

21 *SOCIO-ECONOMICS*

21.1 *INTRODUCTION*

21.1.1 The chapter assesses the socio-economic impact of the Project on the local area and the wider Hull and Humber sub-region. It sets out:

- the current state of the economy with high levels of deprivation and acute need for new investment in economic activity;
- the number of additional jobs that will be directly created by the Project, after taking into account displaced activity;
- the nature of the jobs created and the skills or occupational requirements;
- the skills of the local workforce and their suitability for the new employment opportunities;
- the number of jobs created in the local area by the additional spending created by the direct employment; and
- the nature of any negative impacts, such as stress on local housing and amenities, and possibility of mitigating these.

21.2 *LEGISLATION, POLICY AND GUIDANCE*

General

21.2.1 General planning and strategic documents, such as the Regional Economic Strategy (REcS), the emerging Local Development Frameworks and community strategies have been reviewed including national policy documents specific to renewables and to the transition towards a low carbon economy, which set stringent targets for the future. This review has identified three key strategic objectives that the Project contributes to. These are:

21.2.2 **Economic objectives:** the REcS recognises Environmental Technologies as a priority sector for the future. It is an emerging market with considerable innovation and R&D potential and with significant expertise already present in the region.

- 21.2.3 **Environmental sustainability objectives:** wind farms and other renewables have a fundamental role to play in decoupling economic prosperity from CO₂ emissions. They tackle two core issues with wide-ranging and long-term impacts on all dimensions of human activity, including economic prosperity, climate change and secure energy sourcing.
- 21.2.4 **Social and regeneration objectives:** priority objectives for the local authorities are factors such as labour market, worklessness, housing and combating poverty.
- 21.2.5 The policy review demonstrates the strategic fit of the project not only locally but also regionally and nationally. This is both in terms of the importance of the renewable energy sector, to local and national objectives, and also of the need to create jobs in this deprived economic area.
- 21.2.6 As noted in *Chapter 3* regional policy currently carries little weight given the Secretary of State's intention to abolish Regional Spatial Strategies and Regional Development Agencies. Nevertheless, the REcS remains a relevant document both in policy terms and in providing an understanding of the strengths of the region.
- 21.2.7 The vision in the REcS is for Yorkshire and Humber region to be '*a great place to live, work and do business that fully benefits from a prosperous and sustainable economy*'.

National Policy Statements

- 21.2.8 The NPS for Ports records that the '*decision maker should give substantial weight to the positive impacts associated with economic development*'. However the decision maker is also advised that the weight attached to the benefits needs to take account of the uncertainty attached to such an assessment. In addition judgement is needed as to whether possible adverse impacts would arise from the impact of the development on other commercial operators.

Planning Policy Guidance/Statements

Planning Policy Statement 4: Planning for Sustainable Economic Growth

- 21.2.9 PPS4 brings together all of the Government's key planning policies relating to the economy in both urban and rural areas into a single PPS. It replaces PPG4: *Industrial and Commercial Development and Small Firms*; PPG5: *Simplified Planning Zones*; PPS6: *Planning for Town Centres*; the

economic development policies in *PPS7: Sustainable development in rural areas* and car parking standard policies in *PPG13: Transport*.

- 21.2.10 *PPS4* emphasises its support for sustainable economic growth and states that,

'Local planning authorities should adopt a positive and constructive approach towards planning applications for economic development. Planning applications that secure sustainable economic growth should be treated favourably' (policy EC10. 1).

Sub Regional Policy

- 21.2.11 North Lincolnshire forms part of the Hull and Humber Ports City Region, which is identified as a sub-region in the *Northern Way Growth Strategy*. The sub-region is identified as having a population of 785 000, roughly 60 percent of whom live north of the estuary and 40 percent of whom live south of the estuary.

Local Plan Policy

North Lincolnshire Council Local Plan

- 21.2.12 The broad strategy of the *Local Plan* is set out in Policies ST1, ST2 and ST3. Paragraph 3.7 of the document states that:

'(t)he North Lincolnshire Local Plan aims to ensure that new development provides the maximum benefits for local communities in terms of its effect upon the environment, economic growth and social well being. In some cases development may have a beneficial effect upon all three of these aspects of the community's quality of life. Where this is not possible, the Plan will seek to achieve an acceptable balance between environmental, economic and social factors.'

North Lincolnshire Council Core Strategy

- 21.2.13 Spatial Objective 2 of the Core Strategy is entitled, *'Delivering the Global Gateway'*. It sees the South Humber Bank Ports together with Humberside Airport and Doncaster Robin Hood Airport as a major asset for the area and that:

'their growth and development will be supported to provide an ideal location for industrial growth and secure up to 10,000 high quality jobs.'

21.2.14 The site is referred to in the Core Strategy as South Humber Bank. Policy CS12 of the Core Strategy states that:

'around 900 hectares of land at the South Humber Bank Strategic Employment Site (SHBSES) will be reserved for B1, B2 and B8 port related activities to take special advantage of its location, flat topography and adjacent a deep water channel of the River Humber as an extension to Immingham Port and the Humber Sea Terminal.'

21.2.15 Lifelong Learning and Skills is the basis of CS13 of the Core Strategy, with skills having been identified by business in North Lincolnshire as a key factor in remaining competitive. Given the large number of new jobs that would result from the MEP being consented, and the fact that they are in a field of new and growing technology, skills training and development will be a key component of this project.

North Lincolnshire Employment Land Review (ELR)

21.2.16 The North Lincolnshire Employment Land Review (NLC, 2010b) sets out eight growth sectors which the North Lincolnshire Economic Development Strategy (EDS) has identified as key growth sectors on which it intends to focus effort and resources to develop clusters ¹. These are:

- transport, storage and communications;
- environmental technologies;
- chemicals (consumer end-use chemicals, pharmaceutical products, organic base chemicals, rubber and plastics, speciality chemicals);
- food and drink manufacturing and packaging;
- advanced engineering;
- construction;
- business services (finance, legal, insurance, industrial cleaning, recruitment, security and business support); and
- retail and leisure.

¹ Para 7. 16 (the text states ten sectors though only eight separate headings are listed)

21.2.17 The MEP will have an economic impact on a number of these sectors but in particular it will contribute to the development of environmental technologies and advanced engineering as a cluster.

21.2.18 The ELR shows projected employment growth of 3 783 jobs (199 jobs pa) over the period 2007-2026. There is also a sectoral breakdown of the projections, though neither the method for the totals or the sectoral mix is clear. The North Lincolnshire ELR notes that,

'there is a 'low skills equilibrium' in North Lincolnshire where employers demand low skills levels from their workers who are consequently less inclined to increase their skills levels.'

21.2.19 AMEP provides a unique opportunity for the area to emerge from this low skills equilibrium and develop a sustainable economic base.

21.3 METHODOLOGY

Overview

21.3.1 In order to carry out a socio-economic assessment the relevant area of impact needs to be defined. In this assessment, the impacts are assessed at a number of different levels. These are:

- on-site employment, where the direct local jobs can be measured;
- the immediate locality defined by wards, and represented most immediately by the wards of Ferry and Immingham, in order to assess the immediate baseline profile and impact;
- the administrative areas of North Lincolnshire and North East Lincolnshire for reasons of comprehensiveness of data as well as defining an appropriate policy area for response;
- the travel to work area as defined by drive-time catchments; and
- the wider Humber sub-region as the appropriate policy area for development of the wider technological cluster.

21.3.2 There will also be significant impacts at the national level through supply linkages with the site and the contribution the offshore wind energy production will have on reducing CO₂ emissions.

- 21.3.3 The principal assessment method is through the impact on jobs. These are measurable and locationally specific. Economic impacts are reported in terms of Full-Time Equivalent (FTE) jobs and Gross Value Added (GVA) generated by these jobs.
- 21.3.4 The impact of the jobs created on the local labour market, and hence the economic well-being of the local residents, will also be assessed.
- 21.3.5 The assessment will focus on the following major impact categories:
- **Direct economic impacts;** jobs and GVA that is wholly or largely related to construction, and operation and maintenance of AMEP and generated either on-site or in the reference study areas.
 - **Indirect economic impacts;** jobs and GVA generated in the economy of the reference study areas in the chain of suppliers of goods and services to the direct activities (both on-site and off-site).
 - **Induced economic impacts;** jobs and GVA created by direct and indirect employees' spending in the local and wider economy.
 - **Wider economic (catalytic) impacts;** employment and income generated in the economy related to the wider role of AMEP in influencing economic activities (including socio-economic effects below). This will include examination of effects on inward investment; elsewhere within the construction sector (for example, as a result of worker supply) and on other sectors of the economy.
 - **Wider socio-economic impacts;** these are the effects on local communities and the general population as a result of the above, and due to changes in social conditions and the surrounding environment. This will include examination of effects on the provision of infrastructure and services (for example, accommodation, education and healthcare).
- 21.3.6 In accordance with recommendations of the draft NPS for Ports, the potential for cumulative and in-combination effects will also be examined where required and where data is reasonably available.
- 21.3.7 The approach follows UK Government guidelines and best practice. The methodology used to estimate the impacts of the proposed development will follow the guidance set out in the HM Treasury's Green Book and English Partnerships (EP) Additionality Guidance, as

well as taking into account Department for Business Innovation and Skills (BIS) research on additionality.

21.3.8 According to HM Treasury's Green Book the impact arising from an intervention is additional if it would not have occurred in the absence of the intervention. In many cases of public sector support projects, businesses or individuals would have created jobs or found employment using their own resources in the absence of such projects. The extent to which this occurs would be less without the public sector support projects. The difference between these two scenarios – ie with and without support projects – represents the additional impact that public sector projects have. In the business world, additionality usually represents the difference between the impact of a project/development and a scenario of what would have happened without the project. Additionality of business projects may be either much higher than those of a public sector intervention or much lower. The latter would be the case when development was located in a popular location where other businesses would have created jobs if this project did not go ahead. High additionality arises from unique and large scale projects where which only very few businesses are able to undertake.

21.3.9 The Green Book and EP Additionality Guidance set out key stages to assessing the additional impact or additionality of a project. In particular, the impacts will be adjusted ¹ to take account of:

- leakage, that is, impacts that fall outside the target area;
- displacement and substitution, i.e. other economic activity which does not take place because resources are diverted to the proposed development; and
- multiplier effects, i.e. further economic activity generated by the business spending in the supply chain and increases in local income.

21.3.10 The objective will be to capture the benefits for the Hull and Humber Ports sub-region which has both the need and the opportunity.

