 NHS Commissioning Systems:** For highly technical equipment, Department of Health guidelines and licensing play a significant role in dictating the products that can be sourced by hospitals or GPs. By contrast, there is greater scope for individual trusts or practices to make independent purchasing decisions for everyday equipment. This was confirmed from the manufacturer's perspective as well as from a GP/researcher who gave the example where only a handful of computer systems are approved by the Department of Health but hardware may be sourced from any suppliers. A manufacturer of mobility equipment explained that for many products, it is very difficult to penetrate NHS commissioning systems but niche products that escape more rigorous licensing requirements can provide more successful routes into the public sector supply chains. Once a firm has a track record, and more important

develops personal relationships within the NHS system, they have a better chance of tendering for future provision too.

- 11.34 The NHS was also criticised for attempting to internalise too much work under the guise of cost saving. Specialist, experienced firms are being squeezed out by pressures to reduce spending, even though the external provider can often deliver more efficiently. One example cited was an NHS trust that sought to make all of its own buying decisions and then supply internally to other parts of the NHS but they subsequently found that they were no longer able to reclaim VAT so the costs rose. This requires a re-examination of priorities within NHS trusts in terms of how they measure efficiencies.
- 11.35 **An ‘overlooked’ sector:** In official statistics, health is traditionally aggregated with public administration and education, indicating that it is perceived as a part of the public sector services and not a potential growth sector for private enterprise. Private enterprises that operate in health and care are ‘hidden’ under other sectors such as manufacturing, retail and other services sectors. This is illustrated by local economic policy documents. For example, in North Lincolnshire, 13% of employees work in the healthcare sector, second only to manufacturing (18%). However, in the *Understanding North Lincolnshire* document, planned investments focus on transportation, renewable energy and other industrial enterprises. This suggests that the potential significance of healthcare in an economic sense is being overlooked.

Supply Chain Opportunities and Drivers for Growth

- 11.36 **A growing private healthcare sector:** In January 2011, 11.1% of the UK population (around 6.9 million people) had private medical insurance. This rate was increasingly until the onset of recession when both employer- and self-funded policies fell back. In the private sector, businesses or trusts providing health care have greater flexibility. Certain licensing standards must still be adhered to but there is greater freedom in the choice of suppliers and collaborators. A dental practice explained that they use a lot of local firms for day to day services such as waste disposal and office equipment but that the specialist nature of a lot of the surgical equipment means that they still rely on national and international suppliers for many products too. The interviewee cited one example where a very local firm was providing new specialist equipment but that they only met at a trade fair in Birmingham. Neither the manufacturer nor the purchaser expects to find specialist suppliers or users within a local area hence there business approaches take them to national professional events.
- 11.37 **Supporting third sector organisations:** there are 223 third sector organisations (TSOs) operating in the health and social care sector in Lincolnshire with a turnover of £67m. These organisations also have approximately 1000 full-time employees and over 6,500 registered volunteers (GVA Grimley, 2010). One-third of TSOs focus their work on services for older people. These organisations tend to have a very localised focus, especially in their service delivery, offering a degree of resilience. This could be strengthened through greater collaboration between TSOs. Some are already effective at cross-referrals and collaboration but evidence from the interviews suggests that this depends on individuals’ connections rather than a framework that supports TSO collaboration.
- 11.38 Nationally there has been a significant investment in the development of social enterprises to address the opportunities around the local provision of health care, although most of the focus of this previously has been urban. There is clearly scope to look in more detail at this opportunity in the both the urban and rural contexts within the LEP area. The growth of the “Care Farm” sector providing support and development opportunities for individuals with learning difficulties and mental health

challenges is also an agenda which fits the LEP area well, but where there are currently limited examples of such facilities.

- 11.39 The changes currently being introduced by the Coalition government are intended to make it easier for local groups to run community based care facilities – a trend exemplified by Lincolnshire County Council’s decision to encourage local groups to take responsibility for running day care centres across the county. With 30 day-care centres under threat, it was reported in March that nine proposals had been received from the voluntary or private sector to take on these centres.
<http://www.bbc.co.uk/news/uk-england-lincolnshire-17275980>

Care Homes

- 11.40 The care home sector is a major area of growth, with indicative figures from directories showing that there are 119 care homes in Lincolnshire, the majority being privately run and some run by large organisations such as Bupa, Barchester, Saga and Halcyon Care. A report by The Personal Social Services Research Unit projected that the numbers of people requiring residential and nursing homes would increase by over 20% between 2000 and 2020¹³ indicating that there is scope for growth across the sector. While some of this growth will be centred on larger scale providers, the increasing wealth of older generations will also create demand for niche providers offering smaller premises in a range of locations.
- 10.41 The opportunities that exist for innovation in this sector are exemplified by NorthStar who offer a range of property-related consultancy services targeted specifically at this sector. NorthStar offer an integrated service of planning care home developments from finding sites to handing over a fully-furnished and equipped, CQC-compliant building to the care home operator. Lincolnshire Care Association also reports that the company is creating 300 jobs through its innovative approach to service delivery.
http://www.lincolnshirecare.org.uk/members/news/1142/care_home_developers_set_to_create_300_jobs
- 11.42 Previous research has shown that it is difficult to recruit skilled staff in this sector¹⁴ however for smaller, private run homes, such as the one interviewed in this research, retention levels are higher due to ongoing training and a locally-based workforce. Even here though, it is noticeable that the training providers are outside of the region so increasing the availability of vocational qualifications in this area would strengthen the sector.

Care at Home

- 11.43 Another example of developments in the sector is the transition between home-based care needs and moving into residential care. North Lincolnshire Council has formed a partnership with a Housing Association to develop new apartments designed for the over-55s. With Housing Associations controlling increasing numbers of social housing, this provides a key opportunity for co-operation between the health and social care sector and the housing sector to maximise the ability of older people to maintain their independence for longer. Associated charities, such as the Lincolnshire Home Improvement Agency (LHIA) are another example of how smaller amounts of public funding to support the start-up of businesses in this sector can make a real difference. LHIA provide key services to ensure that vulnerable people are able to live in their own homes for as long as possible and at the same time, they co-ordinate their own “supply chain” of contract workers, demonstrating how these care needs do create work for private sector businesses. In each of these areas,

¹³ PSSRU (2001) Projections of demand for residential care for older people in England to 2020

¹⁴ Employability and Skills in the Newark and Sherwood District. A report for NSDC.

there is scope for greater private sector participation in delivering premises that will meet market demand, whether in the form of more intelligently planned new-builds or refurbishment tailored towards a population with growing care needs.

Personal Budgets

- 11.44 The onset of personal budgets, intended to give patients greater choice over what services they want and how to access them, will alter some established supply chains and carer-patient relationships and may create new opportunities for some businesses while endangering long-standing market shares for others. Given that the sector sees a lot of inputs sourced from outside Lincolnshire, this could provide opportunities for a range of businesses to investigate care provision.
- 11.45 Currently, the self assessment and purchasing options on the County Council website are dominated by a small number of suppliers but there is potential for other business to expand their potential customer base through such integrated routes market.
- 11.46 **Developing the Research Base:** While public sector funding has been cut in many areas, medical research funding has been ring-fenced. This has seen the University of Lincoln continuing to develop a series of cutting edge projects within the school of health and social care. Researchers are collaborating with NHS Lincolnshire, the East Midlands Ambulance Trust and Ultrasis (medical software designers) on different projects and there is potential for further collaborative work that engages more closely with a range of other local organisations. While the findings of any research are not specific to the region, this raises the profile of the sector locally and enables external funding sources to be drawn into the region's economy, and potentially to be distributed through growing chains of research collaborators and users.

Opportunities for the LEP to support/influence the sector:

- 11.47 The health and social care sector is not strictly defined according to business types or business relationships but more about the political perspective on the provision of health care. This provides a focus for policy measures and public sector spending but for many businesses engaging with the "sector" the alternatives include supplying their products or services to other business sectors or directly to customers. Examples include manufacturers who make both medical equipment and health and safety kits for offices; builders who do specialist accommodation for elderly and disabled residents as well as mainstream housing developments; security equipment providers who can tailor services for more vulnerable people; and the range of other business service providers in waste disposal, clerical support and professional services who inevitably target customers with a range of business activities.
- 11.48 As such, opportunities to intervene in ways that will generate opportunities for growth for local businesses are challenging. The problems identified in the interviews cover a range of issues from NHS commissioning and the dominance of large firms through to training needs for employees, uncertainty surrounding personal budgets and reduced funding from the public sector to deliver personal care services.
- 11.49 These are all problematic for the LEP to influence but there were some opportunities that could raise the potential for local firms to expand their markets and improve their competitiveness through collaboration and better use of the Internet. The LEP is already pushing for enhanced broadband across the County and it could provide a mechanism for speeding up knowledge exchange, both policy related information and business to business knowledge to support innovation. Such networks can be

developed through existing sub-sector or cross-sector organisations so as not to replicate the good work already being carried out.

