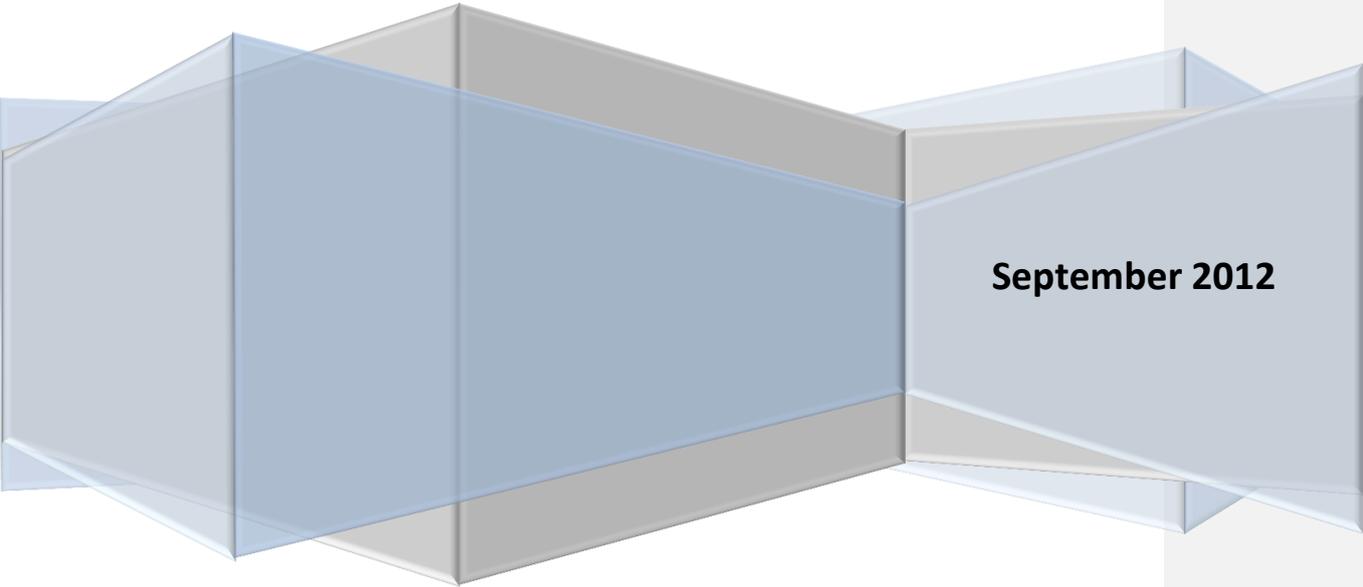


Developing a Supply Chain

Rampion Wind Farm

Dr Dawn Robins

A large, 3D geometric graphic consisting of several overlapping, semi-transparent blue and grey rectangular blocks arranged in a complex, interconnected structure. The text "September 2012" is centered on one of the blocks.

September 2012

A report commissioned by Marine SouthEast to identify suitable companies in a position to supply the Rampion wind farm

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Executive Summary

The Rampion offshore wind farm is being developed by E.on Climate & Renewables off the coast of Sussex. When complete, it will generate up to 700MW of electricity from a sea area of 167 km². The wind farm construction will be implemented under several main (Tier 1) contractors to be appointed by E.on around the end of 2013. These Tier 1 contractors will then procure a wide range of products and services from the supply chain.

E.on hopes to ensure that as much as possible of this procurement can be contracted with companies local to Rampion, provided they can satisfy the procurement need, but inclusion in the database does not guarantee commissioning to the supply chain. Working in partnership with local authorities, E.on has commissioned Marine South East to carry out a supply chain mapping and engagement project. This comprises four major tasks:

1. Analysis of potential supply chain procurement needs for Rampion, based on actual procurements for recent offshore wind farm developments (analysis performed by 4COffshore);
2. Engagement of supplier interest in Rampion procurement opportunities through a programme of awareness events, and later on through some Meet-the-Buyer events
3. Mapping of these supply chain procurement needs onto the supplier capabilities within East and West Sussex and the surround areas (mapping performed by University of Chichester);
4. Creation of an online supplier portal through which suppliers can register relevant supply capabilities, and contractors can find capable local suppliers.

The University of Chichester was commissioned by Marine South East to develop a database of companies located within the Sussex region that have the potential to, or could with minor changes; supply the Rampion wind farm from construction through to maintenance, and through life, before decommissioning. This activity represents task 3. The main objectives were:

1. Create an electronic database of potential tier 2, 3 & 4 product or service suppliers incorporating information from E.ON, The Crown Estates and local authorities. The

database will include contact details, a short description of current activities, capacity and capability¹.

