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The History of the Siemens-ABP Investment in Hull

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Executive Summary

In March 2014, Siemens announced that it would be investing £160m in the development of an offshore wind facility on Hull's Alexandra Dock; Siemens' chosen partner, Associated British Ports (ABP), would invest a further £150m in the project.

The journey, starting from the initial discussions with Siemens and to the loading of the first blades in January 2017, lasted 8 years and was quite challenging, with several delays and obstacles that presented themselves along the way. It is a journey that is worth documenting as there are many lessons to be learnt from policy implications to skills, local authorities and stakeholders support.

This report details the main events leading to the opening of the blade manufacturing plant in Hull, as informed by several influential stakeholders, some of whom were involved from the start and others at different stages, but all contributing to making the investment a success. The goal of this report is to inform and educate policy makers and local stakeholders as to the barriers that existed along the way, and the ways in which they were overcome, so that future inward investments in the offshore sector can be facilitated and dealt with in an expedited manner.

The interviews revealed that, while the process was long and arduous, its success might not have been possible without the commitment of key stakeholders, particularly that of UK Government, ABP and especially the local authorities through Green Port Hull (GPH), which, among other things, provided the facilities required for skilling, training and hiring of the local workforce.

Despite the challenges, the Hull and the Humber region is on track to become a world-class centre for offshore wind and there is great potential in the Siemens Supply Chain, particularly in manufacturing and services.



Table of Acronyms

ABP	Associated British Ports
CfD	Contract for Difference
DECC	Department of Energy and Climate Change
EMR	Electricity Market Reform
ERYC	East Riding of Yorkshire Council
FES	Future Energy Scenarios
GHG	Greenhouse Gas
GIA	Green Port Impact Assessment
GPGP	Green Port Growth Programme
GPH	Green Port Hull
HCC	Hull City Council
HRO	Harbour Revision Order
ITT	Invitation to Tender
LCCC	Low Carbon Contracts Company
MoU	Memorandum of understanding
MVA	Mega Volt Amp
O&M	Operation and maintenance
RB	Reckitt Benckiser
RGF	Regional Growth Fund
RO	Renewables Obligations
Ro-Ro	Roll-on/Roll-off
YF	Yorkshire Forward

1.Introduction

In 2006, Hull City Council commissioned IBM² to identify the economic competencies for Hull. Four specific areas of impact were identified in which Hull and the region could develop a strategic advantage. These were:

- Ports & Logistics: Hull/Humber Ports should market themselves as one integrated port area focusing on becoming a gateway for the UK as a whole due to its strong position and capacity for growth
- Pharmaceutical: Existing manufacturing strengths need to flourish, innovation stimulated, adding value and diversification to increase competitiveness
- City Centre: Joint regional and city marketing required to change weak image perception, market region's central location as a gateway to the UK, not solely the North
- Renewable Energy: Sufficient opportunity to develop Greenfield sites close to ports.

Since then, there have been some significant developments in all of these areas as can be evidenced by the following:

- Increased freight through the Humber ports, ABP investing £15m to upgrade the container port in Hull and the construction of a new cruise terminal³
- RB, a leading manufacturer of home, hygiene and healthcare products, has invested £110m in a new Global R&D Centre; reinvestment from Smith & Nephew's in Hull and University of Hull's investment in the new health building
- The Humber named the Energy Estuary with the development of offshore Operations and Maintenance activities on the South Bank; Siemens opening a blade factory in Hull; the formation of GPH as a joint initiative by Hull and East Riding; brand supported by the Green Port Growth Programme (GPGP)
- Hull named as UK City of Culture 2017.

On 25th March 2014, Siemens announced its decision to invest £160m (EUR 190m) in wind turbine production and installation facilities in Yorkshire; its partner, Associated British Ports (ABP), invested a further £150m in the infrastructure development at Alexandra Dock to support Siemens' facilities. The Alexandra Dock site is approximately a 139-acre (56 ha) site⁴. Siemens stated that the investment would, "provide a huge boost to the UK's offshore wind industry and the Humber region". The combined investment of £310m is expected to create up to 1,000 jobs directly, with additional jobs during construction and indirectly in the supply chain⁵.

This paper provides a detailed summary of the 'history' of the Siemens-ABP investment, (hereafter "the investment"), with a view to, among other things, answer questions such as: Why did Siemens choose Hull? What are the lessons to be learned? What can be further done to facilitate the development of a strong offshore industry in the region?

The paper is organised as follows: Section 2 provides a contextual overview of the UK and EU policies that were central to the decisions taken by Siemens during the early stages of the investment. In particular, it explains the time lags that influenced Siemens actions and the implications that they had. Section 3 opens with a timeline of the significant events and milestones that shaped the investment: starting with the former Yorkshire Forward's interest in the offshore wind sector in 1999, through to Siemens dispatching the first rotor blades in January 2017. The timeline also maps the inception of GPH and the GPGP and its involvement in Siemens-ABP journey. Section 3 continues with a review of the activities that have taken place since the start of the plant construction in November 2014, including some of the challenges to be overcome. The paper concludes with a review of the vitality of the offshore wind industry.

The paper is intended as a resource to understand the challenges that key stakeholders encountered during their efforts to contribute to the development of a new renewables industry in the Humber region, with a view to assisting those involved in similar future endeavors.





2. Overview of the Policies Driving UK Renewable Energy

2.1 2008 UK Climate Change Act and 2009 EU Renewable Energy Directive

The commitment to reduction of GHG and to climate change have been important components on the energy agenda in the UK and Europe since the early 2000s. In the UK, the two main environmental policies that have significantly influenced renewable energy are:

1. **2008:** The UK Parliament's Climate Change Act of 2008 which makes it the duty of the Secretary of State to ensure the reduction of GHG emissions by at least 80% from 1990 levels by 2050 in the UK⁶
2. **2009:** The 2009 EU Renewable Energy Directive (2009/28/EC) that provides the UK with a target to ensure that at least 15% of its energy consumption is from renewable sources by 2020⁷.

The magnitude of this target is considerable: it represents a seven-fold increase in the proportion of energy coming from renewables, which is to be achieved in a little over 10 years (starting from a position of 2.25% in 2008). In order to meet the EU target by 2020, the DECC⁸ suggested that the following proportions of energy consumption that should come from renewables:

- **Electricity:** about 30%; of which 60% from on and offshore wind, together with contributions from hydro, biomass, marine sources and small-scale technologies
- **Heat:** 12%; which could be mainly met from biomass, biogas, solar and heat pumps
- **Transport:** 10% to be fulfilled by renewable sources.