- 11.50 Similar, opportunities to re-think public sector purchasing could be extended to NHS commissioning. Private dentists and GPs commented on the value of flexibility and a manufacturer noted that the NHS is too big an organisation to effectively commission procurement across a large range of activities so the Localism agenda provides opportunities for improved procurement, activity that can be connected to the ongoing Source Lincolnshire programme.
- 11.51 The LEP may not have funds available to provide training but raising awareness of the sector's needs can inform training providers of a niche in the market. Awareness-raising can also help in relation to research and development, local sourcing by private sector care providers and business financing. The data shows that firms carrying out healthcare-related activities are seen to be performing well in the region, so raising the profile of these activities will impact upon future growth and investment among these firms and can stimulate other firms and start-ups to look more closely at health and social care as providing genuine business opportunities.
- 11.52 The three over-riding messages concern the flow of information and opportunities to firms in Greater Lincolnshire, especially through improved use of the Internet; the fairness and accessibility of high value supply chains; and an improved provision of education and training opportunities to boost employment potential.
- 11.53 **Flow of rapid, reliable information flow:** ensure a rapid, reliable flow of information on policy changes and new opportunities within the sector to Greater Lincolnshire's firms to give them the best opportunities to react positively and gain a first mover advantage over their external competitors.
- 11.54 **Foster knowledge networks:** a knowledge network for healthcare firms to reduce the problems of physical distance. These could build on networks that already exist across the different professional and commercial fields within the overall sector. As part of this local firms should be encouraged to build strong relationships with gatekeepers, whether wholesalers, larger suppliers or directly with the NHS. Co-operatives of local firms could have a stronger position when engaging in such relationships so fostering local collaborations should also be a target for policy.
- 11.55 **Support network for the third sector:** to ensure that TSOs can have a space in a sector-wide knowledge network. North and NE Lincs have established a "Compact code of good practice" for working with TSOs – something that can be built on as relationships develop.
- 11.56 **Prioritising local suppliers:** review commissioning and tendering guidelines to ensure local firms have at least equal opportunities. Consider prioritising new and local firms subject to competition regulations, either learning from or as part of a wider review of public sector procurement, in line with Source Lincolnshire initiatives. As part of this, ensure that firms are well-informed about how to obtain NHS licenses. There should be an onus within the increasingly localised administration of NHS services to recognise these responsibilities to suppliers.
- 11.57 **Publicise research projects and opportunities for collaboration.** Explore match-funded programmes to enable Lincolnshire firms and research organisations to maximise their ability to access new income streams. The University, in conjunction with the NHS research group should build closer links with private enterprise and this can be facilitated through the LEP task group. Further research is also required to understand the speed at which new technology reaches Lincolnshire's healthcare firms and to identify any barriers to adoption. Increased knowledge of the processes

of innovation transfer can assist firms building innovation networks, provide evidence to support R&D funding and inform policy aimed at accelerating flows of information and best practice.

Health and Care Supply Chain SWOT Analysis

Strengths ▪ Local focus for service provision ▪ Award winning care home providers ▪ Medical research presence ▪ Growing retail sector for healthcare support products	Weaknesses ▪ Dominance of outside firms in NHS supply chains ▪ Commissioning procedures exclude some providers ▪ Dispersed settlement geography and transport infrastructure mean that access to larger markets, nationally and internationally, is compromised.
Opportunities ▪ Growing and ageing population ▪ Personal budgets giving patients greater choice and greater need for advice ▪ Growing third sector healthcare provision ▪ Research funding continues to support bio-tech and health-care research ▪ Co-operative working to supply private sector care homes ▪ Niche product development for new care needs ▪ Opportunities for small businesses and sole traders in the home-improvement sector ▪ Opportunities for local suppliers to develop a strong web-based presence to appeal to international customers	Threats ▪ Reduction in public sector funding ▪ Ever-changing policy landscape could leave some businesses vulnerable ▪ Difficulty in sourcing private sector financing ▪ Price competition from overseas for basic supplies ▪ Consolidation of certain supply chains squeezes out smaller firms unless they can specialise into niches or build effective business relationships.

12. CONCLUSIONS AND ACTION POINTS

Identified Sector Summaries

- 12.1 **Agri food:** our analysis shows that agri food is an important and locally distinctive sector, both in terms of its concentration of employment and its contribution to the area's export profile. The sector in Greater Lincolnshire is diverse, incorporating growing and processing of fresh produce, import and processing of seafood, as well as manufacture of ingredients and prepared meals.
- 12.2 The two principal clusters in Grimsby and south Lincolnshire are distinct and focused on very different product areas. Compared with other sectors, there is relatively strong support from trade groups, produce associations, and buyers consortia. The Grimsby cluster has a tight geographical and product focus, and is recognised by Government as a best practice case. The south Lincolnshire cluster, while larger in employment terms, incorporates a wider range of activities and perhaps lacks the strength of focus of the Grimsby cluster.
- 12.3 The overall agri food sector in Lincolnshire has declined in employment terms, with greatest losses in the fish and vegetable processing sectors. The sector faces a number of key supply chain issues, which include increasing consolidation of farms, processors and manufacturers, increasing international ownership, availability of labour and technical skills, and growing internationalisation of the seafood industry. Opportunities for the LEP to support this sector include providing support for smaller producers in collective purchasing, building on and facilitating linkages between existing clusters, and promoting access to R&D via existing facilities at Grimsby and Holbeach.
- 12.4 **Engineering:** the engineering and electronic sector is relatively small in employment terms, but with a number of locally distinctive activities such as manufacture of turbines, agricultural machinery, bearings, and electronic components. The sector has a strong national and international focus and qualitative feedback suggests that sales are strong, driven by demand for more efficient sources of energy and growth in Asian markets.
- 12.5 Compared the agri food sector, there is less of a defined geographical cluster of engineering activities. Engineering activity is diffuse across Greater Lincolnshire, with local concentrations in Lincoln, Grantham, North Lincolnshire and East Lindsey. Although there are some existing networking activities to support the sector (e.g. Lincoln Engineering Breakfast), it is not thought to work together as a cluster, nor is there evidence of Lincolnshire-wide collaboration.
- 12.6 The engineering sector has declined locally, although employment levels remain fairly static compared with the national average. Key supply chain issues for the sector include a limited and declining local supply base, limited awareness of/networking with local suppliers, a national and local shortage of engineering skills, and increasing international ownership. Opportunities for the LEP to support this sector include support for networking and collaboration in the absence of RDA funding, broadening access to R&D and training facilities at Lincoln Engineering School, and facilitating links between the engineering and renewables sectors.
- 12.7 **Manufacturing:** other manufacturing activities are an important source of employment, with a number of distinctive local activities in North and North East Lincolnshire including basic metals, coke and petroleum, and pulp and paper products. As in the rest of the country, employment in manufacturing activities has declined, driven by a combination of increased mechanisation and international competition.

- 12.8 Key supply chain issues include, as with engineering, a lack of a local supply base and distance from customers, with many firms in this sector focused on export. Skills appear to be less of an issue for this sector compared with the engineering sector.
- 12.9 **Renewables/Environmental Technologies:** as a relatively new sector, renewables/environmental technologies incorporates a diverse range of businesses, which are grouped together on the basis that their activities result in low carbon energy or sustainable product development. The difficulty of quantifying the sector lies in the fact that much of it is 'hidden' within other sectors such as agri food, engineering, construction, and manufacturing. Nevertheless, existing studies suggest that Greater Lincolnshire is a leading region for renewable energy generation in particular, with much untapped potential.
- 12.10 The nature of the sector varies geographically, with offshore wind activities focused in the Humber, anaerobic digestion from agricultural waste in south Lincolnshire, and energy from waste and landfill gas in North and North East Lincolnshire. There is also potential for further development of biomass and biofuels. Perhaps because of the disparate nature of the sector, collaboration is patchy. There is strong local collaboration around offshore wind, with the Grimsby Renewables Partnership, but less so in other sub-sectors.
- 12.11 This is a fast growing sector, with great potential for growth of new environmental technologies businesses, as well diversification of established businesses. There are opportunities, in particular, for local engineering and agri food businesses. Key supply chain issues include uncertainty around government legislation and incentives, lack of a skills legacy for new industries, a lack of collaboration, and a predominance of international suppliers in the wind and solar energy sectors. Areas where LEP could support the sector including promoting the low carbon economy to foster growth of new businesses, facilitating local firm collaboration, and arranging a 'sand pit' event to bring together engineering and renewables companies.
- 12.12 **Logistics:** logistics is a locally important industry, with concentrations of road freight, water transport, and storage activities. Although logistics, as a business services activity, is closely linked to all sectors, its concentration locally is most strongly associated with the agri food sector. Road freight is the most important activity in terms of employment. Port activities, although smaller in employment terms, are locally distinctive. The ports at Immingham and Grimsby, being the largest by tonnage in the UK, are a major asset for the Greater Lincolnshire area.
- 12.13 Logistics is a growing sector for Greater Lincolnshire. Key supply chain issues include consolidation of key customers and the effect of retailer power on distribution. A key challenge is retaining competitive advantage compared with more central and well connection regions such as Northamptonshire. Areas where the LEP could support the sector include promoting use of local ports, supporting multi-modal logistics infrastructure, and the development of shared logistics facilities.
- 12.14 **Health and Care:** although not a locally distinctive sector, health and care is an important and growing activity in Greater Lincolnshire. While hospital activities remain the largest area of activity, there has been growth in medical and dental practices, and complementary health activities. The growth of medical and orthopaedic equipment sales, the fastest growing sector, is thought to be directly related to demand from Lincolnshire's ageing population.
- 12.15 Key supply chain issues include dominance of large international pharmaceutical companies, the internationalisation of medical supplies manufacture, and restrictions around NHS commission systems. Ways in which the LEP could support the sector

include facilitating collaboration between third sector organisations, sharing best practice in prioritising local suppliers in public procurement, and ensuring a regular information flow about policy changes and new initiatives to local firms in the sector.