2. Identify South East England based companies having capabilities that can be adapted and enhanced through development or diversification to fulfil key parts/capability gaps in the supply chain requirement.

The database has been devised to include 3 main categories – Capital Expenditure, Operational Expenditure, and Support Services. These three categories have been further disaggregated to include eight sub-categories. These are:

- Balance of Plant
- Construction Port
- Project Development
- Installation and Commissioning
- Project Monitoring
- Wind Turbines
- Operations and Maintenance
- Support Services

Each of these sub-categories contains all of the activities necessary for the main category to be developed and all the categories together provide details of all the activities and supplies that are required to build, operate and maintain a wind farm. These include consultancy, infrastructure supply (turbine, mast etc.), and development support such as divers, vessels and storage as well as generic but necessary items such as food, toilets and car parking.

The data was compiled using established databases, attendance lists to wind farm information meetings, social media and online searches. The database can be split into four areas – W Sussex, E Sussex², Peripheral Areas, and Outside Areas. The following table highlights the total amount of companies and the activities that can be covered within each area and the percentage of activities that this covers overall. A cumulative percentage highlights the total coverage as each area is added to the

¹ The original database structure was designed by 4 C Offshore under a separate contract with MSE

² Brighton and Hove are included in East Sussex as the county boundary has been used. It is possible to disaggregate the data if needed.

total. The 'Gaps' identifies the amount of activities not covered and the percentage of the total this represents.

Number of occurrences for activities in the four areas and the percentage of total activities covered

	West Sussex	East Sussex	Periphery Counties	Outside Area	Gaps	Total
Total Companies³	160	86	392	51	-	689
Total Activities⁴	396	263	987	128	214	1774 ⁵
Unique activities⁶	237	198	358	89	214	- ⁷
% Covered	28%	34%	52%	13%	31%	69%
% Accumulated	28%	48%	67%	69%	100%	100%

Although East Sussex companies cover a higher percentage of the total amount of activities than West Sussex, it is West Sussex that has the greater amount of companies. There is a main cluster of companies around the coastal strip between Worthing and Brighton although West Sussex also has clusters in the main towns of Chichester, Haywards Heath, Crawley and Burgess Hill.

³ This represents the total amount of companies that can supply to the wind farm in each designated region

⁴ This represents the total amount of activities that can be covered in each area and will include duplication where more than one company can carry out an activity

⁵ This highlights the duplication of activity coverage in the database

⁶ This represents unique activities and where more than one company can supply the activity is only counted once.

⁷ No figure can be inserted here due to the number of unique activities only applying to each individual area and not across the entire database

The information within the database is not detailed enough to determine if companies can adapt sufficiently but the work undertaken does present a reasonable picture of activity in Sussex. West Sussex has a great deal of expertise in the support services around consultancy, design, construction services and support infrastructure. The following table highlights the activities that can be covered by East and West Sussex and the percentage of activities in each sector that this represents.

Coverage of activities in E&W Sussex by sub-category and tier including the percentage of activities covered

Category /Tier	West Sussex			East Sussex		
	2	3	4/5	2	3	4/5
Balance of Plant	11 24%	51 40%	21 19%	6 28%	18 19%	45 58%
Construction Port	3 100%	0	0	1 33%	0	0
Project Development	38 43%	8 32%	17 37%	27 44%	13 53%	2 6%
Installation and Commissioning	46 38%	2 2%	0	32 28%	5 10%	0
Project Monitoring	0	0	0	0	0	0
Wind Turbines	13 31%	27 19%	9 30%	11 25%	10 10%	2 9%
Operations and Maintenance	18 62%	0	0	6 29%	0	0
Support Services	10 56%	2 50%	0	5 22%	2 50%	0

The peripheral areas around E & W Sussex have the capability of offering many of the services not available in the counties and support and complement the services required.

Activities covered in each category and tier by the peripheral counties

Category/Tier	2	3	4/5
Balance of Plant	23 45%	59 29%	89 64%
Construction Port	4 67%	0	0
Project Development	89 72%	30 68%	33 48%
Installation and Commissioning	127 51%	33 38%	0
Project Monitoring	0	0	0
Wind Turbines	29 48%	58 34%	14 39%
Operations and Maintenance	44 81%	0	0
Support Services	22 41%	6 100%	0

An initial breakdown of the value of procurement in the Sussex area shows that East Sussex has a slightly higher value impact than West Sussex but many of the activities that can be supplied are considered low value activities.