Thus far, there has been good progress. In 2010, 3.8% of all energy sourced was from renewable sources and this proportion has grown to 8.3% in 2015⁹. The greatest contribution of renewable energy is to the electricity sector, which saw an increase from 19% of total generation capacity in 2014 to 25% in 2015. The most significant contributions to the electricity sector were from biomass, followed by onshore and offshore wind.

The National Grid's FES 2016 indicates that although the electricity generation sector is on the required trajectory, significant progress is still required in the heating and transport sectors if the UK is to meet the 2020 EU renewable target.

2.2 UK Commitment to Offshore Wind

In the context of offshore wind, the UK Government committed to rapid increase in offshore wind deployment to meet the 2020 EU renewable energy target. Round 1 (2000) of The Crown Estate's commercial seabed leasing programme, saw the development of thirteen, fully operational projects whereas Round 2 (2003) had eight projects (See Appendix 1). Round 3, which began in 2009, calls for the development of large-scale offshore wind farms in the UK¹⁰. At the national level, DECC's Offshore Energy Strategic Environmental Assessment (SEA) in 2009 set the potential of offshore wind capacity in UK waters at 33 GW5. The Crown Estate identified nine zones of various sizes around the UK for offshore wind development. Figure 1¹¹ shows the intended annual growth of installed capacity by region, to reach the 33GW target by 2020. As can be seen, a bigger proportion of the capacity is on the East Coast of the UK.

The Crown Estate awarded Round 3 zones to different offshore wind developers through a competitive tendering process at the end of 2009. The successful offshore wind developers for each zone were announced in January 2010, of which eight are currently under active development¹².

The announcement of 33 GW offshore wind capacity attracted many international players to potentially invest in various parts of the offshore wind supply chain in the UK to provide local content. Some of the big names that expressed inward investment interest included GE, Siemens, Gamesa and Vestas¹³. The Government extended its commitment to the offshore wind sector in the March 2010 Budget by providing up to £60 million for the development of port sites to support offshore wind turbine manufacturers. As a result, Siemens signed a MoU on 29th March 2010 with the UK Government as part of its commitment to invest more than £80m to build an offshore wind turbine factory in the UK¹⁴. After signing the MoU, Siemens started a competitive selection process that ran up to December 2010. On 20th January 2011, after vetting the competitive final bidders including Able Marine Energy Park (AMEP), Felixstowe and Harwich, Siemens and ABP signed a MoU in connection with ABP's proposed development site at Alexandra Dock for a Siemens manufacturing factory.



3. Siemens' Selection Process and Commencement in Hull

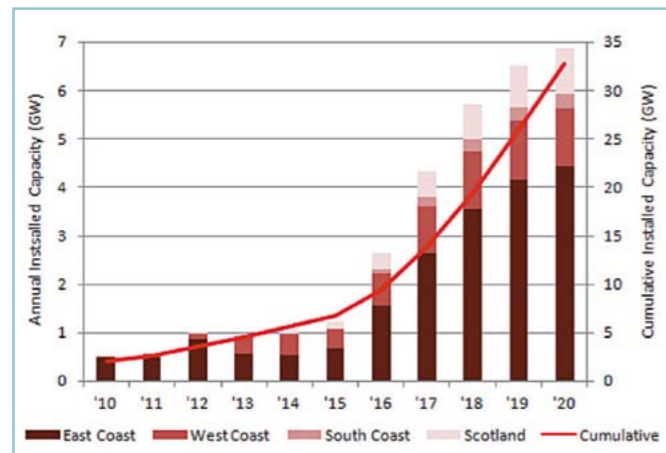


Figure 1: Intended Growth of Offshore Wind Capacity by Region to reach 33 GW in 2020 (source: BVG)

2.3 Electricity Market Reform and Uncertainty

In 2011, DECC released a white paper setting out the Government's commitment to meet the increasing demand for electricity over the coming decades while understanding the need for around £100 billion investment to replace the UK's ageing energy assets¹⁵. The newly elected Conservative Government (elected in 2010) introduced a new comprehensive EMR programme, which underpinned the Energy Act of 2013¹⁶. EMR intended to meet three main policy objectives:

- Decarbonisation of electricity generation
- Continuing security of supply
- Maintain affordability.

Based on the point of view that current market arrangements could not deliver the scale of the investment needed, i.e. approximately £100 billion by 2020 to meet the current energy challenge, EMR introduced significant changes to the pre-existing support mechanisms such as moving away from RO to long-term CfD, auctioning system. RO has been one the main support mechanisms for large-scale renewable electricity projects in the UK since 2002. It placed an obligation on UK electricity suppliers to source an increasing proportion of the electricity from renewable

sources. EMR established a new system where low-carbon technology can compete against each other on a level playing field in the long run. CfD, a key mechanism at the heart of EMR, is a private, law legal, long-term contract between a low carbon electricity generator and the (LCCC)¹⁷, a government-owned company¹⁸. When the price for electricity, i.e. Strike Price is above the 'Reference Price' set out in the CfD contract, payments are made by LCCC to the CfD Generator to cover the difference. However, when the reference price is above the Strike Price, the CfD Generator pays the difference to LCCC¹⁹. The intent of the CfD mechanism is to incentivise investments in low carbon electricity generation by providing greater certainty, stability and predictability to future revenue streams by reducing exposure to volatile wholesale prices and protects customers from paying higher costs when electricity prices are high.

Furthermore, the UK Government reduced DECC's initial 33GW of potential offshore wind capacity in UK waters by 2020 to 11-18GW by 2020. This together with the move away from RO induced a period of uncertainty in the offshore market with a lot of players postponing plans until they had a better understanding of the market trend. The inward investment decision for the setup of the Siemens manufacturing facility in Hull overlapped with this period of market uncertainty that lasted between 2010 and 2013. The transition to EMR programme raised concerns on required capacity, strike prices, government support and investment in the offshore wind sector. Therefore, despite signing a MoU with ABP in January 2011, the final investment decision was only taken in 2014. Siemens attribute the significant delay to market uncertainty and the introduction of the new EMR legislation.

3.1 Timeline

This section presents the entire timeline covering the Siemens-ABP investment in Hull. The timeline starts with the former Yorkshire Forward's interest in the offshore wind sector in 1999 and covers the main events leading to the signature of a MOU between Siemens and the UK Government in 2010, the start of the construction of the blade assembly plant in 2014 through to the completion of the plant and the loading of the first rotor blades in January 2017. Crucially, the timeline also maps the inception of the GPGP, and its involvement in Siemens-ABP journey. A detailed narrative around the major events that lead to the decision taken by Siemens is also provided in the following sections.