Cross-Sector Linkages and Commonalities

- 12.16 **Agri food and logistics:** there is a strong supply chain interdependency between the agri food and logistics sectors in Greater Lincolnshire, most clearly observed in North East Lincolnshire and south Lincolnshire. The logistics sector provides a link between manufacturers and retailers, with logistics providers working alongside manufacturers to deliver goods to major retailers. The logistics (road freight in particular) and agri food sectors, therefore, experience similar supply chain pressures in terms of customer demands and consolidation of food suppliers. There is thought to be further scope, however, for collaboration between the two sectors on shared facilities and shared transport, such as for produce going to the same retailer, or for delivery of linked products such as food and flowers. In terms of growth of the local and speciality food, there is thought to be scope for further logistical support for smaller providers, such as the development of a local distribution hub.
- 12.17 More broadly, there are currently few linkages between transport of non-seafood related food and use of ports at Grimsby and Immingham. It is thought that the majority of food imported for processing in south Lincolnshire is transported through Felixstowe. This is thought to be related to a number of factors, including the lack of a chilled hub for fresh produce at Immingham, and that Immingham is regarded to have low visibility locally despite being the busiest UK port by tonnage. There is scope for the LEP to have closer engagement with the Associated British Ports, which manages the ports at Immingham and Grimsby, to explore these issues and opportunities further.
- 12.18 **Engineering and environmental technologies:** the engineering and environmental technologies sectors have a number of linkages. Engineering companies in the power engineering sector are increasingly driven by the same agenda as the renewable energy sector, including the need to improve efficiency of power generation, improve energy security, and reduce carbon emissions. There is evidence that local engineering firms are increasingly engaging directly in low carbon activities, including technology related to biomass and alternative fuels, electrification of transport, as well as supply of components into the alternative energy supply chain. At a local level, however, there is as yet little direct engagement between engineering firms and growing sectors such as wind energy. This is thought to be partly because of the international supply chains associated with alternative energy, as well as limited knowledge of new developments taking place in the area and the technology involved. This is an area with potential for further collaboration, and it is an area where the Lincoln Engineering School could play an integral role. It has been suggested that an event that allows local engineering companies to learn about alternative energy developments and technologies in the area would be beneficial.
- 12.19 **Agri food and environmental technologies:** much of the potential for low carbon energy production in Lincolnshire is intertwined with the agri food sector, whether onshore wind located on agricultural land, anaerobic digestion from agricultural waste, or the energy potential of biofuels and biomass. There are a number of examples of agri food companies diversifying into anaerobic digestion, including Branston Potatoes and Staples Vegetables, and many similar schemes are in development. However, it is early days for these new technologies, and there are a number of concerns about consistency of planning policy, the efficiency of the plants, and the income generated compared with other uses of food waste (such as stock feed). There is considerable scope for joint working between agri food companies in the development of shared anaerobic digestion facilities, subject to planning policy.

Common Sector Issues

- 12.18 **Supply Chain Consolidation:** the research has suggested that there is increasing consolidation of suppliers across the agri food, logistics, engineering, and health and care sectors. This is driven by a number of factors, such as end customer pressure to improve efficiency and reduce costs, the internationalisation of suppliers in the case of manufacturing, and a loss of skills in the engineering sector. This puts smaller local companies at a competitive disadvantage, as in order to compete with larger and more efficient suppliers they must either offer niche products, or collaborate with other companies to access the supply chain.
- 12.19 **Attraction of Skilled Workers:** the engineering, agri food, logistics, and renewables sector all cite a lack of skilled workers as a pressing issue. The engineering and agri food sectors, in particular, have an 'image problem' in the sense that careers in these sectors can be perceived as manual and factory-based and less glamorous than more service-focused careers. There is a need to promote the career prospects within these sectors, including their highly skilled nature, and opportunities for pay and progression.
- 12.20 **Infrastructure:** a perennial issue for Lincolnshire is the quality of transport connections, particularly the ease of road travel in the south and east of Lincolnshire. Not only is this shown to affect the costs and efficiency of transporting goods in and out of the area, but it is also thought to inhibit local businesses' ability to attract skilled workers from other areas. Transport connectivity is felt to be less of an issue for companies in North and North East Lincolnshire, which are well connected by motorways. A key concern about road infrastructure is its effect on the competitive advantage of the agri food and logistics sector in the area, particularly when compared to better connected areas such as Northamptonshire. For this reason, the road-rail hub may address some of these disadvantages. The quality of the roads is a long-term issue and any action needs to be focused on specific and targeted improvements that will make a difference. This is clearly an area that the LEP does not have the resources to resolve directly, but may be able to contribute through direct lobbying.
- 12.21 **Vibrant Lincolnshire?:** as discussed above, feedback from many of the interviews suggests that there is difficulty attracting and retaining skilled workers from elsewhere and overseas. There is also low retention of graduates. This is thought to stem from a number of factors, including a sense that the area is peripheral and lacks cultural offer, that there is a lack of critical mass in employment and so limited opportunity for career progression, and that there is no real international community which makes workers from overseas feel isolated. There is thought to be a perception problem, in the sense that many people from outside the area may have preconceptions of the area that do not reflect the changes that have taken place in Lincoln and Greater Lincolnshire. To ensure the vitality and sustainability of local sectors, there is a need to promote Lincolnshire as a place to live and work, and to challenge preconceptions of the area.

Action Points

- 12.22 A series of action point for each identified sector, together with timescales, suggested lead partners and potential funding sources, are set out in the table below:

Activity		Time Frame			Lead Partner	Source of Funding
		Short	Medium	Long		
AGRI FOOD						
1	Support for smaller food growers/manufacturers in negotiating access to supply chains				Tastes of Lincolnshire, University of Lincoln	Existing University seminars funded by Tastes of Lincolnshire, Food and Drink inet Innovation Support (ERDF) EU Framework 7: call KBBE-2013-7
2	Facilitating development of cooperatives for collective purchasing of utilities and equipment				Cooperative movement	National Cooperative Movement, Keep Communities Thriving funds and foundations
3	Promotion of local provenance and PGI status				Tastes of Lincolnshire, Lincolnshire farmers markets.	Lincolnshire County Council Lincoln BIG East Midlands Fine Foods Initiative
4	Commissioning study into the water availability and irrigation solutions particularly in south Lincolnshire				Anglian Water, Environment Agency, Food Growers and Producers	DEFRA: RDPE East Midlands, EU Framework 7: call KBBE-2013-7
5	Continued support for Grimsby Trade Corridor to diversify the seafood supplier base, and develop export opportunities				Humber Seafood Institute, Humber LEP	UKTI, BIS, EU Framework 7
6	Development of a chilled hub at Immingham to enable import of fresh produce				Associated British Ports	Private sector investment, Interreg North West Europe ERDF Budget (2007-2013) – Priority 3
7	Encourage access to relevant training and development opportunities for factory staff and management from short courses to undergraduate and post graduate courses.				University of Lincoln, Grimsby Institute, Further Education colleges	Food and Drink Sector Skills Council, Biotechnologies and Biological Sciences Research Council (BBSRC)
ENGINEERING/MANUFACTURING						
8.	Promoting access to the Engineering School for all SMEs for R&D and training				University of Lincoln Siemens	Technology Strategy Board, Engineering and Physical Science Research Council (EPSRC), EU Framework 7, ERC Advanced Grants
9.	Promotion of cluster working, networking and company visits, in absence of RDA/Business Link support				Lincoln Engineering Breakfast, University of Lincoln	BIS local (East Midlands), Advanced Manufacturing Supply Chain initiative (Technology Strategy Board), Manufacturing Advisory Service
10.	Support for development of intermediate skills, e.g. through a				University of Lincoln,	Decision on application pending