The report recommends additional research into the value of procurement in the Sussex area utilising more comprehensive value data that includes infrastructure, transport and workforce data to ascertain the local economic impact.

1 Introduction and Background to the Research

The Rampion offshore wind farm is being developed by E.on Climate & Renewables off the coast of Sussex. When complete, it will generate up to 700MW of electricity from a sea area of 167 km². The wind farm construction will be implemented under several main (Tier 1) contractors to be appointed by E.on around the end of 2013. These Tier 1 contractors will then procure a wide range of products and services from the supply chain. On 2nd October, E.ON announced that Newhaven port would be the operations and maintenance base for its proposed Rampion Offshore Wind Farm if the development is granted approval. The decision was made following a rigorous technical assessment of both Newhaven and Shoreham Ports.

E.on hopes to ensure that as much as possible of this procurement can be contracted with companies local to Rampion, provided they can satisfy the procurement need, but inclusion in the database does not guarantee commissioning to the supply chain. Working in partnership with local authorities, E.on has commissioned Marine South East to carry out a supply chain mapping and engagement project. This comprises four major tasks:

1. Analysis of potential supply chain procurement needs for Rampion, based on actual procurements for recent offshore wind farm developments (analysis performed by 4COffshore);
2. Engagement of supplier interest in Rampion procurement opportunities through a programme of awareness events, and later on through some Meet-the-Buyer events
3. Mapping of these supply chain procurement needs onto the supplier capabilities within East and West Sussex and the surround areas (mapping performed by University of Chichester);
4. Creation of an online supplier portal through which suppliers can register relevant supply capabilities and contractors can find capable local suppliers.

The University of Chichester was commissioned by Marine South East to develop a database of companies located within the Sussex region that have the potential to, or could with minor changes; supply the Rampion wind farm from construction through to maintenance, and through life, before decommissioning. This activity represents task 3. The main objectives were:

- Create an electronic database of potential tier 2, 3 & 4 product or service suppliers incorporating information from E.ON, The Crown Estates and local authorities. The database will include contact details, a short description of current activities, capacity and capability.
- Identify South East England based companies having capabilities that can be adapted and enhanced through development or diversification to fulfil key parts/capability gaps in the supply chain requirement.

The output from these two activities is explained in the following report.

On 2nd October, E.ON announced that Newhaven port would be the operations and maintenance base for its proposed Rampion Offshore Wind Farm if the development is granted approval. The decision was made following a rigorous technical assessment of both Newhaven and Shoreham Ports.

The move could create up to 85 full time permanent jobs with the majority being recruited locally. It would also see part of Newhaven Port being modernised and redeveloped through E.ON's investment in the new facility, which would support the operation and maintenance of the proposed offshore wind farm.

The operations and maintenance base would contain office space, equipment storage and vessel mooring which will be used by a team dedicated to operating and maintaining the wind farm for the lifetime of the project. A separate planning application will need to be made to the local planning authority for the O&M site before the development could take place.

2 Database Development

The database format was taken from the original database that was designed and developed for this project by 4C Offshore. The original database was designed in Microsoft Access but for ease of updating and for future use this has been exported to Microsoft Excel. The original database included specific fields (see table 1) including details of the activities each company carried out.

Table 1 Data Fields and Explanations

Field	Explanation
SupplyChainModelId	Unique internal identifier
ShortDescription	Short Description of the product/service
LongDescription	Long description of the product/service. Sometimes these are quite extensive, otherwise they are brief or absent, depending on the amount of detail available or required.
PercentValue	The percentage of the parent contract value relating to this activity.
ParentId	The Supply Chain Model Id of the parent record – used to create a recursive link up the hierarchy
Alias	An alias for this product/service to be used in calculating the position (see below) e.g. CPX is the alias for CAPEX
PathTo*	The path to this product/service in the hierarchy, e.g. OWF CAPEX > Wind turbines > Towers > Electrical system
Depth*	The depth of this product/service in the hierarchy e.g. 3
Position*	The code, or position of this product/service in the hierarchy, e.g. CPX.TUR.4.1

The model developed by 4C contains three main categories:

- OWF CAPEX. This refers to all capital expenditure on the project, including development and construction. Estimated CAPEX cost for a typical project is provided in the OWF CAPEX model entry.
- OWF OPEX. This refers to running costs of the project so is an annual cost. Estimated annual cost for a typical project is provided in the OWF OPEX model entry.
- OWF SUPPORT SERVICES. These have been included for purposes of completeness. They are activities and products that are highly cross cutting and relate to multiple entries. They have not been quantified. Examples include hotels and training. In some cases, e.g. Weather forecasting, they have been included in some CAPEX estimates.