Year	Timeline
1999	<ul style="list-style-type: none"> Established in 1999, YF, the Regional Development Agencies (RDA) for Yorkshire and Humber decides to focus on the offshore wind sector as one of the options for renewable energy development in the region
2005	<ul style="list-style-type: none"> ABP applies for a parliamentary order to develop Alexandra Dock site for Samskip.
2006	<p>April 2006: ABP Harbour Revision Order (HRO) for Alexandra Dock in Hull granted. However, owing to financial considerations, Samskip decided to withdraw from the project and not use Alexandra Dock, leaving the dock with consent to develop, but no project</p> <p>September 2006: IBM Plant Locations, commissioned by HCC, identified four economic competency bases for Hull:</p> <ul style="list-style-type: none"> • Port Logistics • Renewable Energy in particular offshore wind • Pharmaceutical • Development of the City Centre.
2009	<ul style="list-style-type: none"> DECC's Offshore Energy Strategic Environmental Assessment concluded up to 33 GW of potential offshore wind capacity in UK waters attracting interest from international players Dan McGrail (Project Manager, Siemens) was working with DECC and Yorkshire Forward to set up a Siemens manufacturing site in the UK
2010	<p><i>NOTE: Prior to the 2010 general election, a scheme for UK ports had been developed to allow UK ports to benefit from government infrastructure investment (as is the case for EU ports); however, owing to the election, this was never granted</i></p> <ul style="list-style-type: none"> ABP applies for the ITT put out by Siemens Site selection narrowed from over 100 sites to four: Hull, Harwich, Felixstowe and the AMEP site in Immingham Initially, AMEP was the preferred site. <p>29 March 2010:</p> <ul style="list-style-type: none"> Gordon Brown and Peter Mandelson signed a MOU with Siemens. Siemens announced its intention to invest in excess of £80m to develop an offshore wind turbine production facility in the UK <p>December 2010: Site selection and recommendations were taken to Siemens Steering Committee [in Hamburg] and Hull was selected. The decision was motivated by the following facts:</p> <ul style="list-style-type: none"> • A planning permit was already in place • ABP, as a partner and owner of the site, was prepared to invest in the development of the necessary infrastructure • Alexandra Dock had one of the longest berths • Steaming time to installation sites is shorter than sites outside of the Humber <p>HCC and ABP along with its partners, ERYC and the University of Hull set out to promote the offshore wind industry in the region and launched GPH to oversee and facilitate the establishment of the region as a world class centre for renewable energy.</p>



Year	Timeline
2011	<p>20 Jan 2011: Siemens and ABP announced the signing of MOU, in which Siemens selected GPH's site at the Port of Hull as their preferred location. The intent was for a wind turbine manufacturing facility for nacelles at Alexandra Dock and a blade assembly plant at the Paull site</p> <p>May 2011: GPGP bid submitted to RGF</p> <p>Oct 2011: £25.7m funding awarded to deliver the following strands of activity;</p> <ul style="list-style-type: none"> • Employment and Skills Development • Inward Investment • Site Assembly • Business Support and Advice • Business Investment Grants • Research Development Innovation. <p>July 2011:</p> <ul style="list-style-type: none"> • EMR White paper released to attract the £110 billion investment needed to replace the UK's ageing energy infrastructure with a more diverse and low-carbon energy mix • EMR will facilitate vital investment through the introduction of two new schemes: the "Contract for Difference" (or "CfD"); and the "Capacity Market". These replace Renewable Obligations. • UK Government also set an ambition of 11-18GW by 2020 which was lower than DECC's initial 33GW of potential offshore wind capacity in UK waters by 2020. <p>NOTE: Lot of policy concerns around what will happen post-2020. Uncertainty due to market risk and market failure. Energy Bill/CfDs caused delays during which Siemens was not getting any new orders for turbines.</p> <p>September 2011:</p> <ul style="list-style-type: none"> • Vince Cable (Former Secretary of State for Business, Innovation and Skills) met with HCC • HCC made an offer to contribute £5m from its capital programme towards infrastructure works associated with the sites that were of wider community/public benefit, including the transformation of the public right of way and listed structures.
2012	<p>May 2012: Outline planning consent granted by HCC for the wind turbine manufacturing facility at Alexandra Dock</p> <p>July 2012: GPGP in place and commenced delivery</p>
2013	<p>Jan 2013: Approval of Energy Bill, i.e. Energy Act 2013</p> <p>June 2013: Mandelson (Labour Politician) meets with Tim Rix and Councillor Colin Inglis</p> <p>July 2013: Siemens internal review ended; Siemens Central Board provided an 'In principle' go ahead. It was intended to be for the manufacture of both nacelle and blades</p> <p>3rd September 2013: HCC granted planning permission for the development of Alexandra Dock</p>

Year	Timeline
2014	<p>March 2014:</p> <ul style="list-style-type: none"> • UK Prime Minister David Cameron and Secretary of State for Energy & Climate Change Ed Davey visit ABP's Port of Hull to welcome Siemens investment decision • March 25, 2014, Siemens announced its decision to invest £160m (EUR 190m) in wind turbine production and installation facilities in Yorkshire; its partner, ABP, is to invest a further £150m in the infrastructure development at Alexandra Dock to support Siemens facilities. <p>Sept 2014: HCC granted planning permission for the new wind turbine production facility at Alexandra Dock, enabling development to commence on the nacelle pre-assembly, project construction and logistics & distribution facilities and offices; details of the proposed rotor blade manufacturing facility were to be submitted later in 2014/15</p> <p>Nov 2014: Change of Plans Announced. Siemens announced that the rotor blade manufacturing plant would be co-located at Alexandra Dock site following a redesign of the development that would create 1,000 direct jobs and that the nacelle manufacturing plant will be moved to Cuxhaven.</p> <p>Reasons for this:</p> <ul style="list-style-type: none"> • The initial application was for a nacelle plant but supply chain for nacelles is heavily based in Cuxhaven. Blade manufacturing has the potential to create more direct jobs and hence was considered beneficial for Hull. • Paull site wasn't ready and needed £20m investment for flood protection, road access and other infrastructure development and another £6m in utilities. <p>Nov 2014: Construction works on site commenced</p>
2015	<p>May 2015: Sign off of Green Port Hull Impact Assessment Study by the Logistics Institute, University of Hull</p> <p>Nov 2015: GPGP opened 'Green Port Hub' at the Central Library in Hull to help residents and businesses access information on the region's emerging renewable energy sector</p>
2016	<p>1st Dec 2016: Siemens Blade Manufacturing Factory official launch ahead of schedule</p>
2017	<p>January 2nd: First installation vessels loaded</p> <p>January 4th: First vessels set off from Alexandra dock</p> <p>January 23rd: Deadline for construction of the blade factory</p>
2019	<p>Planned end of GPGP funding</p>



3.2 Siemens Selection Criteria and Process

According to Michael Suess, a member of the managing board of Siemens AG and CEO of the Energy Sector, the decision to construct a production facility for offshore wind turbines in England was part of Siemens global strategy, i.e. to invest in markets with reliable conditions that ensure factories can work to capacity. Suess notes that the British energy policy creates a favourable framework for the expansion of offshore wind energy, specifically recognising the potential of offshore wind, within the overall energy production portfolio²⁰.