¹ This can be presented as the following equation:

$AI = [GI \times (1 - L) \times (1 - Dp) \times (1 - S) \times M] - [GI^* \times (1 - L^*) \times (1 - Dp^*) \times (1 - S^*) \times M^*]$
where AI is additional impact of a project scenario, GI – gross impact, L – leakage, Dp – displacement, S – substitution, and M – multiplier effects and all variables marked with '*' represent the same elements of the reference case (deadweight), ie of what would have happened without the project. The units of measurement are usually either FTE jobs or GVA.

Construction Phase

- 21.3.11 Construction phase impacts will be assessed in terms of estimated total worker-years and FTE jobs generated based on a standard assumption that ten construction worker-years is equal to one FTE job.
- 21.3.12 Construction phase employment impacts are modelled based on the project description data supplied in *Chapter 4*. Average building costs from Spon's Architects' and Builders' Price Book (2009) has been used to estimate project costs at an appropriate level for the purposes of the EIA.

Operational Phase

- 21.3.13 The analysis of economic impacts of AMEP once all the facilities have been built and is operational, serving the growing offshore wind farm construction market, is based on the Indicative Site Plan for manufacturing facilities and the market share assessment.
- 21.3.14 A description of the MEP site and the manufacturing facilities proposed is included in *Chapter 4*.
- 21.3.15 It is assumed that manufacturing production on AMEP will be at capacity and will continue into the future without any growth (or contraction) although in reality production will build up over time.
- 21.3.16 The impact assessment analyses direct, indirect, and induced economic impacts in terms of employment (FTE jobs) and GVA generated at the site and/or locally, in Hull and Humber, the wider Yorkshire and Humber region, in the UK, and elsewhere in Europe.
- 21.3.17 The analysis is based on an assumption of the cost of 1 MW of installed capacity estimated from declared project costs in the offshore wind sector. The cost of 1 MW of installed offshore wind farm capacity has been rising since the demonstrator at Blyth built in 2000, which cost just £1 million per MW. Earlier offshore wind farms were built in relatively shallow waters, whereas more of Round 2 and most of the Round 3 projects will be built in deep waters that require different technological solutions to turbine foundations and in the installation of both foundations and turbines. In addition turbines themselves will be bigger and much heavier. These trends have been driving the costs upwards and will continue to do so in the short term.

- 21.3.18 Analysis of offshore wind farm project costs is based on the published data that is sometimes inconsistent. For example, the cited cost of the Gunfleet Sands wind farm that became operational in 2010 ranges between £297.5 million, according to *4coffshore* web database, and £420 million quoted by Renewable Energy Development web-site (www.renewableenergydev.com) resulting in either £1.72 million or £2.43 million per MW installed. This compares favourably to £3.09 million per MW of the Inner Dowsing and Lynn wind farms that started supplying electricity in 2009 or £3.32 million per MW projected for the Sheringham Shoal wind farm due to be completed in 2011. At the same time the Beatrice demonstration of 5 MW turbines cost £3.5 million per MW (all costs above are based on *4coffshore* web database).
- 21.3.19 The average cost per MW for all completed offshore wind farms in the UK is £2 million, however this includes all of the early wind farms built in 2003, 2004, and 2007. The average cost for wind farms currently under construction ranges between £2.9 and £3.1 million depending on the project cost information used. Most of these wind farms will have 3.6 MW turbines with only Ormonde and Beatrice project using new 5 MW turbines. *A Guide to an Offshore Wind Farm* (Crown Estate, 2010) details approximate costs of wind farm development, 5 MW turbines and their components, installation, and O&M. The average cost per MW from this data is £3.05 million.
- 21.3.20 It has been widely reported that the offshore wind industry expects capital costs for wind farm projects to decrease as further innovation brings forward cheaper materials for turbines and as learning helps to reduce costs of development and installation and risks associated with the new sector. Some of the cost reduction estimates show that there may be up to 20 percent decrease in costs by 2020. For example, the *Study of the Costs of Offshore Wind Generation* (DTI, 2007) predicted 20 percent reduction in costs for Round 2 projects. A more recent Ernst and Young study *Cost of and Financial Support for Offshore Wind* (DECC, 2009) provided an analysis of the scale of reductions in levelised costs¹ of offshore wind energy that can be expected by 2015. The reductions were mostly related to the capital cost element of levelised costs, and range between 9.7 percent - accounting for the learning benefits, to 19.4 percent - accounting for learning and reduction in risk as perceived by financial market, to 41 percent - accounting for the aforementioned two factors and efficiencies achieved in the supply chain.

¹ Levelised costs of electricity production include capital costs, fuel costs, and operation and maintenance (O&M) costs. The analysis in the DECC report broke down levelised costs into capital expenditure, O&M expenditure, and cost of capital to show how financing costs contribute to the economics of offshore wind electricity generation.

21.3.21 The impact assessment will use the current average cost of £3.05 million per MW for impact estimates as it is close to the average from real data and it can be easily broken down by components and various project activities. This cost is assumed to apply within the life of the AMEP. Cost reductions discussed above may result in a lesser number of jobs created by the project in the future, however this trend will be counteracted by the growth in production at the site and even its potential expansion. Due to the number of variables the conservative approach of applying the current cost per MW has been adopted.

21.3.22 On this basis, and taking the Round 3 project as a whole, the estimated cost for the design, manufacturing, installation and commissioning of 32.2 GW of OWT's is £98 billion. Based on Member States Renewable Energy Action Plans, the estimated annual expenditure on OWTs by 2020 will be around £25 billion – or over £500 million per week. By way of comparison, the new Wembley Stadium is recorded to have cost £0.75 billion and took over 4 years to construct.

21.3.23 The assumptions that have been adopted for the purposes of the economic impact assessment are presented below in the *Table 21.1*.

Sensitive Receptors

21.3.24 Socio-economic impact of the MEP will comprise mainly positive effects and some potentially negative effects. Sensitive receptors for the purposes of the socio-economic analysis are following:

- economy: site-specific, wider local, wider regional, and wider national employment and GVA;
- housing;
- recreation and amenity; and
- social infrastructure: education and health care.

Table 21.1 *Assumptions used in the economic impact assessment*

Item	Assumptions																														
Offshore wind turbine size	5 MW																														
Average turnover per job in total OWT production chain and jacket foundations production	c.a. £420 k - £485 k																														
Average turnover per job in Development and Consulting sectors	c.a. £131 k																														
Cost of industrial buildings per 1 m ² .	Average £755 per 1 m ² for industrial buildings with an area of more than 2 000 m ² based on <i>Spon's Architects' and Builders' Price Book</i> (2009)																														
Costs by type of costs per 1 MW of offshore wind energy capacity	<table> <tr> <th></th><th>£ million</th></tr> <tr> <td>Development consent</td><td>0.12</td></tr> <tr> <td>Environmental surveys</td><td>0.01</td></tr> <tr> <td>Coastal surveys</td><td>0.0002</td></tr> <tr> <td>Met. station</td><td>0.01</td></tr> <tr> <td>Sea bed surveys</td><td>0.03</td></tr> <tr> <td>Engineering and design</td><td>0.002</td></tr> <tr> <td>Human impact</td><td>0.0002</td></tr> <tr> <td>Wind turbine</td><td>1.15</td></tr> <tr> <td>Cables</td><td>0.16</td></tr> <tr> <td>Foundations</td><td>0.60</td></tr> <tr> <td>Sub-station</td><td>0.10</td></tr> <tr> <td>Onshore sub-station</td><td>0.08</td></tr> <tr> <td>Installation and commissioning</td><td>0.80</td></tr> <tr> <td>Total cost per 1 MW</td><td>3.05</td></tr> </table>		£ million	Development consent	0.12	Environmental surveys	0.01	Coastal surveys	0.0002	Met. station	0.01	Sea bed surveys	0.03	Engineering and design	0.002	Human impact	0.0002	Wind turbine	1.15	Cables	0.16	Foundations	0.60	Sub-station	0.10	Onshore sub-station	0.08	Installation and commissioning	0.80	Total cost per 1 MW	3.05
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Onshore sub-station	0.08																														
Installation and commissioning	0.80																														
Total cost per 1 MW	3.05																														
Indirect multiplier effects	Average indirect multiplier of 0.44 based on English Partnerships' <i>Additionality Guidance</i> . For comparison, an average indirect employment multiplier in relevant sectors of Scottish Input-Output Tables is 0.37.																														
Induced multiplier effects	An average induced employment multiplier of 0.33 in relevant sectors of Scottish Input-Output Tables; An average induced GVA multiplier of 0.34 in relevant sectors of Scottish Input-Output Tables.																														
GVA per job	Average GVA of £56 280* per job in the Manufacturing sector in the UK.																														

* Estimated based on the GVA in the Manufacturing sector in the UK and the number of workforce jobs in this sector in the UK in 2008.

Significance Criteria

21.3.25 The EIA will assess the magnitude of impacts by analysing the scale of changes in comparison with baseline conditions. For example, by comparing:

- numbers of new jobs with total jobs in the immediate ward and wider travel to work area;
- numbers of new jobs with numbers of unemployed;
- numbers of new jobs with the size of the labour force in the immediate ward and wider travel to work area;
- potential housing needs of additional workforce with current housing stock and proposed/planned developments;
- additional demand for social infrastructure services with the current and planned provision; and
- labour force will also be assessed in terms of qualitative dimensions such as labour force type.

21.3.26 The magnitude of impacts will be assessed on a scale from “significant” to “non-significant”, and “negligible”.

21.4 *CONSULTATION*

21.4.1 The Scoping Opinion and consultation responses included various comments relating to socio-economic matters: these are outlined in *Annex 2.2* below together with explanations of how these matters are addressed in the EIA.

21.5 *BASELINE*

21.5.1 This baseline analysis was compiled during November 2010 using the most recent data reasonably available at the time. For employment this is 2008 data from the *Annual Business Inquiry*. For some data sets, in particular travel to work data and some detailed ward level data the latest available data that is reliable is the 2001 census. This was used where appropriate and where the broad patterns may still be relevant however it is recognised that the actual figures cited may have changed.