Activity	Time Frame			Lead Partner	Source of Funding
	Short	Medium	Long		
University Technical College				Lincoln College and others	
11. Consider LEP-wide 'sandpit' event for exploring new supplier opportunities in the renewables sector				Lincolnshire LEP	Office of Renewable Energy Deployment (ORED)
12. Promotion of Lincolnshire as a place to live and work				Lincolnshire County Council, VisitLincoln, Lincoln City Council	Lincolnshire County Council
RENEWABLES/ENVIRONMENTAL TECHNOLOGIES					
13. Lincolnshire has the greatest renewables potential of any area in the East Midlands – there is a need to promote the low carbon economy to foster sector growth locally				Lincolnshire LEP Sustain Lincolnshire	Sustain Lincolnshire, Green Deal (Office of Renewable Energy Deployment - ORED), UK Innovation Investment Fund (BIS), Energy Efficiency Financing (Carbon Trust/Siemens), EU Framework 7: call KBBE-2013-7
14. Work with the Engineering sector in the promotion of high technology industries and skills to schools				Lincoln Engineering School, Lincoln Engineering Breakfast	STEMnet Ambassadors Scheme, Lincolnshire and Rutland EBP
15. Foster collaboration which enables local companies to access international supply chains, including a LEP-wide 'sandpit' event for exploring new supplier opportunities				Lincolnshire LEP, Humber Renewables Partnership, Lincoln Engineering Breakfast	Sustain Lincolnshire, Office of Renewable Energy Deployment (ORED)
16. Prioritise investments to attract and retain new renewables industries to the area, e.g. infrastructure investments in Grimsby docks and the ABLE energy site					Government Offshore Wind, Manufacturing Funding (ORED) CO2Sense (for Humber only)
LOGISTICS					
18. Road improvements identified as a priority				Lincolnshire LEP, Lincolnshire County Council	Community Infrastructure Levy, Highways Improvements Lobbying role
19. Road-rail hub development				South Holland DC Lincolnshire CC Lincolnshire LEP Network Rail	Community Infrastructure Levy, Private sector investment, Interreg North West Europe ERDF Budget (2007-2013) – Priority 3
20. Skills development to improve logistics management skills				University of Lincoln and other HEIs	Funding from private companies for employees to attend MBA Logistics
21. Explore, with agri food sector, increasing use of local ports for import of fresh produce				Lincolnshire County Council, ABP	Interreg North West Europe ERDF Budget (2007-2013) – Priority 3

Activity	Time Frame			Lead Partner	Source of Funding
	Short	Medium	Long		
22. Exploring logistics support for small food producers, particularly consolidation services				Tastes of Lincolnshire	East Midlands Fine Foods Initiative, Keep Communities Thriving funds and foundations
HEALTH AND CARE					
23. Given rapid changes taking place in the NHS, there is a need to facilitate information flow about new initiatives and opportunities to Lincolnshire SMEs				Lincolnshire County Council, Lincolnshire NHS Trusts, Local Involvement Networks (LiNKs)	Lincolnshire County Council, NHS Trusts
24. Conduct further research into opportunities to prioritise local suppliers, drawing on experiences from similar initiatives such as by Procurement Lincolnshire				Lincolnshire County Council, Lincolnshire NHS Trusts	Lincolnshire County Council, Lincolnshire NHS Trusts
25. Developing a framework for third sector collaboration in Lincolnshire				Lincolnshire Compact, Individual Budgets Network Lincolnshire (IBNL), Lincolnshire County Council, NHS	Community Development Foundation, Big Local Big Society Capital
26. Maximising use of biotechnology and healthcare research funding, which has been ring fenced				University of Lincoln, NHS Trusts, private health and care SMEs	NHS East Midlands Regional Innovation Fund, Interreg North West Europe ERDF Budget (2007-2013) – Priority 4, Biotechnologies and Biological Sciences Research Council (BBSRC), Medical Research Council (MRC), National Institute for Health Research

Appendices

APPENDIX 1 – INTERVIEW PRO FORMA

Opportunities for Greater Lincolnshire Supply Chains Supply Chain Business Interview Pro Forma

The University of Lincoln and ADAS have been commissioned by Lincolnshire County Council to undertake research into Lincolnshire's key supply chains. The aim of the study is to develop a better understanding of these supply chains, and to identify opportunities for growth and investment. The results of the study will be used by the Greater Lincolnshire Local Enterprise Partnership (GLLEP) to inform future policy and bids for funding.

As part of this project, we're conducting interviews with selected companies across Lincolnshire. As a key business within one of the priority sectors identified by the LEP, we would like to explore the issues facing your business and supply chain.

The information you provide to us will be used at an aggregate level to explore overall supply chain patterns, and detailed company information will be held in confidence.

1. About your business

- Can you tell me about your business? When was it founded?
- What products and services do you offer (B2B, B2C)?
- How many people (FTE) does your business employ?
- What is your turnover for the last year?
- What is the ownership structure of the business?

2. About your suppliers (please see Table 1)

- Who are your principal suppliers?
- Where are they based? (please provide location and postcode if available)
- What is their size? (micro, SME, large company)
- Approximately what is the value of purchases from Greater Lincolnshire, national, international suppliers?
- How much has your supplier base changed over the last 10 years? Why? How do you think it will change within the next 10 years?

3. About your customers (please see Table 2)

- Who are your principal customers?
- Where are they based? (please provide location and postcode if available)
- What is their size? (micro, SME, large company)
- Approximately what is the value of sales from Greater Lincolnshire, national, international customers?
- How has your customer base changed over the last 10 years? Why? How do you think it will change within the next 10 years?
- Can you provide details of the procurement strategies and processes within your company?

4. Collaboration

- Do you collaborate with other companies in any of the following:

New product development	Yes / No	Where are these companies based?	Are these companies within or outside your sector/supply chain?
Tendering for contracts			
Producing goods/services			
Sharing equipment/joint purchasing			
Shared data / information services			
Transport and logistics			
Recruitment and training			

Marketing and promotion			
Re-directing work to or recommending other companies			
Other areas?			

- Are there any areas of whole supply chain collaboration? How could this be improved?
- Is there anything that restricts you from collaborating more with local businesses?

5. Links to Greater Lincolnshire and other regions

- Do you consider yourself to be a Lincolnshire business?
- What ties do you have to other regions and why?
- Are you linked to any local trade associations or networks?
- Do you take part in any government funded initiatives (e.g. training, business support)
- Thinking of your suppliers and supply chain what are the greatest threats/risks to the future success of your business?
- Thinking of the market and your customers what are the greatest threats/risks to the future success of your business?
- What would help your business grow and thrive in Greater Lincolnshire?

6. Environmental Factors

- How advantageous is being located in Greater Lincolnshire in terms of the following:

	Poor										Excellent		
	1	2	3	4	5	6	7	8	9	10	NA		
Availability of labour													
Skills within the local labour market													
Proximity to suppliers													
Proximity to customers													
Presence of support sectors, e.g. logistics													
Support for collaborating with other firms													
Help in complying with regulation													
Availability of finance													
Transport infrastructure													
Digital connectivity													
Cost of land/premises													
Any other													

7. Other Contacts

Are there any other companies in your supply chain that you recommend we speak to?
Suppliers/Customers?

APPENDIX 2: SUPPLY CHAIN QUESTIONNAIRE

1. What is your main area of business activity?

2. How many people does your business employ? 1-5, 6-10, 11-50, 51-250, more than 250

3. Which of the following supply chain activities is your business engaged in?

	Please tick all that apply
Producing raw materials	
Processing raw materials	
Manufacturing goods	
Wholesale	
Retail	
Services to other businesses	
Services to domestic customers	
Other, please state	

4. Is your business engaged in the following activities? Please tick all that apply

	Yes, undertake in-house	Yes, outsource this activity	No involvement
Packaging goods			
Transport of goods			
Storage of goods			
Recruitment			
Training			
Managing financial accounts			
Marketing			
Website set-up and maintenance			
Internal IT systems			
Procurement			
Tendering for contracts			
Other, please state			

5. Do you collaborate with other companies on any of the following?

	Yes, with companies in Lincolnshire	Yes, with companies elsewhere	No, but would like to	No, and unlikely to in the future
New product development				
Tendering for contracts				
Producing goods/services				
Sharing equipment/joint purchasing				
Shared data / information services				
Transport and logistics				
Recruitment and training				
Marketing and promotion				
Re-directing work to or recommending other companies				
Other, please state				

6. Do you tend to collaborate with:

	Please tick all that apply
Companies in your own sector	
Some, but not all, companies in your supply chain	
All companies in your supply chain	
Companies in other sectors	
The public sector	

7. Thinking about your suppliers...

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Not Applicable
I have the flexibility to choose my own suppliers						
I have long term relationships with my suppliers						
My customers have an influence on my choice of suppliers						
I am able to obtain most of the products/services I need locally						
I prioritise local suppliers						

8. Thinking about new opportunities for your business to supply goods and services...

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Not Applicable
My business bids for new work through advertised contracts/ invitations to tender						
It is easy to find out about new public sector contracts						
It is easy to find out about contracts offered by other businesses						
My business is experienced at tendering for new contracts						
My business secures work locally through the tendering process						