It had not been part of Siemens initial plan to develop harbour infrastructure in support of its proposed UK facility; the aspiration had been to occupy and develop on a 'ready-made' port site on the East Coast of the UK. However, following a technical investigation, it became clear that there were very few suitable sites and development of harbour infrastructure would be necessary, together with some scaling back of initial requirements, in order to successfully build a facility. This posed financial obstacles; unlike European ports such as Cuxhaven, UK ports are not publicly owned and must therefore be, largely, financed privately. Siemens did not want to own the port, but the UK government was constrained in terms of its ability to offer investment in support of the development.

However, the decision made by the UK government in March 2010 provided a clear signal of its intention to support such investment needs by pledging to make £60m available for the development of ports, to help manufacturers of offshore wind turbines looking to locate new facilities in the UK²¹. As a result of this, Siemens was then in a position to sign an MoU committing to an investment in excess of £80m to develop an offshore wind turbine production facility in the UK²².

A number of UK sites were listed for consideration as part of an ITT made by Siemens; the shortlist criteria included:

- Good access to markets
- Suitable configuration of the site: ability to support the size requirements
- Attractiveness of the financial offering
- Sufficient strength and depth offered by partners
- Strength of political support.

Ultimately, the decision would come down to deliverability, and not price.

The four sites that were selected and taken to the December 2010 Hamburg Steering Committee were:

- AMEP (Killingholme, South bank of the Humber estuary)
- Harwich
- Felixstowe
- Hull.

Despite speculation that the preferred site might be AMEP on the south bank of the Humber, the Port of Hull had a significant advantage in the form of a consented development permit (an HRO) already in place with ABP, owing to a project with logistics company Samskip that had not gone ahead. In addition to this, it was ultimately thought that some of the alternative sites might be too remote and Hull proved to have other benefits such as the longest quay and the strength of a partners such as ABP, both in terms of experience with stakeholders (as one of the 'original private port companies') and its financial preparedness.

In December 2010, Siemens selected Hull as the location for its wind turbine facilities, (which was initially for the manufacture of nacelles, though this was later changed to blades) and in January 2011, Siemens selected ABP as preferred bidder; the MoU was subsequently signed between the partners in connection with ABP's proposed development at Alexandra Dock, in the Port of Hull, with the aim of executing definitive agreements in 2011.²³

However, between signing the MoU and the execution of a definitive agreement (which eventually happened in March 2014), there were a number of delays primarily due to:

- **Policy** – specifically, the EMR (see section 2.3). With uncertainty on what the offshore wind market would look like in 2020, turbine purchasers were reluctant to place orders and Siemens therefore began to question whether the investment in a new facility would be worthwhile at all
- **Availability of local skill set:** This, among other things, motivated the formation of Green Port Hull and the Green Port Growth Program.

3.3 The Formation of Green Port Hull

After the announcement of Round 3 of The Crown Estate's commercial leasing programme in 2009, and in line with the economic competency areas identified by IBM, HCC together with ERYC, ABP and the University of Hull saw an opportunity to form an entity, Green Port Hull, whose vision was to establish Hull and East Riding as a leading centre for renewable energy. This entity would also include the provision of training and upskilling, thus addressing the concern of Siemens regarding the local skill set. It will also prepare for the skills required to attract other players in the renewable supply chain to set up in the region thereby creating jobs and subsequent wealth for the region.

GPH was officially launched in December 2010, three weeks prior to Siemens signing the MoU with ABP.

GPH's objective is to take advantage of the region's close proximity to the offshore wind opportunities available in the North Sea, by establishing the right infrastructure, knowledge, expertise and the capability to handle a mix of renewable energies (offshore wind, bio fuels, carbon capture and storage, waste to energy, solar, wave and tidal power generation). It is projected that the renewable energy sector will be the single biggest influence on the local economies of Hull and East Riding for generations, creating thousands of jobs as well as immense opportunities for local people and business.

In 2012, HCC and ERYC secured a £25.7 million RGF funding leading to the formation of the GPGP, whose overall impacts are to:

- Increase the Gross Value Added (GVA) of the area by £300 million
- Secure approximately £280 million of large inward investments into the region
- Assist up to 650 local businesses to diversify and enter the supply chains of major renewables investors and their suppliers
- Upskill and train approximately 900 local people;
- Establish Hull as a centre for Research and Development for the renewables industry
- Create 3500 renewables sector jobs²⁴.

The GPGP aims to achieve these between June 2012 and March 2019 through its various strands, details of which are given in Appendix 2.

3.4 Siemens comes to Hull

After signing the MoU with ABP in 2011, there was a period of silence from Siemens with regard to the investment in Hull. During this time, the outline planning consent for the wind turbine manufacturing facility at Alexandra Dock was granted by HCC and the GPGP had commenced delivery on its objectives. The delays had something of a knock-on effect felt by those organisations which would be required to relocate from Alexandra Dock to make way for the factory. Some organisations opted to relocate of their own accord, because the uncertainty was too great; other businesses discontinued

Finally, in January 2013, the Energy Act 2013 was approved and Siemens internal review of the feasibility of the investment ended, concluding that the move towards CfD would be favourable for investment by wind turbine producers and Siemens could expect to receive orders for the parts that it would manufacture in the proposed facility in Hull. In July 2013, Siemens Central Board provided the 'in principle' go head for the development of the manufacturing facility in Hull. This confirmation was marked by a visit from the then UK Prime Minister, David Cameron, and the Secretary of State for Energy & Climate Change, Ed Davey, who welcomed Siemens to Hull in March 2014. In September 2014, HCC granted full planning permission for the new wind turbine facility at Alexandra Dock, enabling development to commence.

3.4.1 Construction Phase

Initially, Siemens had intended to operate across two sites:

- Alexandra Dock (Hull): a nacelle pre-assembly, project construction and logistics & distribution facility, and associated offices (HRO was in place for the renovation of Alexandra Dock)
- Paull (East Riding): a rotor blade manufacturing facility. As an enterprise zone, the Paull site is able to enjoy tax benefits (Enhanced Capital Allowances²⁵).