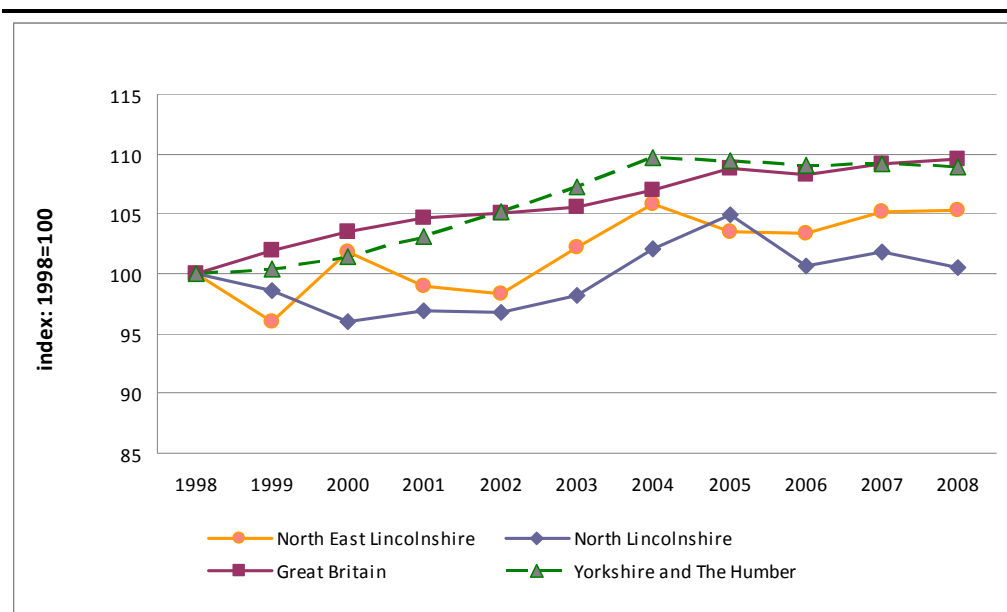
21.5.2 The study area is profiled primarily at the local authority levels of North Lincolnshire and North East Lincolnshire. These provide the best understanding of the general economic characteristics of the local economy and labour market. We have also included data on Hull to give an understanding of the sub-regional characteristics. Profiles of the local wards, which make up the immediate area, are also outlined. Finally, a profile of the area based on drivetime catchments is presented. This helps define the catchment area more precisely but data is more limited.

Local Authority Baseline Profile

Economy

21.5.3 Both North Lincolnshire and North East Lincolnshire are currently suffering high levels of unemployment. Even prior to the recent recession, employment growth in the area had been flat compared with the national and regional pattern as illustrated in *Figure 21.1* below.

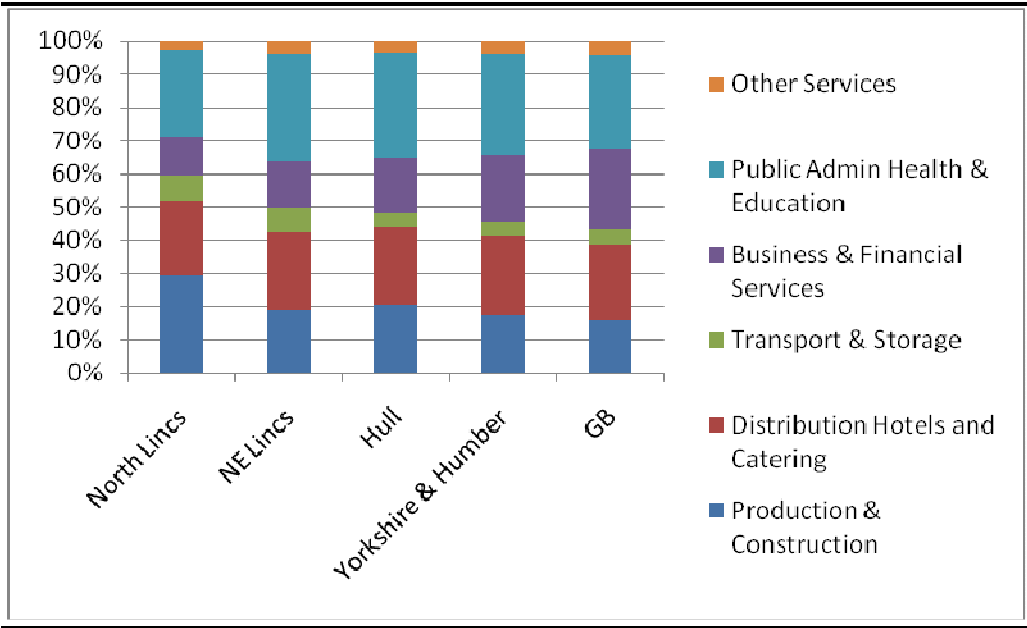
Figure.21.1 *Index of Employment Change 1998 – 2008*



Source: Annual Business Inquiry, Office for National Statistics (2010a)

21.5.4 As illustrated in *Figure 21.2*, North Lincolnshire employment structure is very heavily weighted towards the production and construction industries. This underlines the vulnerability of its economy as these sectors have been in long term structural decline. This highlights the importance of this Project to the local economy and also indicates the local economy is well placed to provide the necessary skills.

Figure 21.2 *Employment Structure*



Source: Annual Business Inquiry, Office for National Statistics (2010a)

21.5.5 North Lincolnshire has a higher proportion of full-time employment than nationally, with 71.3 percent of total employee jobs being full-time compared with 68.8 percent nationally. North East Lincolnshire has a lower proportion of full-time employment at 65.7 percent.

Table 21.3 below, which lists the sectors in which North Lincolnshire specialises, provides further insight into the nature of the local economy. As can be seen the area specialises in manufacturing, and some of the major sectors are manufacturing of iron, steel and construction. The sector, and major employers such as Scunthorpe Steel Mill, are well placed to form part of the vertical cluster supporting AMEP. Food processing is also strongly represented in North Lincolnshire.

21.5.6 North East Lincolnshire similarly has a functional specialisation in terms of food processing and manufacturing, though here the profile is related to fish and to chemicals related sectors, refer to Table 21.4.

Table 21.3 *Specialist Sectors in North Lincolnshire*

Sectors
Construction of bridges and tunnels
Manufacture of lime and plaster
Manufacture of basic iron and steel and of ferro-alloys
Manufacture of cement
Manufacture of refined petroleum products
Manufacture of household and sanitary goods and of toilet requisites
Manufacture of condiments and seasonings
Specialist medical practice activities
Casting of steel
Processing and preserving of poultry meat
Casting of iron
Other food service activities
Processing and preserving of potatoes

Source: Annual Business Inquiry, Office for National Statistics (2010a)

Table 21.4 *Specialist Sectors in North East Lincolnshire*

Specialist sectors
Processing and preserving of fish, crustaceans and molluscs
Manufacture of dyes and pigments
Manufacture of man-made fibres
Manufacture of fertilisers and nitrogen compounds
Manufacture of plaster products for construction purposes
Manufacture of other tanks, reservoirs and containers of metal
Service activities incidental to water transportation
Wholesale of other food, including fish, crustaceans and molluscs
Retail sale of fish, crustaceans and molluscs in specialised stores
Manufacture of other organic basic chemicals
Manufacture of plastics and rubber machinery
Manufacture of plastics in primary forms

Source: Annual Business Inquiry, Office for National Statistics (2010a)

21.5.7 The largest individual sectors in North Lincolnshire district are a combination of manufacturing, distribution, public sector activities such as health and education and retail. It is an employment structure that is in general weighted towards lower growth and lower value sectors.

New business registrations are close to, though slightly below, the national and regional average. In 2007 there were 440 new VAT registrations in North Lincolnshire representing 9.3 percent of the stock. This compares with 9.7 percent for North East Lincolnshire, 10 percent for Yorkshire & Humberside and 10.2 percent for Great Britain as a whole.

Table 21.5 *Largest Employment Sectors in North Lincolnshire*

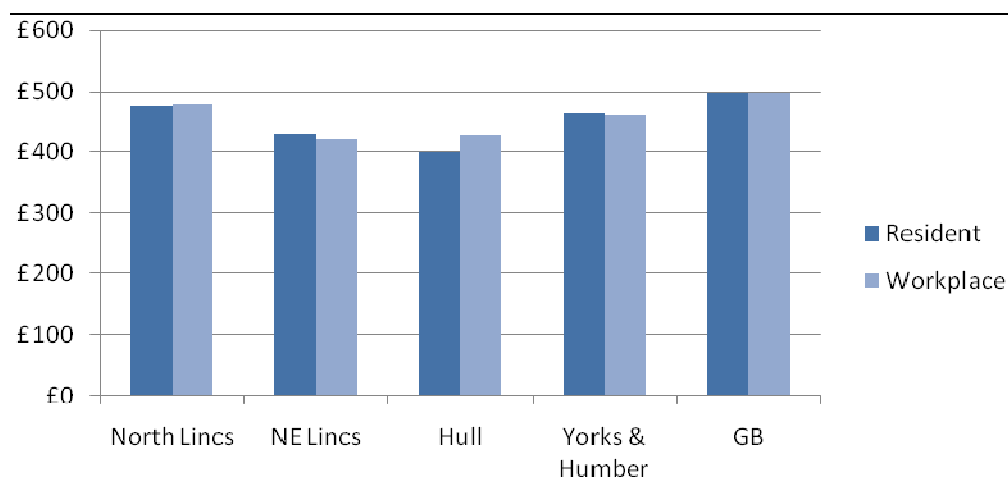
Manufacture of basic iron and steel and of ferro-alloys
Hospital activities
Retail sale in non-specialised stores with food, beverages or tobacco predominating
Primary education
Temporary employment agency activities
Freight transport by road
General secondary education
Warehousing and storage
Beverage serving activities
General public administration activities
Manufacture of refined petroleum products
Construction of other civil engineering projects n.e.c.
Other specialised construction activities n.e.c.
Restaurants and mobile food service activities

Annual Business Inquiry, Office for National Statistics (2010a)

Population and Labour Market

- 21.5.8 ONS sub-national population projections (2008) indicate that the population of North Lincolnshire will rise by 29 800 from 160 500 in 2008 to 190 300 by 2033 an increase of 18.6 percent, but this increase is predominantly accounted for by an ageing population. The working age population has a much flatter growth trajectory. The population aged 15-64 is currently projected to grow by just 4.2 percent or 4 400 over this 25 year period.
- 21.5.9 In neighbouring North East Lincolnshire the total population is projected to increase by 9 000 or 5.7 percent, whilst the population of working age is projected to decline by 5 200 or 5.1 percent.
- 21.5.10 The employment structure of the local area results in average wage rates for both residents and workers which are marginally above the regional average for North Lincolnshire, though workplace wages are below the regional average in North East Lincolnshire. In both cases however average wages are close to the regional average and below the national average. This is illustrated in *Figure 21.3* below. In Hull resident wages are lower still at some 20 percent below the national average, although workplace wages are on a similar level to NE Lincs.

Figure 21.3 *Average Weekly Wage Rates*



Source: *Annual Survey of Hours and Earnings, Office for National Statistics (2010b)*

- 21.5.11 Unemployment is currently high, especially for North East Lincolnshire. For the year July 2009 - June 2010, the unemployment rate was estimated to be 8.0 percent for North Lincolnshire and 11.9 percent for North East Lincolnshire compared with 9.0 percent for the region and 7.8 percent nationally ¹.