9. How advantageous is being located in Lincolnshire in terms of the following:

5. How advantageous is being located in Enfieldshire in terms of the following:											
	Poor							Excellent			
	1	2	3	4	5	6	7	8	9	10	NA
Availability of labour											
Skills within the local labour market											
Proximity to suppliers											
Proximity to customers											
Presence of support sectors, e.g. logistics											
Support for collaborating with other firms											
Help in complying with regulation											
Availability of finance											
Transport infrastructure											
Digital connectivity											
Cost of land/premises											
Availability of land/premises											
Any other											

10. Is there anything that restricts you from trading more with local businesses? (open ended)

11. Is there anything that restricts you from collaborating more with local businesses? (open ended)

APPENDIX 3: Hypothecation of 2007 SIC BRES into key Standard Industrial Trade Classifications

SITC	BRES Categories
Food & Live Animals	01 : Crop and animal production, hunting and related service activities 02 : Forestry and logging 03 : Fishing and aquaculture 10 : Manufacture of food products
Beverages and Tobacco	11 : Manufacture of beverages 12 : Manufacture of tobacco products
Crude Materials	07 : Mining of metal ores 08 : Other mining and quarrying 09 : Mining support service activities
Mineral Fuels	05 : Mining of coal and lignite 06 : Extraction of crude petroleum and natural gas 19 : Manufacture of coke and refined petroleum products
Chemicals	20 : Manufacture of chemicals and chemical products
Manufactured Goods	13 : Manufacture of textiles 14 : Manufacture of wearing apparel 15 : Manufacture of leather and related products 16 : Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials 17 : Manufacture of paper and paper products 18 : Printing and reproduction of recorded media 25 : Manufacture of fabricated metal products, except machinery and equipment 26 : Manufacture of computer, electronic and optical products 27 : Manufacture of electrical equipment 31 : Manufacture of furniture
Machinery	28 : Manufacture of machinery and equipment n.e.c. 29 : Manufacture of motor vehicles, trailers and semi-trailers 30 : Manufacture of other transport equipment
Miscellaneous Manufacturing	21 : Manufacture of basic pharmaceutical products and pharmaceutical preparations 22 : Manufacture of rubber and plastic products 23 : Manufacture of other non-metallic mineral products 24 : Manufacture of basic metals 32 : Other manufacturing

APPENDIX 4: SUPPLY CHAIN SURVEY RESULTS

1. About the Respondents

	Frequency	Percent
Agri Food	57	34.1
Engineering	12	7.2
Other Manufacturing	13	7.8
Construction	9	5.4
Business Services	28	16.8
Logistics	7	4.2
Renewable Energy & Env Services	4	2.4
Retail and Other Services	31	18.6
Health & Care	6	3.6
Total	167	100.0

2. Business Size

Number of employees	Frequency	Percentage
1-5	74	44.3
6-10	26	15.6
11-50	30	18.0
51-250	20	12.0
250+	16	9.6
Total	166	100.0

3. Involvement in different stages of the supply chain

Industry	Producing raw materials	Processing raw materials	Manufacturing goods	Wholesale	Retail	All of the Above
Agri Food	45.6%	75.4%	66.7%	54.4%	63.2%	12.3%
Engineering			58.3%			
Other Manufacturing		23.1%	84.6%	23.1%	38.5%	
Construction				11.1%	11.1%	
Business Services	3.6%	7.1%	3.6%	14.3%	14.3%	
Logistics				28.6%		
Renewable Energy & Env Services	25.0%		25.0%	25.0%	25.0%	
Retail and Other Services	9.7%	9.7%	12.9%	19.4%	41.9%	
Health & Care				16.7%	33.3%	
	18.6%	30.5%	37.1%	29.3%	37.1%	4.2%

4. Activities undertaken in-house and outsourced

Packaging goods

		Packaging goods				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	83.3%	3.7%		13.0%	100.0%
	Engineering		22.2%	11.1%	66.7%	100.0%
	Other Manufacturing	45.5%	18.2%		36.4%	100.0%
	Construction				100.0%	100.0%
	Business Services	15.0%			85.0%	100.0%
	Logistics	33.3%			66.7%	100.0%
	Renewable Energy & Env Services	33.3%			66.7%	100.0%
	Retail and Other Services	30.4%		8.7%	60.9%	100.0%
	Health & Care	33.3%			66.7%	100.0%
Total		47.1%	4.3%	2.2%	46.4%	100.0%

Transport of goods

		Transport of goods				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	60.4%	13.2%	17.0%	9.4%	100.0%
	Engineering	22.2%		44.4%	33.3%	100.0%
	Other Manufacturing	36.4%	9.1%	36.4%	18.2%	100.0%
	Construction	28.6%		14.3%	57.1%	100.0%
	Business Services	30.0%	5.0%		65.0%	100.0%
	Logistics	28.6%		28.6%	42.9%	100.0%
	Renewable Energy & Env Services	33.3%		33.3%	33.3%	100.0%
	Retail and Other Services	13.6%	4.5%	27.3%	54.5%	100.0%
	Health & Care			33.3%	66.7%	100.0%
Total		37.7%	7.2%	21.0%	34.1%	100.0%

Storage of Goods

		Storage of goods				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	75.5%	11.3%	3.8%	9.4%	100.0%
	Engineering	62.5%			37.5%	100.0%
	Other Manufacturing	54.5%	9.1%		36.4%	100.0%
	Construction	28.6%		14.3%	57.1%	100.0%
	Business Services	25.0%	5.0%		70.0%	100.0%
	Logistics	66.7%			33.3%	100.0%
	Renewable Energy & Env Services	100.0%				100.0%
	Retail and Other Services	26.1%	4.3%	4.3%	65.2%	100.0%
	Health & Care	50.0%			50.0%	100.0%
Total		53.7%	6.6%	2.9%	36.8%	100.0%

Recruitment

		Recruitment				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	55.8%	11.5%	7.7%	25.0%	100.0%
	Engineering	22.2%	33.3%		44.4%	100.0%
	Other Manufacturing	45.5%		9.1%	45.5%	100.0%
	Construction	16.7%			83.3%	100.0%
	Business Services	38.1%			61.9%	100.0%
	Logistics	60.0%			40.0%	100.0%
	Renewable Energy & Env Services				100.0%	100.0%
	Retail and Other Services	43.5%	4.3%		52.2%	100.0%
	Health & Care	33.3%	33.3%		33.3%	100.0%
Total		44.4%	8.9%	3.7%	43.0%	100.0%

Training

		Training				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	52.8%	17.0%	15.1%	15.1%	100.0%
	Engineering	18.2%	36.4%	9.1%	36.4%	100.0%
	Other Manufacturing	40.0%	20.0%		40.0%	100.0%
	Construction	33.3%	16.7%		50.0%	100.0%
	Business Services	66.7%	9.5%		23.8%	100.0%
	Logistics	60.0%	20.0%		20.0%	100.0%
	Renewable Energy & Env Services				100.0%	100.0%
	Retail and Other Services	26.9%	11.5%	19.2%	42.3%	100.0%
	Health & Care	33.3%	50.0%	16.7%		100.0%
Total		44.3%	17.9%	10.7%	27.1%	100.0%

Accountancy

		Accountancy				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	60.4%	3.8%	24.5%	11.3%	100.0%
	Engineering	33.3%		22.2%	44.4%	100.0%
	Other Manufacturing	40.0%	20.0%	20.0%	20.0%	100.0%
	Construction	16.7%	16.7%	16.7%	50.0%	100.0%
	Business Services	30.0%		35.0%	35.0%	100.0%
	Logistics	33.3%		50.0%	16.7%	100.0%
	Renewable Energy & Env Services				100.0%	100.0%
	Retail and Other Services	20.8%	4.2%	33.3%	41.7%	100.0%
	Health & Care	40.0%	40.0%	20.0%		100.0%
Total		40.7%	5.9%	27.4%	25.9%	100.0%

Marketing

		Marketing				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	73.1%	9.6%	7.7%	9.6%	100.0%
	Engineering	50.0%			50.0%	100.0%
	Other Manufacturing	50.0%	10.0%	10.0%	30.0%	100.0%
	Construction	50.0%	16.7%		33.3%	100.0%
	Business Services	68.0%	8.0%		24.0%	100.0%
	Logistics	71.4%		14.3%	14.3%	100.0%
	Renewable Energy & Env Services	50.0%		50.0%		100.0%
	Retail and Other Services	56.0%	12.0%		32.0%	100.0%
	Health & Care	83.3%	16.7%			100.0%
Total		65.0%	9.1%	4.9%	21.0%	100.0%

Website set-up and maintenance

		Website set-up and maintenance				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	47.2%	9.4%	30.2%	13.2%	100.0%
	Engineering	50.0%	10.0%		40.0%	100.0%
	Other Manufacturing	9.1%	18.2%	45.5%	27.3%	100.0%
	Construction	16.7%		66.7%	16.7%	100.0%
	Business Services	36.4%		40.9%	22.7%	100.0%
	Logistics	33.3%	16.7%	33.3%	16.7%	100.0%
	Renewable Energy & Env Services			100.0%		100.0%
	Retail and Other Services	26.9%	7.7%	30.8%	34.6%	100.0%
	Health & Care	16.7%	33.3%	50.0%		100.0%
Total		35.2%	9.2%	34.5%	21.1%	100.0%