The Paull site is located adjacent to Hull's eastern boundary, between the BP Chemical site at Saltend and the village of Paull. The 80ha site is owned by ABP



and has a river frontage which has been earmarked for development by GPH. The site, through a Local Development Order, has outlined planning permission for development that is associated with renewable and low carbon industries. As an Enterprise Zone, the site has a 100% capital write down for plan and machinery investment incurred between April 2012 and March 2020²⁶.

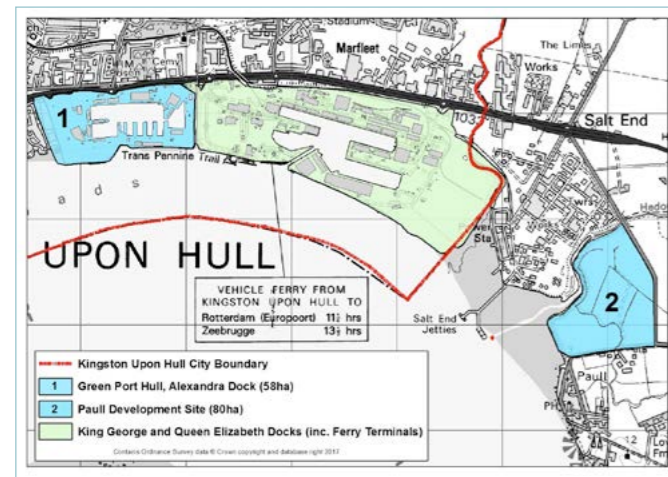


Figure 2: Siemens site selection map and surrounding areas.

ABP undertook construction work on this basis for two years. However, several critical issues existed with the Paull site, in particular with regard to access, which would have required the construction of a new road into the site. In addition to this, it became clear that transportation of the blades from the Paull site to the dock would be a challenge and would have required the removal of several pylons along the way. Separately to this, the Paull site is also home to a protected bird sanctuary that would have required preservation. It was estimated that ~£20m worth of investment would have been required to transform the site into a suitable space for this development.

It was therefore decided in January 2015 that the rotor blade manufacturing plant would be co-located on Alexandra Dock allowing the blade plant to sit alongside the wind turbine assembly and servicing facilities. The amended plans allowed for an increase in production from 450 blades a year to 600. In addition to addressing the concerns regarding the Paull site, the revision secured long term cost effectiveness. However, in the short term

there were accelerated work costs, with no compensating movement in budget or timelines, which was a particular concern for ABP.

3.4.2 Alexandra Dock Site

The Alexandra Dock, (site shown in Figure 3²⁷), site was split into ~30 work packages that were individually managed. ABP appointed the GRAHAM Lagan Construction Group Joint Venture to carry out the construction at Alexandra Dock for Siemens, including the development of three new berths. VolkerFitzpatrick was contracted by Siemens to build the 40,000-square metre blade factory²⁸.



Figure 3: Illustration of the Siemens plant (Source: Siemens)

The power requirements of the factory were significant: at the start of the project, 1-MVA was required, but by the end 3.9 MVA was required - all the power eventually needed to be replaced.

Other works included the installation of ro-ro ramp piles to enable the loading of blades onto the ships, construction of a quay wall and several other site-wide services, including infrastructure on the port to enable electricity to the blade factory²⁹. Significant restoration activity also took place to maintain three protected buildings:

- The steam crane (Grade II* listed)
- A Hydraulic Engine House and Tower (Grade II listed)
- The Pumping Engine House.

Restoration was carried out by a Lincolnshire building and civil engineering firm, A Torn Construction Limited. HCC contributed £1.1m towards the restoration costs³⁰.

Development of the site required the relocation of approximately 12 businesses which were based on the dock, including Cemex (which relocated to Albert Dock), Brady (which relocated to Immingham), Rix and Humber Sand and Gravel. However, given the significance of the development and the 'greater good' that could result for the city of Hull, the affected parties were seemingly supportive and there was an outward sense of cooperation.

Construction began in November 2014 and was completed in January 2017. The first installation vessels were loaded on January 2nd, for departure on January 4th.

3.4.3 Challenges

During pre-assembly and the construction phase, a number of challenges were encountered: including the need to ensure sufficient compensation for the change in natural habitat at Alexandra Dock; this was achieved via a coastal realignment scheme created by ABP as part of an agreement with English Nature, the RSPB, the Environment Agency and the Yorkshire and Lincolnshire Wildlife Trusts³¹.

As a consequence of adverse effects upon the Humber Estuary, a designated site of international nature conservation importance had to be secured in lieu. This involved undertaking coastal realignment and habitat creation and enhancement schemes at various locations along the Humber Estuary, to the satisfaction of Natural England, the Council and Marine Management Organisation as competent authorities under the Habitats Regulations, and secured through a legal agreement.

Other challenges, had they not been overcome, might have proved detrimental to the course of the investment. Such a challenge was the closure and diversion of a public footpath: the Public Right of Way (known as footpath 22) was re-routed, as shown in Figure 4 to allow for safe transporting and loading of turbine components between the manufacturing plant and the new quay. HCC stated that the development of the blade factory was a, "once-in-a-generation opportunity" for the city of Hull

and that, while it did not take the diversion 'lightly' it was essential to make way for the development on Alexandra Dock³². Several bodies were consulted in the diversion, including The Ramblers Association, Trans-Pennine Trail, Sustrans, the Local Access Forum and HCC; during this process, there was a continued display of cooperation and 'good will' which was important: had there been just one objection, the process would have been taken to a public enquiry, which might have taken several years to resolve⁴.

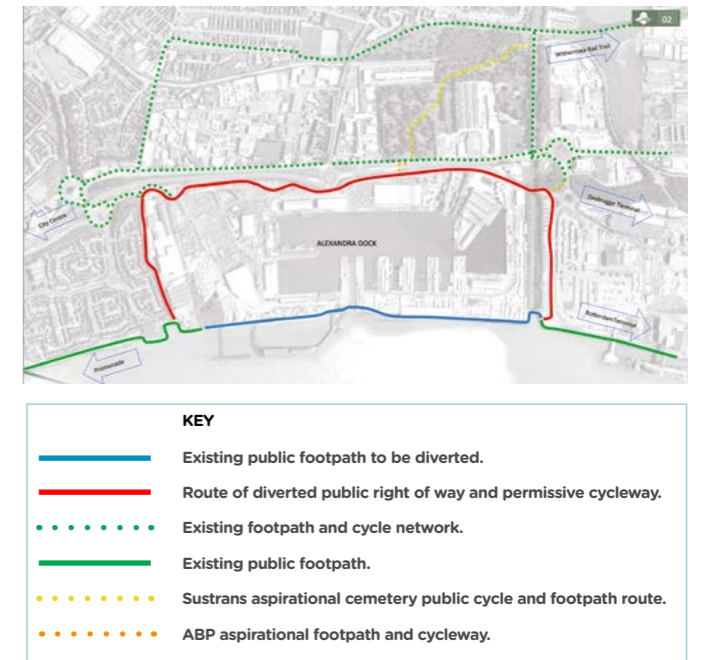


Figure 4: Creation of a new Public Footpath at Alexandra Dock (Source: Hull City Council).