Local Ward Profile

- 21.5.12 The proposed MEP is located in the ward of Ferry in North Lincolnshire. In 2008 there were an estimated 6 300 employees working in Ferry ward.
- 21.5.13 In 2001 unemployment ² in Ferry ward was 3.5 percent (lower than regionally but slightly higher than nationally) and in Immingham ward it was 5.6 percent (well above regional and national averages). Comparable estimates are not available for the present but latest data shows that 3.4 percent of the working age population of Ferry ward and 5.8 percent of the working age population of Immingham ward were claiming unemployment benefits in December 2010. Unemployment is usually higher than the claimant count as not all unemployed people claim benefits.
- 21.5.14 *Figure 4* below shows the qualification levels of the workforce (2001 Census) in local wards. The closest wards to the site are:

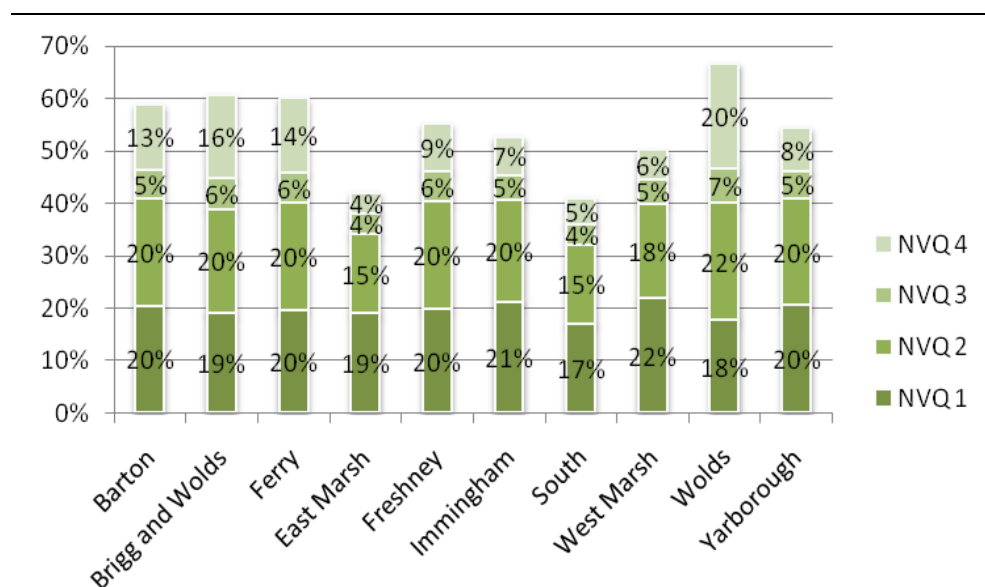
¹ Unemployment rate among the working age population from Annual Population Survey. ONS, 2010

² The quoted unemployment rate is among all people aged 16-74 as published. Working age (16-64) unemployment rates were 4 percent and 6.3 percent in Ferry and Immingham wards respectively

- in North Lincolnshire: Barton, Brigg and Wolds and Ferry;
- in North East Lincolnshire: East Marsh, Freshney, Immingham, South, West Marsh, Wolds, Yarborough.

21.5.15 Each of the local wards had a similar qualifications profile. For most wards roughly a third of the population have no qualifications. Again for most of the local wards shown in the figure below, roughly 20 percent were only qualified to NVQ1 with a further 20 percent qualified to NVQ2. Wolds ward stands out as having a higher level of qualifications with 20 percent qualified to NVQ4.

Figure 21.4 *Qualifications of Resident Workforce*

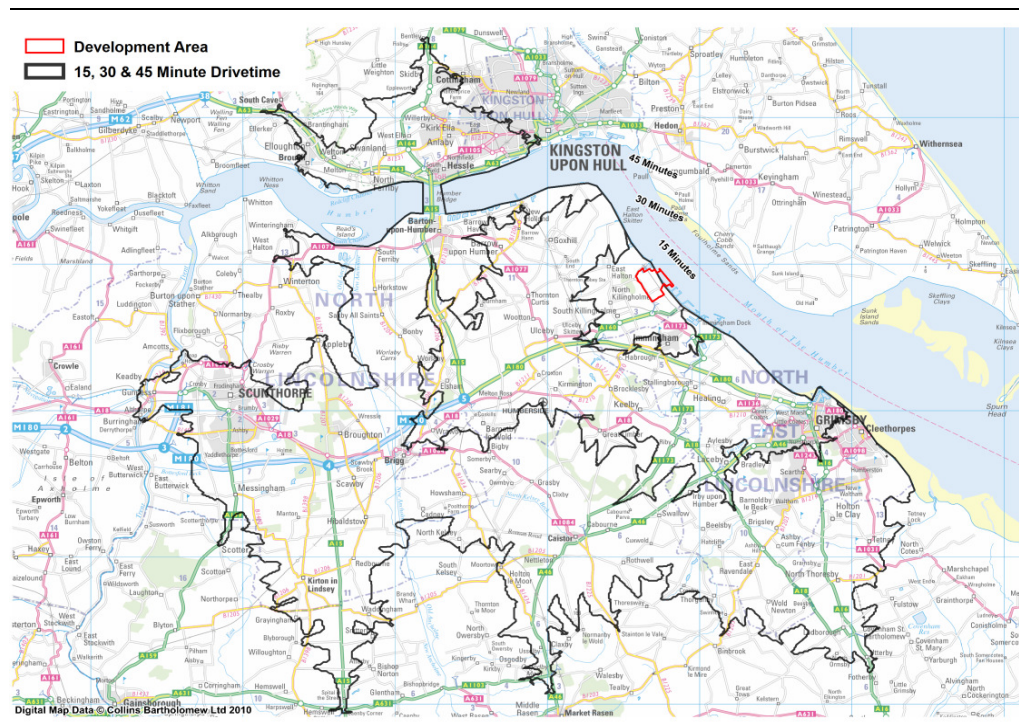


Source: Census 2001, Office for National Statistics (2010c)

Labour Market Catchment

21.5.16 In order to get an indication of the likely labour market catchment for the site the 15-minute, 30-minute and 45-minute drive-time catchment areas have been determined. These are shown in *Figure 21.5* below.

Figure 21.5 AMEP drive-time catchment areas



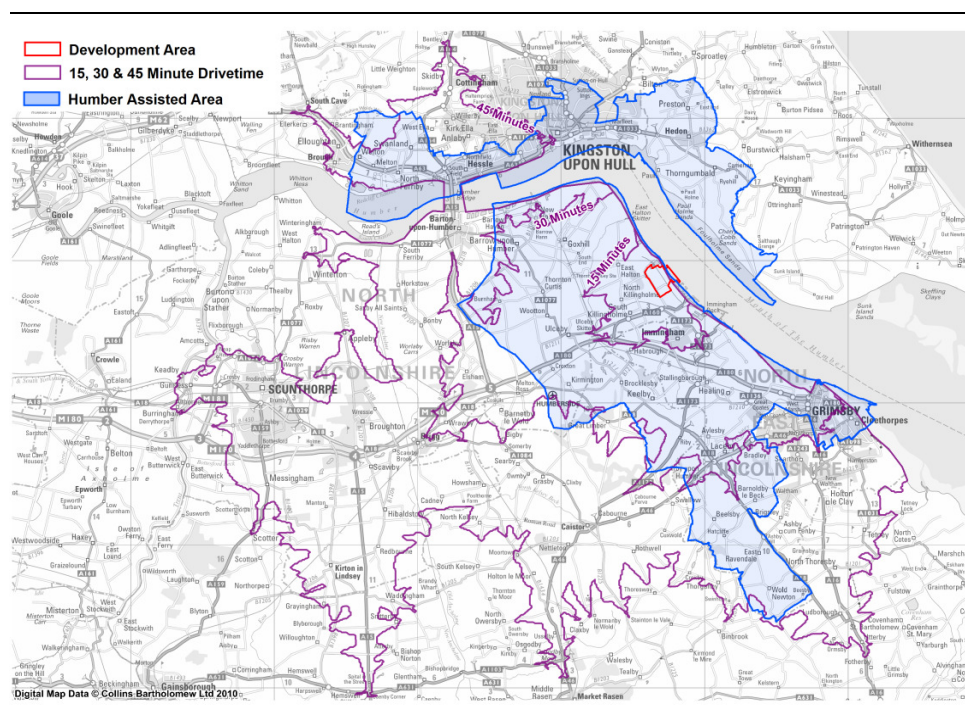
Source RTP

21.5.17

The Drive Time assessment attempts to capture statistical evidence for functional labour markets, which often extend beyond local authority boundaries. Although some designated boundaries are sometimes linked to local authority boundaries, they act as a useful proxy for determining the geography of functional labour markets in the area. A 15-minute drive-time contains 8 400 people of working age, 5 400 of whom are economically active. A 30-minute drive-time incorporates the urban area of Grimsby and contains 77 500 people of working age, 50 800 of whom are economically active. A 45 minute drive-time catchment incorporates Scunthorpe to the west, Cleethorpes to the south and extends the labour market catchment across the Humber to pick workers from the North Bank. Within a 45-minute drive-time there are 295 300 residents of working age of whom 194 300 are of working age. Economic activity rates in the 30 and 45 minute catchments are around one percentage point below the national average. In the more immediate 15-minutes catchment the economic activity rate is 1.6 percent below the national average. If economic activity rates in the 45-minute catchment area were at the national level there would be 1 750 additional workers. If this is added to the 13 000 unemployed workers in the 45-minute catchment, there is a potential labour reserve of nearly 15 000 workers not currently in employment.

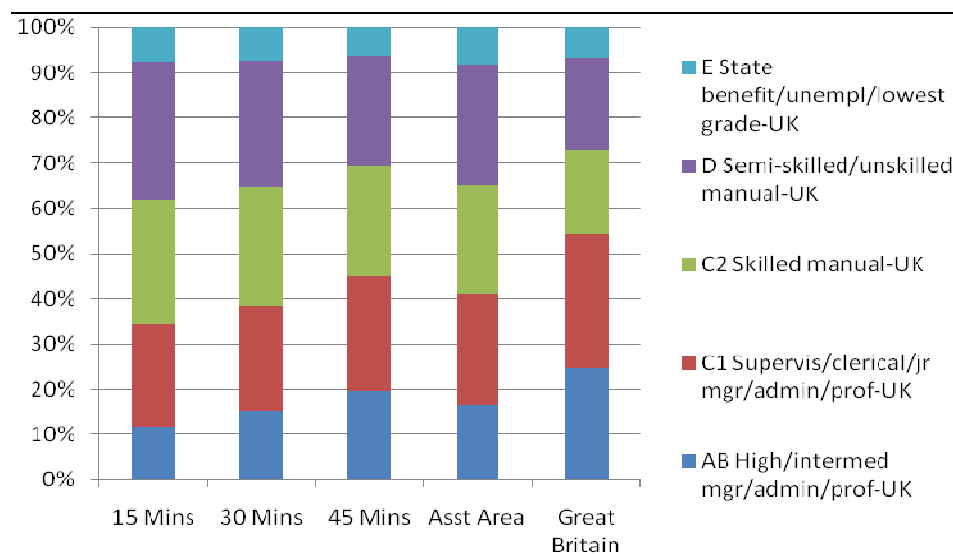
- 21.5.18 A higher proportion of people are employed in manufacturing than nationally (between 22-23 percent compared with 15 percent nationally). The immediate 15-minute catchment has a high proportion of workers in the “transport, storage and communications” industry with 16 percent compared to 7 percent nationally.
- 21.5.19 *Figure 21.6* show the relationship between the Humber Assisted area and the drivetime catchment areas. Businesses in the Humber Assisted area are eligible for the government grant support (Grant for Business Investment). The grant support targets businesses in deprived areas in England.
- 21.5.20 In terms of occupations the local area has a much higher proportion of workers employed in manual occupations than nationally and this is more highly concentrated in the immediate catchment. 58 percent of workers are employed in manual occupations compared to 39 percent nationally. This is set out in the *Figure 7*. The profile of the Assisted Area is similar to that of the 30 minute drivetime.