Internal IT systems

		Internal IT systems				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	69.8%	9.4%	7.5%	13.2%	100.0%
	Engineering	50.0%		10.0%	40.0%	100.0%
	Other Manufacturing	45.5%	9.1%	27.3%	18.2%	100.0%
	Construction	16.7%		66.7%	16.7%	100.0%
	Business Services	50.0%		27.3%	22.7%	100.0%
	Logistics	40.0%		40.0%	20.0%	100.0%
	Renewable Energy & Env Services			50.0%	50.0%	100.0%
	Retail and Other Services	36.4%	4.5%	22.7%	36.4%	100.0%
	Health & Care	33.3%	16.7%	50.0%		100.0%
Total		51.8%	5.8%	21.2%	21.2%	100.0%

Procurement

		Procurement				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	90.4%			9.6%	100.0%
	Engineering	70.0%			30.0%	100.0%
	Other Manufacturing	70.0%	10.0%		20.0%	100.0%
	Construction	71.4%			28.6%	100.0%
	Business Services	72.7%			27.3%	100.0%
	Logistics	83.3%			16.7%	100.0%
	Renewable Energy & Env Services	100.0%				100.0%
	Retail and Other Services	50.0%	4.5%	4.5%	40.9%	100.0%
	Health & Care	80.0%			20.0%	100.0%
Total		76.5%	1.5%	.7%	21.3%	100.0%

		Tendering for contracts				Total
		Undertake in-house	Partly outsource the activity	Outsource the activity	No involvement	
	Agri Food	37.5%		2.1%	60.4%	100.0%
	Engineering	83.3%			16.7%	100.0%
	Other Manufacturing	54.5%			45.5%	100.0%
	Construction	100.0%				100.0%
	Business Services	77.3%	4.5%	4.5%	13.6%	100.0%
	Logistics	71.4%			28.6%	100.0%
	Renewable Energy & Env Services	100.0%				100.0%
	Retail and Other Services	40.0%	5.0%		55.0%	100.0%
	Health & Care	80.0%			20.0%	100.0%
Total		58.4%	1.5%	1.5%	38.7%	100.0%

5. Areas of Collaboration

New product development

	New product development				
	only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Agri Food	9.8%	13.7%	13.7%	5.9%	56.9%
Engineering	11.1%	22.2%	44.4%		22.2%
Other Manufacturing	9.1%		54.5%	9.1%	27.3%
Construction	14.3%			14.3%	71.4%
Business Services	33.3%	4.2%	20.8%	8.3%	33.3%
Logistics	14.3%	14.3%	14.3%		57.1%
Renewable Energy & Env Services	25.0%		50.0%		25.0%
Retail and Other Services	12.0%	12.0%	4.0%	8.0%	64.0%
Health & Care			16.7%	16.7%	66.7%
Total	14.6%	9.7%	18.8%	6.9%	50.0%

Tendering for Contracts

	Tendering for contracts				
	only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Agri Food	4.3%	6.4%	4.3%	2.1%	83.0%
Engineering		44.4%	22.2%		33.3%
Other Manufacturing	8.3%	8.3%	50.0%	8.3%	25.0%
Construction	25.0%	50.0%	12.5%		12.5%
Business Services	8.3%	12.5%	16.7%	12.5%	50.0%
Logistics		14.3%	14.3%		71.4%
Renewable Energy & Env Services		33.3%	66.7%		
Retail and Other Services	4.0%	28.0%		16.0%	52.0%
Health & Care		16.7%		33.3%	50.0%
Total	5.7%	17.7%	12.8%	7.8%	56.0%

Producing goods and services

	Producing goods/services				
	only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Agri Food	12.0%	14.0%	8.0%	8.0%	58.0%
Engineering		54.5%	18.2%		27.3%
Other Manufacturing	16.7%	8.3%	50.0%		25.0%
Construction		16.7%	16.7%		66.7%
Business Services	19.0%	23.8%	14.3%	4.8%	38.1%
Logistics		16.7%			83.3%
Renewable Energy & Env Services	50.0%	25.0%	25.0%		
Retail and Other Services	8.7%	21.7%	4.3%	13.0%	52.2%
Health & Care		16.7%		33.3%	50.0%
Total	11.5%	20.1%	12.9%	7.2%	48.2%

Sharing equipment/joint purchasing

	Sharing equipment/joint purchasing				
	only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Agri Food	10.2%	4.1%	2.0%	4.1%	79.6%
Engineering		11.1%	22.2%		66.7%
Other Manufacturing			10.0%	10.0%	80.0%
Construction					100.0%
Business Services	5.0%	5.0%	10.0%	15.0%	65.0%
Logistics					100.0%
Renewable Energy & Env Services				66.7%	33.3%
Retail and Other Services	16.7%	4.2%	4.2%	8.3%	66.7%
Health & Care				33.3%	66.7%
Total	7.5%	3.8%	5.3%	9.0%	74.4%

Shared data/information services

	Shared data / information services				
	only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Agri Food	5.9%	11.8%	7.8%	5.9%	68.6%
Engineering		12.5%		12.5%	75.0%
Other Manufacturing			9.1%	9.1%	81.8%
Construction					100.0%
Business Services	23.8%		19.0%	14.3%	42.9%
Logistics					100.0%
Renewable Energy & Env Services				33.3%	66.7%
Retail and Other Services	12.5%	12.5%		8.3%	66.7%
Health & Care				16.7%	83.3%
Total	8.1%	7.4%	6.6%	8.8%	69.1%

Recruitment and training

		Recruitment and training				
		only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Industry	Agri Food	10.4%	6.3%	8.3%	8.3%	66.7%
	Engineering	16.7%	16.7%	33.3%		33.3%
	Other Manufacturing	27.3%	9.1%	36.4%		27.3%
	Construction	28.6%		14.3%		57.1%
	Business Services	13.6%	13.6%	18.2%	4.5%	50.0%
	Logistics		16.7%	16.7%		66.7%
	Renewable Energy & Env Services	33.3%			33.3%	33.3%
	Retail and Other Services	16.7%	12.5%	12.5%	8.3%	50.0%
	Health & Care		16.7%		16.7%	66.7%
Total		14.4%	10.1%	15.1%	6.5%	54.0%

Marketing and promotion

		Marketing and promotion				
		only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Industry	Agri Food	11.5%	11.5%	11.5%	1.9%	63.5%
	Engineering	10.0%	30.0%			60.0%
	Other Manufacturing	27.3%		18.2%	9.1%	45.5%
	Construction	16.7%	33.3%			50.0%
	Business Services	20.0%	12.0%	24.0%	12.0%	32.0%
	Logistics	14.3%	14.3%	14.3%		57.1%
	Renewable Energy & Env Services	66.7%		33.3%		
	Retail and Other Services	12.0%	24.0%	12.0%	8.0%	44.0%
	Health & Care	16.7%		16.7%	16.7%	50.0%
Total		15.9%	14.5%	13.8%	5.5%	50.3%

Re-directing work to or recommending other companies

		Re-directing work to or recommending other companies				
		only businesses in Lincolnshire	businesses in Lincolnshire and elsewhere	only businesses elsewhere	no, but would like to	no, and unlikely to in the future
Industry	Agri Food	20.0%	16.0%	12.0%		52.0%
	Engineering	12.5%	25.0%	37.5%		25.0%
	Other Manufacturing		9.1%	36.4%	9.1%	45.5%
	Construction	25.0%	25.0%			50.0%
	Business Services	21.7%	21.7%	30.4%		26.1%
	Logistics		16.7%	16.7%	16.7%	50.0%
	Renewable Energy & Env Services		33.3%	33.3%		33.3%
	Retail and Other Services	20.8%	8.3%	12.5%	12.5%	45.8%
	Health & Care	33.3%	16.7%		16.7%	33.3%
Total		18.0%	16.5%	18.0%	4.3%	43.2%

6. Who businesses collaborate with

Industry	Businesses in your own sector?	Some but not all businesses in your supply chain?	All businesses in your supply chain?	Businesses in other sectors?	The public sector?
Agri Food	54.4%	54.4%	8.8%	26.3%	5.3%
Engineering	83.3%	41.7%	8.3%	33.3%	25.0%
Other Manufacturing	61.5%	46.2%	7.7%	38.5%	7.7%
Construction	44.4%	22.2%	22.2%	33.3%	33.3%
Business Services	64.3%	35.7%	10.7%	35.7%	21.4%
Logistics	14.3%	28.6%	57.1%	28.6%	14.3%
Renewable Energy & Env Services	50.0%	75.0%	25.0%		25.0%
Retail and Other Services	51.6%	25.8%	9.7%	38.7%	16.1%
Health & Care	50.0%	33.3%	16.7%		16.7%
Total	55.7%	41.3%	12.6%	30.5%	14.4%