The formation of a Joint Project Team, comprised of multi-disciplinary personnel from ABP, Siemens, and HCCI was key in enabling such challenges to be identified, addressed, and overcome. Fundamental to these successful outcomes was early and continued engagement at every stage of the development process with key statutory consultees, including the Environment Agency, Highways England, Historic England, and Natural England, ensuring broad support for holistic solutions.





© The Siemens Gamesa Blade Manufacturing site at the beginning of construction, 2015

4. Vitality of the Offshore Wind Industry

The UK Government Offshore Wind Industrial Strategy (2013) recognises the important role that offshore wind has to play in the Government's long-term plan for a balanced, low carbon electricity generation portfolio to help meet 2050 carbon targets and enhance security of supply. There was the need for government and industry working together to develop the UK's offshore wind sector and provide the necessary tools needed to support large scale investment in the UK supply chain, raising awareness of the commercial opportunities in both the UK and overseas offshore industry as well as delivering the innovation and competition needed to bring down costs. Keith Anderson, the chair of the UK Offshore Wind Industry notes, *"offshore wind power represents a unique opportunity for the UK to support thousands of highly skilled jobs, increase energy security and vastly reduce carbon emissions"*³³

It is crucial for the UK to maintain its position as the leading country in offshore wind development by unlocking all the potential benefits, particularly pertaining to economic growth, through creating 10,000+ long term UK jobs, development of a competitive UK-based supply chain, a technology cost-competitive with other low carbon technologies and major manufacturing facilities in the UK. BVG Associates argues that in 2020/21, under a strong growth scenario, the sector could deliver around £7bn GVA to the UK economy and support over 30,000 full time equivalent UK jobs³⁴. Similarly, the Centre for Economics & Business Research (Cebr) Report of 2012, estimates offshore wind could increase net exports by £7 - 18bn³⁵. This motivated the creation of the EMR framework to support the development of a sustainable and ambitious offshore wind industry which will ensure industry guaranteed price support lasting into the 2030s and help provide the certainty needed to underpin long term investment. The vision of the government is to see UK-based businesses grow to create a centre of engineering excellence, which delivers cost reduction for UK projects and exports to overseas markets by growing the manufacturing base to be a world-leader in offshore wind farms, similar to what was achieved in the North Sea oil and gas industry.

In November 2016, the government published plans for second allocation round (AR2) for CfD's which started in April 2017 with successful projects to be awarded a 15-year CfD. It is projected by Norton Rose Fulbright (2016) that offshore wind will most likely be the main beneficiary of AR2 since it has costs significantly lower than wave and tidal stream and also due to competition from fuelled renewable technologies being limited by a cumulative cap. Offshore wind has the lowest Administrative Strike Price (ASP) of all Pot 2 technologies at £105/MWh in 2012 prices for 2021/22 delivery year and £100/MWh in 2012 prices for 2022/23 delivery year³⁶. The GPH region stands to benefit from this due to its strategic location from the major Round 3 wind farm zones which stand to benefit from this incentive.

© The Siemens Gamesa Blade Manufacturing site after construction, 2016





5. Conclusion

On 1st December 2016, Siemens announced that the first batch of blades had been successfully manufactured and would be loaded onto installation vessels, on schedule for departure on 4th January 2017 (Figure 5). The construction phase officially came to an end on 23rd January 2017.



Figure 5: Loading of the installation vessels.

As of March 2017, approximately 850 directly employed staff had been recruited by Siemens, of which 97% were located within 30 miles of the city centre. Siemens estimated a total job creation of 1,000 employees by May 2017.

According to Siemens General Manager of Corporate Real Estate at that time, who oversaw the whole investment in Hull, the main reasons for Siemens selecting Hull were:

- The fact that a planning permit was in place
- ABP as a business partner for its flexibility and willingness to fund the required investment at the right level.

He went on to say that one of the biggest issues facing investors is office space especially closer to the Siemens site. A new mixed-use estate development with flexible leasing conditions would go a long way for inward investment. Except for the Paull site, which requires investment in road access, flood barrier and other infrastructure, there is a shortage of sites with direct access to the river on the North Bank.

The Siemens investment in Hull was a long and arduous process that suffered several hurdles and setbacks; its success might not have been possible without the commitment of key stakeholders (HCC, ERYC, ABP and others). The process was further complicated by a lack of complete information due to the corporate sensitivity that surrounded it.

Since its inception, GPH has greatly assisted in realisation of Siemens implementation by ensuring the development of the right environment for business support by providing facilities for skills training, upskilling, hiring and other services. It has a responsibility to develop sites and enterprise zones for the renewable industry and acts as a one-stop shop for inward investment.

The period of uncertainty between 2011 and 2013 did deter some of the major players in moving ahead with projects in the Humber region. However, the region is still on track to become a world-class centre for offshore wind energy as the south bank has become an established place for O&M activities and there is considerable potential in the Siemens Supply Chain both in manufacturing and services.



6. Appendix

Appendix 1: The Crown Estate's Offshoring Wind Leasing Rounds

	Award Date	Number of Projects	GW Capacity
Round 1	December 2000	18	1.5
Round 2	July 2003	15	7.2
Round 1 and 2 extension	May 2010	4	1.6
Round 3	January 2010	9 zones	32

Table 1: UK Offshore Wind Capacity [Source: modified from Forewind, 2012³⁷]

The Crown Estate owns the right to the seabed, out to 12 nautical miles. In Round 1, the projects typically had no more than 30 turbines, in areas chosen by developers which were small in scale (approximately 0.1GW) and were close to the shore³⁸. The aims of Round 1 were:

- To provide developers with the opportunity to gain expertise (technological, economic and environmental)
- To cater for demonstration scale projects.³⁹

Round 2 began in July 2003 for projects in proximity to: the Greater Wash, the Thames Estuary and Liverpool Bay. The wind farms were larger in scale and further from the shore than those in Round 1; the Round 2 tender process was for commercial scale projects.

In 2010, The Crown Estate announced the award of development rights to four Round 1 and Round 2 sites, to extend their geographical areas.