Figure 21.6 *Assisted Areas Proximal to the AMEP Site*



Source: RTP/BIS

Figure 21.7 Occupational Structure



Source: Census 2001, Office for National Statistics (2010c)

Housing and social infrastructure

Housing

- 21.5.21 North Lincolnshire's Housing Strategy is already geared up to cope with expansion. The North Lincolnshire Draft Core Strategy states that:

'North Lincolnshire has a range of housing spread across its towns and villages. As a result of its attractive environment, good services and buoyant economy, it has become a desirable place for many people to live, therefore residential development has increased considerably in recent years. The area has approximately 70,000 dwellings, however due to expected population growth and economic developments an additional 12,063 new dwellings will be required between 2010 and 2026.'

- 21.5.22 The Regional Spatial Strategy (RSS) identifies an overall housing requirement for North Lincolnshire between 2004 and 2026 of 15 700 new dwellings, which is phased into two periods. Between 2004 and 2008, North Lincolnshire was expected to provide 2 200 new dwellings (a rate of 550 dwellings per year). In the second period (2008-2026), the area is expected to provide 13 500 new dwellings at a rate of 750 dwellings per year. Whilst invited by the Secretary of State to reconsider these targets following the intention to abolish the RSS, a *Housing Topic Paper* from North Lincolnshire Council published in October 2010 outlined the rationale for retaining these targets. Part of this justification was the fact that recent completion rates supported this level of development.

- 21.5.23 The Lincolnshire Lakes project is identified within the *Scunthorpe Strategic Development Framework* (SDF) as a key component in the transformation of Scunthorpe. The project aims for the creation of a major new sustainable waterside setting and neighbourhood for Scunthorpe.
- 21.5.24 The *Strategic Housing Market Assessment for North Lincolnshire* published in November 2008 identified a total annual need for housing of 1 170 per annum, of which 373 would be affordable.
- 21.5.25 The *Housing Topic Paper* had also factored in the demand likely to emerge from the proposed MEP. The paper notes that:
- 'Able UK have also announced a £400 million vision for the creation of what would be the UK's leading Marine Energy Park, including the construction of quayside facilities purpose-built for the construction and installation of wind turbines, and the development of biomass energy generation. Both of these projects are expected to create around 15,000 new high value jobs on site. In meeting the need of these people it is important that significant numbers of homes are created in sustainable locations. Therefore it is essential that the housing requirements of the Core Strategy DPD are adopted to meet these needs in locations like the Lincolnshire Lakes.'* (paragraph 4.19)
- 21.5.26 The assessment undertaken as part of this EIA shows that there might be less than one third of these FTE jobs created at AMEP itself. It may be that earlier estimates published in the media confused the direct on-site jobs with the total number of jobs that would be created on the site and in the wider regional and national economy. Nonetheless it will be important to ensure adequate provision of housing in the local area as GVA growth in the local economy is directly linked to housing.
- 21.5.27 *North East Lincolnshire Annual Monitoring Report 2009/2010* shows housing completions reached 400 dwellings per annum in 2007-2008 however reduced to 77 in 2008-2009 when hit by recession. The targets until 2016 show a gradual increase to 500 dwellings per annum. The housing policy takes into account the AMEP proposal at Killingholme. Five year supply of housing land identified in the *North East Lincolnshire Strategic Housing Land Availability Assessment 2010* will provide c. 600 homes surplus capacity.

Education

- 21.5.28 There are 82 schools in North Lincolnshire, 14 of which have specialist school status (*Table 21.6*):
- 13 secondary schools;
 - 9 junior schools;
 - 10 infant schools;
 - 47 primary schools; and
 - 2 special schools.
- 21.5.29 Seven of the specialist schools focus on technology, engineering, and science subjects. John Leggott and North Lindsey Colleges provide post-16 and adult education with the latter catering for approximately 2 000 full-time and 8 000 part-time students.
- 21.5.30 North East Lincolnshire has 62 schools:
- 9 secondary schools;
 - 8 junior and infant schools;
 - 41 primary schools;
 - 2 special schools; and
 - 3 independent schools.
- 21.5.31 Six of the secondary schools specialise in science, computing, technology, sports or business, and three of them are academies.
- 21.5.32 A number of North Lincolnshire schools will be fully or partially rebuilt as part of the Building Schools for the Future programme. These are:
- Phase 1/sample schools:
 - Brumby Engineering College
 - Melior Community College for Business Enterprise and the Arts.
 - Phase 2:
 - FTC
 - The St Lawrence Academy
 - Phase 3:
 - Frederick Gough School - A Specialist Language College
 - St Bedes Catholic School - A Specialist Mathematics and Computing College
 - St Hughs Communication and Interaction Specialist College

Table 21.6 *Specialist secondary schools in North Lincolnshire and North East Lincolnshire*

School	Specialisation
North Axholme School	media arts
Baysgarth School	technology
Brumby Engineering College	engineering
FTC (Foxhills Performing Arts & Technology College)	performing arts, maths & computing
Frederick Gough School	languages
High Ridge School Specialist Sports College	sports
Huntcliff School	engineering & technology
Melior Community College for Business, Enterprise & the Arts	business and arts
St Bede's Catholic School	mathematics and computing
Sir John Nelthorpe School	science, mathematics and computing
St Hugh's	communication and interaction
South Axholme Community School	arts technology
Vale of Ancholme Technology College	technology
Winterton Comprehensive School	engineering
Healing School	science and foundation
Humberston Maths and Computing College	maths and computing
Oasis Academy Immingham	engineering and commerce
Oasis Academy Wintringham	sports and health
The Hereford Technology School	technology
Tollbar Business Enterprise and Humanities College	business and humanities

Source: North Lincolnshire Council and North East Lincolnshire Council web-sites

- 21.5.33 These schools will be designed to cater for the increase in pupil numbers expected up until 2015. They will also be designed with the potential to increase capacity if pupil numbers exceed those projected.

Tourism and recreation

- 21.5.34 The *North Lincolnshire Tourism Strategy 2004-2007* notes that tourism is a growth industry which contributes £46 million to the North Lincolnshire economy and employs 1 024 people. In 2003 the area attracted over 1.5 million day-visitors and the Strategy notes that much work has been done to raise the awareness of the location of North Lincolnshire as a geographical area.
- 21.5.35 The Waterfront is noted in the Strategy as one of the attractions, though the area around Killingholme is not specifically identified.

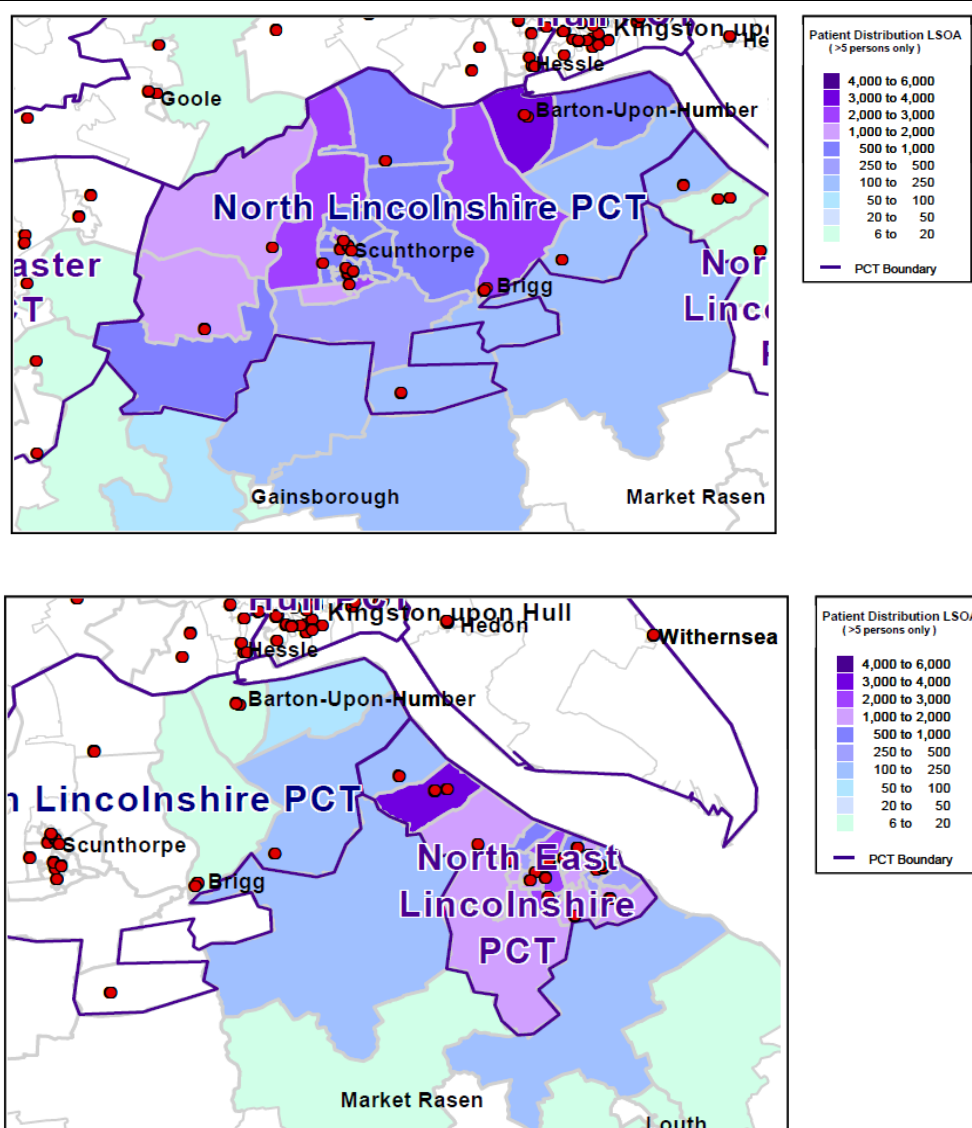
- 21.5.36 The coastal footpath, a section of which runs through the site is seen as a significant local amenity though there is no data on usage. Walking is encouraged through the North Lincolnshire Council (2007) Active Choices, Active Futures: Sport and Recreation Strategy as one of the means to encourage a healthy and active lifestyle. It notes that, *'the local facilities for walking and cycling play an important role in promoting increased physical activity.'*
- 21.5.37 The Sport England Active People Survey (2006) reported that in North Lincolnshire, 53.4 percent of the population are inactive in terms of engaging in physical activity.