7. Supplier Relationships

		I have the flexibility to choose my own suppliers				Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	
	Agri Food	76.5%	17.6%	2.0%	3.9%	100.0%
	Engineering	83.3%	16.7%			100.0%
	Other Manufacturing	61.5%	38.5%			100.0%
	Construction	75.0%	25.0%			100.0%
	Business Services	56.0%	36.0%	8.0%		100.0%
	Logistics	71.4%	28.6%			100.0%
	Renewable Energy & Env Services	50.0%	25.0%	25.0%		100.0%
	Retail and Other Services	60.0%	33.3%	6.7%		100.0%
	Health & Care	50.0%	50.0%			100.0%
Total		67.3%	27.6%	3.8%	1.3%	100.0%

		I have long term relationships with my suppliers				Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	
	Agri Food	74.5%	25.5%			100.0%
	Engineering	25.0%	75.0%			100.0%
	Other Manufacturing	61.5%	38.5%			100.0%
	Construction	12.5%	75.0%	12.5%		100.0%
	Business Services	40.0%	48.0%	12.0%		100.0%
	Logistics	71.4%	28.6%			100.0%
	Renewable Energy & Env Services	25.0%	75.0%			100.0%
	Retail and Other Services	50.0%	46.7%		3.3%	100.0%
	Health & Care	50.0%	50.0%			100.0%
Total		53.8%	42.9%	2.6%	.6%	100.0%

		My customers have an influence on my choice of suppliers					Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food	22.0%	30.0%	20.0%	20.0%	8.0%	100.0%
	Engineering	9.1%	18.2%	36.4%	27.3%	9.1%	100.0%
	Other Manufacturing		23.1%	38.5%	23.1%	15.4%	100.0%
	Construction		62.5%	25.0%		12.5%	100.0%
	Business Services	4.8%	19.0%	38.1%	14.3%	23.8%	100.0%
	Logistics		14.3%	28.6%	42.9%	14.3%	100.0%
	Renewable Energy & Env Services		25.0%	25.0%	50.0%		100.0%
	Retail and Other Services	10.7%	39.3%	32.1%	14.3%	3.6%	100.0%
	Health & Care	16.7%	66.7%	16.7%			100.0%
Total		11.5%	31.1%	28.4%	18.9%	10.1%	100.0%

		I am able to obtain most of the products/services I need locally					Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food	17.6%	35.3%	9.8%	23.5%	13.7%	100.0%
	Engineering	8.3%	33.3%	8.3%	33.3%	16.7%	100.0%
	Other Manufacturing		30.8%	23.1%		46.2%	100.0%
	Construction	12.5%	50.0%	12.5%	25.0%		100.0%
	Business Services	18.5%	18.5%	14.8%	25.9%	22.2%	100.0%
	Logistics	14.3%	57.1%		14.3%	14.3%	100.0%
	Renewable Energy & Env Services	25.0%	50.0%	25.0%			100.0%
	Retail and Other Services	3.4%	37.9%	10.3%	31.0%	17.2%	100.0%
	Health & Care		50.0%	16.7%		33.3%	100.0%
Total		12.1%	35.0%	12.1%	22.3%	18.5%	100.0%

		I prioritise local suppliers					Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food	53.1%	26.5%	18.4%		2.0%	100.0%
	Engineering	16.7%	50.0%	33.3%			100.0%
	Other Manufacturing		75.0%	25.0%			100.0%
	Construction	42.9%	42.9%	14.3%			100.0%
	Business Services	28.0%	40.0%	16.0%	12.0%	4.0%	100.0%
	Logistics	14.3%	57.1%		14.3%	14.3%	100.0%
	Renewable Energy & Env Services	50.0%	25.0%	25.0%			100.0%
	Retail and Other Services	17.9%	46.4%	28.6%	3.6%	3.6%	100.0%
	Health & Care		33.3%	50.0%	16.7%		100.0%
Total		30.7%	40.7%	22.0%	4.0%	2.7%	100.0%

8. Securing Contracts

		My business bids for new work through advertised contracts/ invitations to tender					Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food	6.3%	12.5%	31.3%	37.5%	12.5%	100.0%
	Engineering	18.2%	45.5%	18.2%		18.2%	100.0%
	Other Manufacturing		50.0%	10.0%	20.0%	20.0%	100.0%
	Construction		75.0%		12.5%	12.5%	100.0%
	Business Services		56.3%	12.5%	18.8%	12.5%	100.0%
	Logistics	16.7%	50.0%		16.7%	16.7%	100.0%
	Renewable Energy & Env Services		100.0%				100.0%
	Retail and Other Services	20.0%	26.7%	26.7%	26.7%		100.0%
	Health & Care		60.0%	40.0%			100.0%
Total		7.8%	44.4%	17.8%	18.9%	11.1%	100.0%

		My business secures work locally through the tendering process					Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food	6.3%	25.0%	37.5%	18.8%	12.5%	100.0%
	Engineering		11.1%	44.4%	22.2%	22.2%	100.0%
	Other Manufacturing			42.9%	28.6%	28.6%	100.0%
	Construction	25.0%	50.0%	12.5%	12.5%		100.0%
	Business Services		21.1%	21.1%	26.3%	31.6%	100.0%
	Logistics			66.7%	16.7%	16.7%	100.0%
	Renewable Energy & Env Services		33.3%	33.3%	33.3%		100.0%
	Retail and Other Services	5.9%	35.3%	35.3%	23.5%		100.0%
	Health & Care			50.0%	50.0%		100.0%
Total		4.5%	22.5%	34.8%	23.6%	14.6%	100.0%

		It is easy to find out about new public sector contracts					Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food		5.9%	29.4%	41.2%	23.5%	100.0%
	Engineering		44.4%	22.2%	22.2%	11.1%	100.0%
	Other Manufacturing		11.1%	33.3%	44.4%	11.1%	100.0%
	Construction		11.1%	44.4%	33.3%	11.1%	100.0%
	Business Services		31.6%	26.3%	21.1%	21.1%	100.0%
	Logistics		20.0%	20.0%	20.0%	40.0%	100.0%
	Renewable Energy & Env Services		33.3%		66.7%		100.0%
	Retail and Other Services	6.7%	20.0%	20.0%	46.7%	6.7%	100.0%
	Health & Care		40.0%	20.0%	40.0%		100.0%
Total		1.1%	22.0%	26.4%	35.2%	15.4%	100.0%

		It is easy to find out about contracts offered by other businesses				Total
		Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food	4.5%	31.8%	45.5%	18.2%	100.0%
	Engineering	33.3%	33.3%	22.2%	11.1%	100.0%
	Other Manufacturing		30.0%	50.0%	20.0%	100.0%
	Construction	11.1%	44.4%	33.3%	11.1%	100.0%
	Business Services		33.3%	47.6%	19.0%	100.0%
	Logistics	16.7%	33.3%	33.3%	16.7%	100.0%
	Renewable Energy & Env Services	33.3%	33.3%	33.3%		100.0%
	Retail and Other Services	11.8%	29.4%	58.8%		100.0%
	Health & Care		50.0%	50.0%		100.0%
Total		8.9%	33.7%	44.6%	12.9%	100.0%

		My business is experienced at tendering for new contracts					Total
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	
	Agri Food	9.5%	33.3%	28.6%	14.3%	14.3%	100.0%
	Engineering	18.2%	54.5%	18.2%	9.1%		100.0%
	Other Manufacturing		50.0%	37.5%		12.5%	100.0%
	Construction	33.3%	44.4%		11.1%	11.1%	100.0%
	Business Services		45.5%	22.7%	18.2%	13.6%	100.0%
	Logistics		42.9%	28.6%	28.6%		100.0%
	Renewable Energy & Env Services	25.0%	25.0%	25.0%	25.0%		100.0%
	Retail and Other Services	6.3%	31.3%	31.3%	25.0%	6.3%	100.0%
	Health & Care		20.0%	40.0%	40.0%		100.0%
Total		8.7%	39.8%	25.2%	17.5%	8.7%	100.0%

9. Location and Customers and Suppliers

		Are the majority of your customers based			Total
		in Lincolnshire	elsewhere in the UK	outside the UK	
Industry	Agri Food	65.3%	34.7%		100.0%
	Engineering	25.0%	50.0%	25.0%	100.0%
	Other Manufacturing	7.7%	53.8%	38.5%	100.0%
	Construction	77.8%	22.2%		100.0%
	Business Services	40.7%	51.9%	7.4%	100.0%
	Logistics	57.1%	28.6%	14.3%	100.0%
	Renewable Energy & Env Services	75.0%	25.0%		100.0%
	Retail and Other Services	66.7%	33.3%		100.0%
	Health & Care	83.3%	16.7%		100.0%
Total		54.8%	38.2%	7.0%	100.0%