Round 3 is significantly larger than the previous two Rounds, with the potential to triple the GW capacity of Rounds 1 and 2, combined. In 2009, The Crown Estate ran a tender process to award development rights to potential developers; Siemens, together with Mainstream Renewable Power as part of the SMart Wind consortium, was awarded the license to develop 4GW of wind farms in the Hornsea zone off the UK's Yorkshire coast. Siemens portfolio includes products and services for major wind farm developments, including the London Array Offshore Wind Farm and major projects in development and construction, such as Gwynt-y-Mor in North Wales and the Walney extension off the coast of Cumbria. The Westernmost Rough wind farm development will be based on Siemens' next generation 6MW turbines.⁴⁰



Zone	Owner	MW
1. Moray Firth	EDP Renovavais Repsol	1,500
2. Firth of Forth	SSE Renewables Fluor	3,465
3. Dogger Bank	SSE Renewables RWE Npower Statkraft Statoil	9,000
4. Hornsea	Mainstream Siemens DONG Energy	4,000
5. East Anglia	Iberdrola Vattenfall	7,200
6. Rampion	E.ON UK	665
7. Navitas Bay	Eneco EdF	1,200
8. Bristol Channel	RWE Npower	1,500
9. Celtic Array	Centrica DONG Energy	4,185

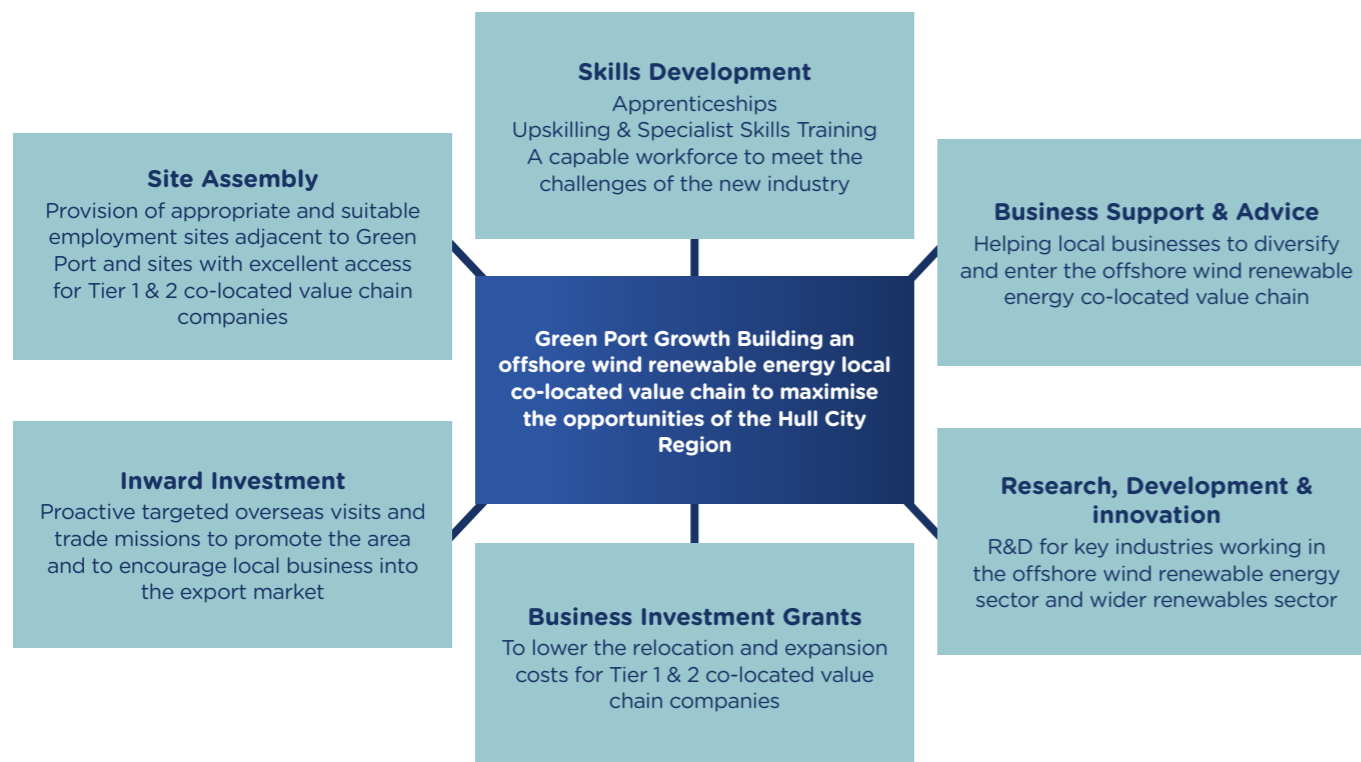
Table 2: Round 3 Development Zones [Source: modified from Forewind, 2012]³³

Appendix 3: Interviewees

Interviewee	Organisation
Shaun Cray	Siemens
Simon Brett	ABP
Mark Jones	Hull City Council
Alan Menzies	East Riding of Yorkshire Council
Mark O'Reilly	THMA
Lord Haskins	LEP
David Wells	University of Hull
Paul Hatley	Alan wood & Partners