Health care

- 21.5.38 Both North Lincolnshire's and North East Lincolnshire's population life expectancy is below the national average. There is a large gap between life expectancy in least deprived and the most deprived areas within these two local authorities (8 and 10 years for men, 3 and 8 years for women in North East Lincolnshire and North Lincolnshire respectively according to the NHS in these authorities). North East Lincolnshire is the third worst area in England in terms of alcohol abuse according to the *North East Lincolnshire NHS Strategic Plan 2010-2015*. Cancer rates have been declining however, but are still above national average rates. Both NHS North Lincolnshire and NHS North East Lincolnshire report higher than average teenage pregnancies (50.1 and 62.3 per 1000 people respectively compared to England average of 40.9¹) and high number of adult obesity cases.
- 21.5.39 As both areas are characterised by an ageing population, this will put more pressure on health care services in the future. North Lincolnshire is forecast to experience an increase in the number of children entering primary school by 200-300 each year from 2010, rising steeply from 2015 and beyond (NHS, 2010b). A higher proportion of these children will come from more deprived areas, which is expected to increase health care service needs.
- 21.5.40 GP practices in the North Lincolnshire PCT (Primary Care Trust) area, which is roughly similar to the local authority boundaries, serve some of patients from neighbouring areas as can be seen from the *Figure 21.8* below. There are 21 GP practices in North Lincolnshire. A similar situation is observed in North East Lincolnshire PCT area, which has 33 GP practices – more than North Lincolnshire.

¹ Under-18 conception rate per 1,000 females aged 15-17 (crude rate) 2006-2008 (provisional). Source: APHO and Department of Health, 2010.

Figure 21.8 *Catchment areas of GP practices in North Lincolnshire and North East Lincolnshire PCTs*



Source: National Health Service (2008) Yorkshire and Humber, North East Public Health Observatory GP Practice profiles 2008/2009

21.6 IMPACTS

Construction Phase

- 21.6.1 An approximate construction cost for the Project is £400 million. This is a global estimate based on an outline design for the quay and benchmark prices per square metre of industrial buildings. It is therefore not a precise cost of the Project but a reasonable estimate at this stage.

- 21.6.2 The construction investment results in 2 637 worker-years or 264 FTE jobs based on the average estimates of sales per employee ¹ in relevant sectors (including architecture and design, construction of buildings and associated civil engineering work). At this stage it is assumed that it will be possible to retain most of these jobs within the Yorkshire and Humber region.

Operational Phase

- 21.6.3 There is an inherent uncertainty in estimating the number of full time equivalent (FTE) jobs that are likely to be created by development of the scale proposed by this Project. *Annex 4.3* provides an estimate of FTE jobs based on *Employment Densities: A Full Guide* (English Partnerships, 2001), and these total 5 309. However, average employment densities have been derived from surveys of businesses operating in industries different from the offshore wind sector; uncertainties arising from this mean that an alternative model for employment estimates has been developed to provide a robust analysis of the potential economic benefits of the Project. This alternative model is based on discussions with Yorkshire Forward, and is centered around production capacity assumptions using average costs of OWT components as discussed in *Section 21.3*.
- 21.6.4 AMEP will comprise a facility that will not only produce wind turbines but will also provide a base for their installation. The impacts are therefore assessed for all these interlinked activities, all of which are considered to be direct impacts. Many activities will involve companies based in the region, elsewhere in the UK, or in Europe. Assumptions of the share of contracts being awarded locally, regionally, nationally or to European companies have been determined based on expected distribution of regional and UK contractors ² because more detailed information is not available at this stage ³.
- 21.6.5 Costs for annual production capacity were estimated based on the project description set out in *Chapter 4*. For each wind turbine component (towers, nacelles, blades and foundations,) numbers of jobs were derived based on sales per employee assumptions.

¹ Two sources of sales per employee in these sectors have been used: UK Plc, 2005. 'A Financial Analysis of Corporate Britain', Hampton (with 2005 statistics adjusted for inflation to 2010) and Annual Business Inquiry data for Yorkshire and Humber region, 2009. Our estimates are the average based on these two sources.

² For example, based on supplier information in the 'Guide to Offshore Wind Farm' by BVG Associates and consultation with Yorkshire Forward.

³ The assessment did not include a survey of businesses. A survey would be justified if AMEP had been already built and operational.

- 21.6.6 All of these businesses will have suppliers of various goods and services (this does not include main OWT component suppliers) whose impact is estimated by applying the indirect multiplier. The indirect multiplier impacts are assumed to be spread between the local area (assumed to be North Lincolnshire and North East Lincolnshire), the rest of the region, the rest of the UK, and continental Europe in following proportions: 5 percent, 25 percent, 35 percent, and 35 percent respectively. The local share is based on experience of assessing impacts of large infrastructure projects like ports and airports. The regional, UK, and European shares are less robust and represent educated assumptions based on professional judgement.
- 21.6.7 Spending by employees in direct and indirect employment creates further jobs in the economy and is represented by induced multiplier effects.
- 21.6.8 It is estimated that the completed Project will create ca 4 100 direct FTE jobs on the site related to manufacturing of OWTs and 5 000 direct FTE jobs in the Yorkshire and Humber region and elsewhere in the UK totalling 9 100 direct FTE jobs related to the manufacturing facilities (excluding installation works). In addition there will be up to 3 200 direct FTE jobs in total related to the installation of the wind turbines. This includes vessels for export and array cable laying, installation of foundations, installation of turbines, installation of offshore sub-stations, and other related port activities.
- 21.6.9 Table 21.7 below shows estimates of net additional FTE jobs resulting from the Project. Additionality factors have been estimated using benchmark rates as shown in the *Table 21.7* below. Indirect and induced multiplier assumptions are detailed in the *Table 21.8*.

Table 21.7 *Additionality rates*

	Sub-regional	Regional	Benchmark rate source
Leakage	17.3%	10.4%	BIS Additionality Research English Partnerships
Displacement	25.0%	25.0%	Additionality Guide 2008
Deadweight	10.3%	40.0%	BIS Additionality Research

- 21.6.10 Indirect and induced impacts arising from "site-specific" impact are distributed within the wider local and regional area. Some jobs are still expected to be created/supported in Europe due to original equipment manufacturer (OEM) supplier linkages, however the number of net additional FTE jobs that can potentially be created in the UK is more than twice the number estimated for jobs in Europe.
- 21.6.11 Indirect jobs will include a variety of suppliers to businesses located at AMEP. It must be noted that they do not include suppliers of essential wind turbine components as these have been assumed as direct and created within the wider region, the rest of the UK, and the rest of Europe as shown in the *Table 21.8* below. The 200 FTE supplier jobs in the wider local area will be those providing a number of goods and services required to run premises, equip the workforce, and run the business (e.g. professional services such as accounting and legal). More of such supplier jobs - 880 FTEs - will be created in the rest of the region bringing the total in Yorkshire and the Humber to 1 080 FTE jobs. Whilst we have used a regional benchmark for calculating impact we would anticipate most of these benefits being captured in the Hull and Humber sub-region if the nascent cluster develops to its full potential.

Table 21.8 *Net additional employment impacts of AMEP*

	Site-specific and wider local area	Regional (Rest of Yorkshire and Humber)	National (Rest of UK)	Europe	Total UK	Total FTE jobs
Direct FTE jobs excluding installation	4 100	1 700	3 300	4 300	9 100	13 400
Direct FTE jobs including installation	4 700	3 300	4 300	5 100	12 300	17 400
Deadweight	(480)	(1 320)	(1 720)	(2 040)	(3 520)	(5 560)
Leakage	(730)	(210)	(270)		(1 210)	(1 210)
Displacement	(870)	(440)	(580)	(770)	(1 890)	(2 660)
Net direct effects	2 620	1 330	1 730	2 290	5 680	7 970
Indirect multiplier effect jobs						3 500
Indirect FTE jobs by area	200	880	1 230	1 230	2 310	3 500
Induced FTE jobs by area	920	720	960	1 150	2 600	3 750
Total net additional FTE jobs by area	3 740	2 930	3 920	4 670	10 590	15 220

- 21.6.12 It should be noted that the estimates shown above are based on 5 MW sized wind turbines. The current trend in offshore wind turbine development is towards increases in the size of wind turbines to 8 MW, 10 MW, and even 15 MW. With the increase in turbine size AMEP may be expected to produce fewer nacelles and other components but of a larger size supporting the same number of jobs as estimated in the model using 5 MW sized turbines. The increase in the size of turbines is expected to reduce costs per 1 MW of installed capacity and with the reduction in costs, the employment impacts of AMEP, including in its supply chain can be expected to reduce. However, such decrease will not be substantial if AMEP maintains the output at the same level of installed GW capacity per annum as assumed at present.
- 21.6.13 Induced jobs will be created through the spending of workers employed in direct and indirect jobs. Their salaries will be spent in the local economy supporting existing businesses and creating an estimated 920 FTE jobs in the wider local area (North and North East Lincolnshire) and 720 FTE jobs in the rest of the region. These jobs, in a variety of sectors, from retail to leisure, will boost local business growth. To illustrate the scale of this, an assumption of 10 employees per business¹ would mean that 92 new businesses would be created, whereas an assumption of 5.5 employees on average would mean that 167 new businesses would be created in the local economy as a result of AMEP operating at its full potential.
- 21.6.14 AMEP activities will contribute to the economy in terms of GVA. GVA was estimated based on the average GVA per job in the UK as per *Table 21.1* and employment impacts identified as shown in the *Table 21.8* above.
- 21.6.15 *Table 21.9* shows GVA impacts of AMEP. The direct on-site GVA is estimated at £264.5 million annually. Additional business activities in the region will generate £186 million, with further business in the UK resulting in the total direct GVA impact of £692 million annually. The total net additional GVA arising from AMEP in the Yorkshire and Humber region is estimated at £378 million, whereas the net additional annual impact in the UK is £602.5 million including indirect and induced effects.
- 21.6.16 It should be noted that the assumption of £56 280 GVA per job applied here is perhaps conservative, as it is expected that the offshore wind energy sector will have higher than average GVA. A simple sensitivity

¹ 82.9% of businesses in NL and NEL have between 1 and 10 employees (ONS, ABI 2008)

test with GVA of £83 370 per job, as estimated in the utilities sector, results in direct on-site GVA of £392 million annually; direct GVA of £1.025 billion in the whole of the UK cumulatively; and £311 million and £893 million of net additional GVA per annum respectively.