		Are the majority of your suppliers based			Total
		in Lincolnshire	elsewhere in the UK	outside the UK	
Industry	Agri Food	59.2%	34.7%	6.1%	100.0%
	Engineering	8.3%	91.7%		100.0%
	Other Manufacturing	15.4%	61.5%	23.1%	100.0%
	Construction	66.7%	33.3%		100.0%
	Business Services	34.6%	57.7%	7.7%	100.0%
	Logistics	57.1%	28.6%	14.3%	100.0%
	Renewable Energy & Env Services	50.0%	25.0%	25.0%	100.0%
	Retail and Other Services	41.4%	55.2%	3.4%	100.0%
	Health & Care	50.0%	33.3%	16.7%	100.0%
Total		43.9%	48.4%	7.7%	100.0%

10. Views on Greater Lincolnshire as a location – percentage saying good/very good

Industry	Availability of labour	Skills within the local labour market	Proximity to suppliers	Proximity to customers	Presence of support sectors	Support in collaborating with other firms
Agri Food	55.6%	46.7%	47.9%	45.8%	54.3%	31.8%
Engineering	27.3%	27.3%	30.0%	36.4%	36.4%	27.3%
Other Manufacturing	75.0%	50.0%	38.5%	30.0%	70.0%	57.1%
Construction	62.5%	77.8%	87.5%	75.0%	50.0%	60.0%
Business Services	44.4%	42.1%	36.8%	47.6%	33.3%	33.3%
Logistics	50.0%	50.0%	71.4%	83.3%	85.7%	60.0%
Renewable Energy & Env Services	100.0%	50.0%	75.0%	100.0%	75.0%	75.0%
Retail and Other Services	73.1%	51.9%	50.0%	75.0%	52.0%	60.0%
Health & Care	50.0%	66.7%	50.0%	100.0%	20.0%	20.0%
Total	58.1%	48.9%	48.9%	57.0%	52.0%	41.2%

Industry	Help in complying with regulation	Availability of finance	Transport infrastructure	Digital connectivity	Cost of land/premises	Availability of land/premises
Agri Food	40.0%	16.7%	35.6%	15.9%	36.2%	31.9%
Engineering	22.2%	14.3%	40.0%	36.4%	57.1%	57.1%
Other Manufacturing	70.0%	28.6%	41.7%	33.3%	66.7%	77.8%
Construction	71.4%	25.0%	75.0%	50.0%	85.7%	75.0%
Business Services	56.3%	31.3%	31.6%	36.0%	73.3%	83.3%
Logistics	60.0%	50.0%	57.1%	42.9%	85.7%	66.7%
Renewable Energy & Env Services	50.0%	.0%	50.0%	.0%	100.0%	75.0%
Retail and Other Services	41.7%	55.6%	29.2%	28.0%	68.0%	50.0%
Health & Care	50.0%	25.0%	16.7%	50.0%	100.0%	80.0%
Total	46.8%	27.8%	37.8%	28.9%	60.5%	53.3%

11. Is there anything that restricts you from trading more with local businesses?

Agri Food	▪ No - except rurality ▪ Lots of competition ▪ Food Hygiene Restrictions ▪ Distances between other businesses, availability of product needs cannot be grown in area ▪ They do not sell what we want ▪ Demise of pub trade due to regulation and tax ▪ Quality and standard they require to trade with or cost ▪ unjust laws re: debt collection ▪ The big companies have destroyed them ▪ No, there's more red tape involved but you can get over it, but he's a one man band so it depends on how far he wants to go. ▪ May use local when purchasing but most of our customers are elsewhere in the UK ▪ Not really, we do look to work with companies that are with reasonable proximity to our factories as this does tend to provide a more focused service. ▪ customers approval ▪ Group central purchasing ▪ Availability of some supplies such as clean potato seed or soya. Local business capacity. ▪ Most of work is in the South East of the country ▪ Climatic conditions necessary for continuity production of specialised crops
Engineering	▪ Our sector is highly specialised ▪ Lincolnshire does not require our products ▪ Lack of properly trained staff ▪ lack of engineering companies, much work is defence related ▪ awareness of what our business can offer in the local area
Other Manufacturing	▪ specialised products that currently Lincolnshire does not produce ▪ We work in a global rather than local market ▪ There is low demand for our services within Lincolnshire, and there are limited companies producing the type of goods and services that we require ▪ Some products simply are not available from UK sources ▪ Outlets not prolific
Construction	▪ What ever people say, public procurement is skewed away from SME's and does not favour local companies ▪ NO. There is one thing that I would like to say and that is that builders in the locality (Holbeach) are short of work including ourselves. We have been in business for 53 years this month and have never advertised for work. It has been word of mouth in all that time. ▪ Price, it is often possible to obtain better prices over the internet even when factoring in cost of delivery. Currently a number of local businesses which I would wish to deal with are currently holding limited stock which can be frustrating and in a number of areas appear to be on the point of closure. Finally the cost of fuel to collect/look for materiel required for jobs, currently I apply a "Lean approach" via the Internet. ▪ specialist supplies - for example, machinery for food production is mostly imported (italy) despite the fact that we have an important engineering cluster in Lincolnshire-also, there are no main steel frame manufacturers in Lincolnshire (as an example) ▪ Yes size of contracts are small in the Grantham area, no major contracts are won by Grantham contractors from the local council, all passed contracts go to either Nottingham Lincoln or Bourne contractors eg- clock tower, market repair works, skdc old folks homes. Passed history is showing that if we cant get these contracts then their will be no point having a college to train the young apprentices.

Business Services	▪ Few local businesses supply or require work at our end of the technical spectrum. ▪ Local businesses do not supply the products I need, although I am always on the lookout for local alternatives ▪ Not really. Cost would be the only thing as we don't have a predominance of large suppliers within the areas of need that we have. ▪ We operate an open access conference centre and skills training facility for employers and training providers. We aim to be the venue of choice for all. ▪ Demand for our services ▪ I have no problem trading with smaller local businesses, however larger Blue Chip companies and Local Authorities including North East Lincs, Lincoln City, Lincolnshire County and East Lindsey seem to prefer a more formal tendering route and often procure goods and services through larger Facilities Management Contracts with providers. ▪ not the right type of business, some traditional businesses are not forward thinking. ▪ insufficient capacity
Logistics	▪ Nothing
Renewable Energy & Env Services	▪ Lack of some of the things we need locally ▪ In the future the Renewable sector will only deal with companies who have met their criteria (ISO ???). Companies will have to be brought up to standard.
Retail and Other Services	▪ Not a priority for us ▪ Possibly not diverse enough local businesses ▪ There are none in my sector ▪ Getting them to know what we do - even though we advertise strongly locally. Although just opening our new retail premises seems to be working well on this level. ▪ Climatic conditions necessary for continuity production of specialised crops ▪ Pricing
Health & Care	▪ Lack of awareness of potential local suppliers

12. Is there anything that restricts you from collaborating more with local businesses?

Agri Food	▪ Lots of competition ▪ There type of product and saleability with ours ▪ competition ▪ dishonesty amongst people in general. ▪ They are not there or cannot compete. ▪ Commercial sensitivity ▪ Competitiveness, although we are all "produce" companies we could all collaborate more without fundamentally effecting the competitiveness of our businesses. ▪ Yes, there are alot of beer tied pubs who they can't trade with ▪ Most of work is in the South East of the country
Engineering	▪ Our sector is highly specialised ▪ No but---not sure what we would get from it ▪ Low levels of manufacturing business in county ▪ no companies with complimentary skills located locally ▪ location of suppliers
Other Manufacturing	▪ Specialised products ▪ there are no local firms we can collaborate with ▪ Only the lack of relevant businesses. ▪ We don't collaborate because of products are technically sensitive

Construction	▪ <i>Often parking when needing to collect material. 1 Search Engine Optimisation (SEO), causing pollution of searches. Significantly keener prices offered by the larger suppliers which the smaller suppliers cannot hope to match. Generally visibility of/to local businesses both incoming and outgoing for mutual support. Clearly there are a number of business support groups for the larger organisations but not really a great deal for sole traders such as my self (a one man band). I do however recommend other tradespersons If I have knowledge of their skills.</i> ▪ <i>the competition act we have to be very careful - we collaborate within our supply chain but cannot talk to 'the industry' (competitors)</i> ▪ <i>Not many other businesses out there to collaborate with in our field.</i>
Business Services	▪ <i>As a sole trader the main thing that restricts me from doing anything with anyone is the number of hours in the day :)</i> ▪ <i>Quality and availability</i> ▪ <i>Finding others who would like to collaborate; time.</i> ▪ <i>Lack of skills in the area</i> ▪ <i>No, we try to buy local where we can and use local suppliers, we collaborate where we can</i>
Logistics	▪ <i>Nothing</i>
Renewable Energy & Env Services	▪ <i>Lack of experience</i>
Retail and Other Services	▪ <i>Not a priority for us</i> ▪ <i>Opportunity</i> ▪ <i>No need</i> ▪ <i>As above - although new networking groups in our region should help with this.</i> ▪ <i>Not interested, it has no benefit to us.</i>
Health & Care	▪ <i>Not that I'm aware of</i> ▪ <i>no knowledge of common aims and goals</i>