Table 3: Partial list of interviewees

Appendix 2: GPH Strands Projects and Activities



7. Endnotes

2. Hull City Council (2007) Investment Plan Priority Projects. RD 150
3. IBM-Plant Location International (2006) Hull Competitive Assessment. Commissioned by Hull Citybuild. September
4. <http://www.abports.co.uk/newsarticle/307/>
5. Green Port Hull (2017). Development Sites. [online] Available at: <http://greenporthull.co.uk/projects>
6. Siemens (2014). Siemens to build major offshore wind manufacturing site in the UK. [online] Available at: https://www.siemens.co.uk/en/news_press/index/news_archive/2014/major-uk-offshore-wind-manufacturing-site-to-be-built-by-siemens.htm [Accessed 25 January 2017]
7. Carbon Budgets and targets - <https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>
8. Renewable Energy Directive 2009/28/EC - <https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive>
9. The UK Renewable Energy Strategy (DECC, 2009) - <https://www.gov.uk/government/publications/the-uk-renewable-energy-strategy>
10. National Grid - Future Energy Scenario report (2016) - <http://fes.nationalgrid.com/>
11. The Crown Estate - Round 3 Offshore wind Site Selection at National and Project Levels - <https://www.thecrownestate.co.uk/energy-minerals-and-infrastructure/offshore-wind-energy/working-with-us/leasing-rounds/round-3/>
12. <https://www.thecrownestate.co.uk/media/451410/ei-km-in-sc-supply-012010-towards-round-3-building-the-offshore-wind-supply-chain.pdf>
13. <https://www.thecrownestate.co.uk/energy-minerals-and-infrastructure/offshore-wind-energy/working-with-us/leasing-rounds/round-3/>
14. <http://www.windpowermonthly.com/article/1347870/analysis-uk-government-memos-reveal-tense-siemens-talks-hull>
15. http://www.siemens.co.uk/en/news_press/index/news_archive/siemens-to-build-wind-turbine-factory.htm
16. Electricity Market Reform (EMR) white paper (2011) - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48129/2176-emr-white-paper.pdf
17. Energy Act 2013 - <http://www.legislation.gov.uk/ukpga/2013/32/contents/enacted/data.htm>
18. <https://lowcarboncontracts.uk/>
19. <https://www.gov.uk/government/collections/electricity-market-reform-contracts-for-difference>
20. <https://www.emrsettlement.co.uk/about-emr/contracts-for-difference/>
21. Siemens (2014). Siemens to build major offshore wind manufacturing site in the UK. [online] Available at: https://www.siemens.co.uk/en/news_press/index/news_archive/2014/major-uk-offshore-wind-manufacturing-site-to-be-built-by-siemens.htm [Accessed 6 January 2017]
22. Practical Law (2010) March 2010 Budget: environmental announcements. [online] Available at: <http://uk.practicallaw.com/5-501-8097#a313004> [Accessed on 3 February 2017]
23. Siemens (2010). Siemens to build £80m wind turbine factory in the UK. [online] Available at: http://www.siemens.co.uk/en/news_press/index/news_archive/siemens-to-build-wind-turbine-factory.htm [Accessed 6 January 2017]
24. Siemens (2011). Siemens selects ABP as preferred bidder for UK wind turbine factory. [online] Available at: http://www.siemens.co.uk/en/news_press/index/news_archive/siemens-selects-abp-as-preferred-bidder-for-uk-wind-turbine-factory.htm [Accessed 6 January 2017]
25. RGF GGP Year 5 Programme Output Profiles spreadsheet, (June 2012 – March 2019)
26. Humber Local Enterprise Partnership (2013). Humber Enterprise Zone: The UK's Energy Estuary. [online] Available at: <http://www.humberlep.org/wp-content/uploads/2015/03/Humber-Enterprise-Zones-AH-Digital-Brochure-With-Links2.pdf> [Accessed on 20 January 2017]
27. Greenporthull.com (2017) Development Sites [online] Available at: <http://greenporthull.co.uk/projects/paull-stage-1> [Accessed on 4 February 2017]
28. https://www.siemens.co.uk/pool/news_press/news_archive/2015/siemens-hull-development-annotated.jpg
29. Greenporthull.com (2017) Development Sites [online] Available at: <http://greenporthull.co.uk/projects/alexandra-dock> [Accessed on 4 February 2017]
30. Green Port Hull (2016) Alexandra Dock Transformation on Schedule [online] <http://greenporthull.co.uk/news/may-news-letter/alexandra-dock-transformation-on-schedule> [Accessed on 20 January 2017]
31. Associated British Ports (2016) £500,000 Investment ensures a sustainable future for Alexandra Dock's Listed Structures. [online] Available at: <http://www.abports.co.uk/newsarticle/333/> [Accessed on 20 January 2017]
32. Green Port Hull (2017) Environment [online] <http://greenporthull.co.uk/projects/alexandra-dock/environment> [Accessed on 23 March 2017]
33. ABP (2011) Consultation Document for the Proposed Diversion of Footpath 22 – Alexandra Dock [online] http://www.hullcc.gov.uk/pls/portal/docs/PAGE/HOME_TRANSPORT%20AND%20STREETS/TRAVEL/PUBLIC%20RIGHTS%20OF%20WAY/GREEN%20PORT%20-%20PROW%20NO%2022/CONSULTATION%20DOCUMENT.PDF [Accessed on 6 October 2017]
34. HM Government (2013). Offshore Wind Industrial Strategy Business and Government Action. Industrial Strategy: government and industry in partnership. August. [online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/243987/bis-13-1092-offshore-wind-industrial-strategy.pdf. [Accessed: 24 January 2017].
35. BVG Associates estimate (2012). Offshore wind cost reduction pathways, Technology work stream. Crown Estate Report, June. Macroeconomics benefits of investment in offshore wind. Cebr Report, June. This is based on a scenario of 16GW installed by end 2020, with 50% UK content in capital expenditure and 85% content in operational expenditure.
36. Cebr Report (2012). Macroeconomics benefits of investment in offshore wind. June
37. Norton Rose Fulbright (2016). Contract for Difference in Great Britain: The offshore wind round? November publication.
38. Forewind (2012) Round 3 offshore wind farms: UK Future Energy Scenarios seminar 2012
39. The Crown Estate (2017) <https://www.thecrownestate.co.uk/energy-minerals-and-infrastructure/offshore-wind-energy/working-with-us/leasing-rounds/>
40. House of Commons (2012) <http://researchbriefings.files.parliament.uk/documents/SN05088/SN05088.pdf>.
41. Siemens (2015) <http://www.siemens.co.uk/en/wind/about-round-3.htm>

About the Green Port Impact Assessment Project

In January 2016, the Logistics Institute at the University of Hull was awarded a contract by GPH to provide an economic, social and environmental impact assessment of the Siemens-ABP investment with a view to investigating and advising on how to best sustain the growth of the renewables sector in the region. A side objective of the project was to review GPH's processes and achievements, the fundamental intention being to identify and improve the areas of weaknesses so that the original GPH objectives are not only met but surpassed, thereby creating the right business environment for Hull and the East Riding to become the go-to-place and a world leader for renewable energy.

The main stakeholders of the Green Port Hull Impact Assessment (GIA) are:

1. Green Port Hull (main client) consisting of members of Hull City Council and East Riding of Yorkshire Council;
2. Siemens and ABP.

Working closely with GPH and Siemens' Suitability Director, a cross-disciplinary team was formed within the Logistics Institute, comprising of pre and post-doctoral researchers and professors in the fields of economics geography, engineering and logistics, together with software development specialists responsible for the development and maintenance of the GIA website, accessible at: <http://gia.hull.ac.uk/>. Discussion, feedback and recommendations are shared between project stakeholders on an ongoing basis in the monthly Steering Committee and quarterly Advisory Board.

This paper is the first in a series of publications from the GIA research team; it documents the 'history' of the Siemens and ABP investment in the Humber region and was put together using information obtained through interviews with influential individuals who were part of the investment journey and also from news archive and other publications.





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