Table 21.9 *Net additional annual GVA impacts of AMEP, £ thousands*

	Site-specific and wider local area	Regional (Rest of Yorkshire and Humber)	National (Rest of UK)	Europe	Total UK	Total GVA
Direct GVA excluding installation	230 700	95 700	185 700	242 000	512 100	754 100
Direct GVA including installation	264 500	185 700	242 000	287 000	692 200	979 200
Deadweight	(27 240)	(74 280)	(96 800)	(114 800)	(198 320)	(313 120)
Leakage	(41 050)	(11 590)	(15 100)		(67 740)	(67 740)
Displacement	(49 050)	(24 960)	(32 530)	(43 050)	(106 540)	(149 690)
Net direct effects	147 160	74 870	97 570	129 150	319 600	448 800
Indirect multiplier effect GVA						201 900
Indirect GVA by area	10 100	50 480	70 670	70 670	131 250	201 900
Induced GVA by area	52 900	42 170	56 590	67 220	151 660	218 880
Total net additional GVA by area	210 160	167 520	224 830	267 040	602 510	869 530

Wider economic impacts

- 21.6.17 Wider economic impacts include additional inward investment that will potentially be attracted regionally, for example in R&D. An example of such additional impacts that AMEP could galvanise in the Yorkshire and Humber region is Mitsubishi's plan to invest £100 million in an offshore turbine R&D project in the UK creating around 200 jobs (RenewableUK, 2010).
- 21.6.18 Beyond such directly related impacts the AMEP development can potentially influence education and skills development in Yorkshire and Humber by involving educational organisations in the region to upgrade the skills of the existing workforce and to develop the skills of the younger generations.

Occupations and skills

- 21.6.19 A recent RenewableUK report¹ suggests that at present UK offshore wind industry direct employment is broken down as follows:
- Planning and Development - 15%
 - Design and Manufacturing - 7%
 - Construction and Installation - 41%
 - Operations and Maintenance - 17%
 - Support Services/Other - 20%
- 21.6.20 This shows that consultancy, construction port activities, onshore construction, and some of the installation work create the majority of UK-based jobs. Key occupations in the wind sector are Service Engineers, Fabrication Engineers, Structural Engineers, Site Wardens, and Installation Engineers (large scale) according to the Energy and Utilities Skills Council². A more detailed list of key construction and O&M occupations is presented in the *Figure 21.9*.
- 21.6.21 It is clear that the majority of the offshore wind jobs require higher qualified employees with strong skills in STEM (Science, Technology, Engineering and Mathematics) subjects. Engineering jobs require highly skilled professionals with NVQ 4 and above qualifications.
- 21.6.22 The occupational profile of North and North East Lincolnshire suggests that the former has more workers in highly skilled categories and the latter in skilled trades or occupations. The combined area as a whole can provide a good mix of skills relevant to offshore wind. There is a very high proportion of process plant and machine operatives within the 'unskilled' occupations and this may mean that in order to capitalise on the offshore wind, the local area will need a strategy to raise the skill level of its workforce. The 15 minutes drive-time area would also struggle to provide sufficient numbers of highly skilled workers as required for the offshore wind manufacturing, based on its skills profile.

(1) ¹ RenewableUK, 2011. Working for a Green Britain

(2) ² Energy and Utilities Skills, 2005. Occupational and Functional Map of the UK Renewable Energy Sector.

Figure 21.9 Offshore Wind Occupations

Sub-sector	Occupation	Functional roles
Wind	Electrical/ Mechanical Engineers	Research and Development
	Installation Engineers	Engineering applications and maintenance
	Service Engineers	Servicing of wind turbines with focus on electrical systems
	Technicians Level 1 and 2 (Wind Operator Company)	For example, service, maintenance and replacement of main components, assisting with craneage and heavy lifting
	Technicians Level 4 (Wind operator company)	Team leadership, planning and implementing work, managing other teams
	Divers	Survey, installation and maintenance
	Fabrication Engineers	Steel tower erection
	Site Wardens	Day-to-day supervision of sites- communication to public
	Operations Supervisors	Production and performance reporting
	Wind Turbine Technicians (Client Company)	Working to a senior wind turbine technician as below
	Senior Wind Turbine Technician (Client Company)	Managing wind turbine technical operational process
	Level 1 Technicians (Wind Operator Company)	Familiarisation and induction to Health and Safety, evaluation and HV, FAW

Source: *Energy and Utilities Skills*, 2005.

- 21.6.23 The recent announcement of a purpose built centre in Hull where 3 000 people a year are expected to be trained is, as reported in the local paper, *'tangible proof of the Humber becoming a "super cluster" for the UK's booming renewables industry.'*
- 21.6.24 Opportunities to develop it further to suit the offshore wind manufacturing sector are being investigated.
- 21.6.25 The Humber is well equipped to embrace offshore wind manufacturing; however, raising the skill level of the local workforce may be an issue due to the scale of requirements of AMEP.

Cluster Effects

- 21.6.26 Companies choose to cluster in a particular location as they can benefit from having a dense, geographically close network of suppliers and customers. Such benefits can include labour market pooling, supplier specialisation, knowledge spillovers, entrepreneurship, developing local demand, locking-in investment to a location and development of cultural relationships¹.
- 21.6.27 Clustering can occur between linked industries, distribution channels and customers, companies related by skills or technologies, and/or related institutions such as research organisations and/or universities. AMEP has the potential to encourage certain types of firms to locate in the sub-region. The process has already started with first foundation manufacturing facility announced in Scunthorpe. The presence of several major Original Equipment Manufacturers is required to enable clustering in offshore wind and AMEP would provide that opportunity.

Tourism and recreation

- 21.6.28 The coastal footpath, a section of which runs through the site, is seen as a significant local amenity although there is no data on usage. The footpath will be re-routed around the site and therefore its users will be able to use it as before. The impact of this on tourism economy is therefore negligible.

Conclusions

- 21.6.29 Based on the impact assessment of AMEP above, it is evident that economic impacts can be expected to be highly positive:
- Diversification of the manufacturing sector into new offshore wind technologies providing higher job security compared to traditional industries that are in decline.
 - New jobs (4,100 direct jobs excluding installation related jobs) created directly at the site absorbing some of the potentially available pool of workers (unemployed and potentially economically active).

(3) ¹ Cortright, J (2006) *Making Sense of Clusters: Regional Competitiveness and Economic Development*. Brookings Institution Metropolitan Policy Program.

- These new jobs will attract highly skilled workers from other areas as well, thereby creating a critical mass of offshore wind professionals in the local area.
- A manufacturing cluster establishment will help to develop offshore wind (and other marine renewable) technologies further, enabling the UK to develop leadership in this field.
- New offshore wind jobs will require highly qualified workers and AMEP represents an opportunity to raise the skill level of local labour to ensure increased local participation.
- Offshore wind manufacturing in the UK will help to increase economic benefits arising from offshore wind projects, which are currently quite low as a high proportion of the capital expenditure pays for wind turbines and foundations imported mainly from Europe.
- The supply chain for AMEP offshore wind manufacturers will be developing in the Yorkshire and the Humber region and beyond with signs of this process starting already appearing recently with foundation manufacturers setting up their facilities in Scunthorpe and Teesside.
- AMEP will also support 200 FTE jobs at a number of suppliers of goods, services, and works locally (i.e. within NL and NEL) and further 920 FTE jobs through spending of its and suppliers' employees in the local economy.
- Wider impacts will include, but are not limited to, attraction of inward investment, growth of R&D in offshore wind in Yorkshire and the Humber, and raising the skill level of the workforce.

Significance of socio-economic impacts

Labour market absorption

21.6.30

The significance of socio-economic impacts, in particular in terms of jobs that will be created in the local area and regionally, can be assessed against the size of the workforce in the respective study areas. This is presented below in the *Table 21.10*. The 15 minute drive time area alone will not be able to cover the requirements of AMEP as the size of the net additional MEP related workforce (excluding deadweight) estimated at 4 220 including wind farm installation jobs represents almost 80% of the economically active population in this drive time area.

- 21.6.31 It can be expected therefore, that workforce at AMEP and in its supply chain locally, and the induced workforce (in retail and other sectors as a result of spending by AMEP and supply chain employees) will come at least from within 30 minutes drive time area and from further away. Within the 45 minutes drive time area the impact is non-significant.
- 21.6.32 The impact of AMEP at the regional level is almost negligible in terms of the labour market absorption. This means that AMEP is not expected to distort the labour market at the regional level.

Table 21.10 *MEP jobs impacts against current workforce by study area*

	15 min	30 min	45 min	NL and NEL area	Yorkshire and the Humber region
Working age population	8 400	77 500	299 800	252 400	4 194 700
Economically active population	5 400	50 800	197 400	158 100	2 607 000
Direct FTE jobs excluding installation	4 100	4 100	4 100	4 100	5 800
Direct FTE jobs including installation	4 700	4 700	4 700	4 700	8 000
Minus leakage and displacement	3 100	3 100	3 100	3 100	5 750
Indirect FTE jobs	200	200	200	200	1 080
Induced FTE jobs	920	920	920	920	1 640
Total potential MEP related jobs	4 220	4 220	4 220	4 220	8 470
Potentially available pool of workforce	640	5400	15 000	25 000	402 000
MEP related jobs as % of working age population	50%	5.4%	1.4%	1.7%	0.2%
MEP related jobs as % of economically active population	78%	8.3%	2.1%	2.7%	0.3%
MEP related jobs as % of potentially available pool of workforce	659%	78%	28%	17%	2.1%

Housing and social infrastructure impacts

Housing

- 21.6.33 The baseline housing policy assessment confirmed that both North and North East Lincolnshire Councils have taken into account the MEP proposal when setting their housing completion targets. The number of total net additional FTE jobs that will be created at AMEP directly is 2 620. Part of these jobs will be filled in by local workers who can be presumed to live in the area thereby supporting existing housing demand. Assuming that such local workers will constitute 20%, 40%, or 60% of the AMEP workforce, there is a requirement for additional housing for 1 048, 1 572, or 2 096 workers. The demand in itself will be a mixture of rented and owned housing and spread over two to three years or longer depending on how rapidly AMEP is developed. Given the combined housing target of 1 250 dwellings per annum in both North and North East Lincolnshire at the start of the MEP operations and additional supply from East Lindsey, it can be expected that projected housing completions will satisfy the demand driven by AMEP employees.
- 21.6.34 The impact on housing is therefore significant, however it has been foreseen and housing provision has been planned taking into account a number of large scale projects that will be developed in the area including AMEP.

Primary and secondary education

- 21.6.35 Both North and North East Lincolnshire are currently refurbishing some of their schools through the Building Schools for the Future programme. This will in particular allow the schools to meet projected demand in 2015 and have spare capacity to expand in case the actual demand exceeds forecasted demand. The BSF programme was put on hold last year and the government will be reviewing the capital spending. However a number of projects that have been progressed to advanced stages will proceed as planned.

Health care

- 21.6.36 Qualitative analysis of the occupational make-up of the AMEP workforce indicates that the majority of employees will be skilled or highly skilled. Higher qualifications usually lead to healthier lifestyles and hence it can be expected that the AMEP workforce will be healthier than the average population in NL and NEL requiring less primary care services.

21.6.37 Additional health care facilities will be provided with the development of new housing and therefore will cater for an increase in demand. New sports and leisure facilities may be required to respond to the increased demand from AMEP workforce.

21.7 *POSSIBLE MITIGATION*

21.7.1 The impact assessment has shown that AMEP will result in a number of employment related socio-economic impacts. The majority of the impacts are both significant and positive. Some negative impacts could occur if local authorities were not prepared for the influx of AMEP workers starting around 2014. However the review of local planning policies shows that both NL and NEL Councils have taken into account the AMEP development and used relatively high estimates of the number of jobs likely to be created, as reported in the media. It is expected therefore that any negative impact on housing and social infrastructure will have been mitigated by adopted planning policies by the start of AMEP's operation. As a result following mitigation measures are proposed:

- Able UK Ltd. will keep NL and NEL Councils informed about the progress of the MEP development and the likely timeline and phasing in letting AMEP facilities
- Able UK Ltd., NL and NEL Councils will further publicise the project and its scale to ensure that local and regional businesses are aware of the increase in the number of employees in this area and therefore plan accordingly.

21.7.2 Mitigation measures for traffic, noise and air quality are set out in *Chapters 15, 16 and 17* respectively.

21.7.3 To increase benefits to the local economy, the following mitigation measures are suggested:

- Able UK will develop a procurement strategy for construction phase of AMEP to increase the proportion of local businesses in the supply chain.
- NL and NEL Councils, emerging LEPs, and other stakeholders will provide support to market the MEP to offshore wind manufacturers continuing the work previously undertaken by Yorkshire Forward.

- Local stakeholders will engage with the future MEP tenants at early stages to understand their requirements for skills and promote local suppliers.
- Able UK, NL and NEL Councils, emerging LEPs, and other stakeholders will engage with training and educational providers to ensure that more skilled workforce is available locally.
- Able UK, NL and NEL Councils, emerging LEPs, and other stakeholders will engage with research centres and universities to promote innovation in the industrial cluster.
- NL and NEL Councils, emerging LEPs, and other stakeholders will develop and promote the wider local area (drive-time catchment) as a place to live and work.

21.8 *RESIDUAL IMPACTS*

21.8.1 Residual impacts are those that remain after mitigation measures have been implemented. Mitigation measures for socio-economic impacts usually attempt to increase positive benefits to local economies. In terms of labour market absorption the mitigation measures are directed to reduce any negative impacts. It is not possible to quantify residual impacts for socio-economic effects and therefore only qualitative analysis can be provided. The following residual impacts of the MEP are expected to remain following implementation of mitigation measures outlined in the previous section:

- Reduced negative impact from the influx of large number of workers during the construction and operation of the MEP as a result of timely implementation of housing planning policies as envisaged by current and draft planning documents. This would also have a positive impact on attracting workforce from outside the local area to counteract any potential negative impact of increased demand for labour locally that could distort the economics of production for other businesses in the area.
- Increased positive impact of re-training of unemployed and unskilled workforce and increase in economically active population
- Increased proportion of local workers within the MEP labour force and increased number of local businesses supplying the MEP during Construction and Operation Phases.

- Regional education and research organisations will be involved in the development of the offshore wind manufacturing cluster in the Humber resulting in new and improved training programmes for the emerging sector, innovations and other business spillovers that will facilitate generation of additional GVA in the local and regional economy

21.9 CUMULATIVE IMPACTS

- 21.9.1 A list of other projects in the local area planned to be developed during the expected AMEP construction phase are shown in the *Table 21.11* below. In-combination impacts with these projects in terms of economic benefits may be significant during the construction phase. The MEP impact is estimated at 2 637 worker-years (264 FTEs), whereas the cumulative number of construction worker-years of the other major projects is 4 780 (478 FTEs). The combined impact is therefore 7 417 worker-years or 742 FTEs.
- 21.9.2 In terms of worker-years this is a high number spread over two-three years, however projects are located in different areas in the Humber and the construction sector has c. 21 000 workers in North and North East Lincolnshire, East Riding of Yorkshire, and City of Hull.
- 21.9.3 The construction phase of AMEP and other projects may create additional demand for accommodation during the construction time. There is a shortage of accommodation in the Grimsby and Immingham area with a number of large plants requiring temporary accommodation for their staff. Construction of a number of large scale projects including AMEP in the area in the near future will increase the need for additional hotel accommodation.
- 21.9.4 The operational impact of most of these projects is very low compared to AMEP as only 541 FTE jobs will be created directly at various facilities with the exception of the Siemens offshore wind manufacturing facility in Hull which will create an additional 1 200 jobs. The total of 2 941 FTE jobs is further boosted by wider area benefits of developing the Queens Road. The cumulative impact will therefore be 6 681 net additional FTE jobs¹. Removing wider multiplier jobs including those associated with the Queens Road results in 4 361 additional FTE jobs or 8% of all manufacturing sector jobs in North and North East Lincolnshire, East Riding of Yorkshire and the City of Hull.

¹ It is not clear how some of these jobs were estimated and whether all of them are net additional. The MEP jobs assessed here are 3 740 net additional FTE jobs.

Table 21.11 Other large scale projects in the local area

Project title	Date of construction	Construction jobs (FTEs)	Operation jobs
Grimsby Ro-Ro Berth			
South Humber Bank Bio-ethanol Plant		199	55-77
Heron Renewable Energy Plant	It will begin generating electricity in 2015	85	150
Hull Riverside Bulk Terminal	Operational by 2016	20	50
Humber Gateway Offshore Windfarm	Operational by 2014	72	
Queens Road Development	This will be constructed over a 10 to 15 year period		1 200
Immingham Oil Terminal - Approach Channel Dredging		n/a	n/a
Bioethanol Production Facility, Grimsby		27	75
URSA			130
Vireol Bioethanol production facility		75	70
Siemens Offshore Wind manufacturing facility at Alexandra Dock in Hull	Expected to be operational in 2014	n/a	1 200
TOTAL		478	2 941

21.9.5 The impact is significant as a whole new sector will be created by both AMEP and the Siemens facility in the region. This will enable the region to lead in the offshore wind sector and access a high share of the UK market and some of the European market. Both schemes are needed in the UK to ensure that a critical mass in offshore wind manufacturing is achieved. The development of this industry will position the UK as a leading producer and installer of offshore wind turbines and will enable the export of technology and expertise in the long run, thereby increasing economic benefits.

21.10 CONCLUSIONS

21.10.1 AMEP will have a significant positive impact on local, regional, and national economy. The proposed project will contribute to a substantial proportion of the offshore wind turbines installed in the North Sea.

- 21.10.2 The employment impact at the site will be 4 100 FTE jobs. The net additional local impact is 3 740 FTE jobs taking into account deadweight, leakage, displacement, and indirect and induced multiplier effects. The UK-wide cumulative net additional impact is 10 600 FTE jobs. These jobs will generate significant net additional GVA in the local economy – estimated at £210 million, and in the national economy – estimated at £602.5 million. As indicated above, these estimates are considered conservative and the GVA impact will potentially be higher due to higher GVA per job in the offshore wind energy sector.
- 21.10.3 The MEP labour market impact is potentially significant, especially in the immediate vicinity of the development. It is expected that the workforce will have to come from a wider area, i.e. 45 minutes drive time area, both North and North East Lincolnshire and from within the wider region of Yorkshire and the Humber.
- 21.10.4 Based on the impact assessment of AMEP, it is evident that economic impacts can be expected to be highly positive:
- Diversification of the manufacturing sector into new offshore wind technologies providing higher job security compared to traditional industries in decline.
 - New jobs (4 100 direct jobs excluding installation related jobs) created directly at the site absorbing some of the potentially available pool of workers (unemployed and potentially economically active).
 - These new jobs will attract highly skilled workers from other areas as well, thereby creating a critical mass of offshore wind professionals in the local area.
 - AMEP will enable the development of an offshore wind manufacturing cluster in the Humber region as it will be cheaper and more efficient to co-locate businesses in the supply chain. A manufacturing cluster establishment will help to develop offshore wind (and other marine renewables) technologies further, enabling the UK to take a lead role in this field.
 - New offshore wind jobs will require highly qualified workers and AMEP represents opportunity to raise the skill level of local labour to ensure increased local participation.

- Offshore wind manufacturing in the UK will help to increase economic benefits arising from offshore wind projects, which are currently quite low as continental suppliers currently account for around 85 percent of capital expenditure on OWTs .
- The supply chain for AMEP offshore wind manufacturers will be developing in the Yorkshire and the Humber region and beyond with signs of this process appearing recently with foundation manufacturers setting up their facilities in Scunthorpe and Teesside.
- AMEP will also support 200 FTE jobs at a number of suppliers of goods, services, and works locally (i.e. within NL and NEL) and further 920 FTE jobs through spending of its and suppliers' employees in the local economy.
- Wider impacts will include attraction of inward investment, growth of R&D in offshore wind in Yorkshire and the Humber, upskilling of the workforce, and others.

21.10.5 The impact of the AMEP workforce on housing and social infrastructure is potentially significant. However both North and North East Lincolnshire authorities have already noted the development of AMEP and its impact on housing when setting their housing targets. The impact mitigation process has therefore already started. New housing development will result in expansion of schools and health care facilities based on the adopted planning practices.

21.10.6 Key mitigation measure is therefore keeping NL and NEL Councils informed about the progress of the MEP development and the likely timeline and phasing in letting AMEP facilities. Other mitigation measures proposed are to engage with education providers and start the process of upskilling of the local workforce to enable them to access skilled occupations that will be offered by AMEP.