These three categories have been further disaggregated to include eight sub-categories. These are:

- Balance of Plant
- Construction Port
- Project Development
- Installation and Commissioning
- Project Monitoring
- Wind Turbines
- Operations and Maintenance
- Support Services

Each of these sub-categories contains all of the activities necessary for the main category to be developed and all the categories together provide details of all the activities and supplies that make up a wind farm from conception to decommissioning. These include consultancy, infrastructure supply (turbine, mast etc.), development and development support such as divers, vessels and storage as well as generic but necessary items such as food, toilets and car parking.

Although this provides a clear understanding of the separate parts of a wind farm supply chain it does also mean there is a certain amount of repetition of activities across the eight categories i.e. personnel, catering and office equipment are accounted for in most categories. This allows for a company to supply to the same activity across the entire wind farm supply chain but also means the company is entered more than once into the database.

2.1.1 Tier Structure

It is important to mention the manner in which the tier structure for the database was developed. As with all supply chains the number of tiers depends on the depth and complexity of the work breakdown structure for each sub-section. This means that the lower tiers may sometimes be a tier 2 in one activity but tier 5 in another – an example of this is food supply and catering: ‘Food’ appears as a tier 2 and 3 and 4 in the database depending on which of the 8 sub-categories it is in. This limits any analysis of tier structure as the tier does not necessarily relate to a sector or differentiate between a support service and/or necessary component. Analysis of specific activities or sectors will be the main depth analysis looked at in this report.

2.2 Data Compilation

Originally, the database had 692 activities within the eight categories in the model. This has been increased to include three other activities – Communication (general), Oil Spill, and Navigation. This was seen as important as these three aspects appear to have a general but fundamental impact on wind farms and are not part of the original support network. The database has been split to account for West Sussex, East Sussex, Peripheral Counties, and Other areas. Both postcode and address provide the basis for location therefore disaggregation by local authority proved difficult. The data can be searched by town to further disaggregate the data but for the purposes of this report the four areas described have been used.

During the data collection phase of the project various press releases and promotional events took place around Sussex and these attracted companies from further afield to register an interest. These companies have been included as requested but are highlighted as being out of area.

The database development included various forms of data search. This included aggregating different wind farm databases into the Rampion format as well as on-line searches. E.ON supplied a database of companies that had contacted them for consideration and this was included in the development along with those companies that had been identified by the University of Chichester through the CAMIS project

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to have a role in offshore renewable energy. Data generated from social media – specifically LinkedIn – and the Marine South East newsletter was also added. Each company that attended an information event held by Marine Southeast and E.ON were also included in the database. The number of companies found, and activities assigned, by these varying methods are shown in table 2.

Table 2 Data Source

Origin	Activities	Companies
On-line searches	685	302
LinkedIn (MSE)	85	35
E.On Supply Chain	772	33
UoC Database	398	310
Events – organized by MSE for the E.ON Supply Chain Project		
1/ Chichester	110	56
2/ Newhaven	95	44
3/ Seaworks	75	39
4/ Shoreham	111	53

There was significant duplication of companies as many of those companies who were able to attend the events had also tended to inform the MSE and the LinkedIn site. The CAMIS database is also a comprehensive dataset that contains the majority of maritime businesses along the south coast and was used to inform companies of the up and coming events. Duplication was therefore inevitable.

It is clearly apparent from the table that compared to the other sources of data the original E.ON database of suppliers are capable of supplying a considerable amount of the materials and services that will be necessary. The UoC database has provided the largest number of companies to populate the database but these companies are

limited in the amount of activities they can potentially deliver. A high level of interest from potential suppliers has been generated by a sequence of workshops organised by Marine South East. These were held in Chichester, Shoreham and Newhaven over the beginning of 2012. A total of 165 companies attended these events, and 33 went on to attend specialist training on bid and tender preparation organised by Marine South East.

During 2013, this engagement will be advanced further through a number of Meet-the-Buyer type events. These will provide an opportunity for potential suppliers to hear first-hand about specific contractor requirements and pre-qualification criteria. The on-line searches and 'new' data that were discovered have managed to fill many of the gaps.

2.3 Adapting to Supply

One aspect that was required by the project definition was that of identifying companies that could, with a little adaptation of operations, supply to the wind farm if necessary. The objective behind this was to ensure that where activities could not be covered by an established supplier there would be options for the wind farm to contract to a local company who would be willing and able to adapt their operations to supply the necessary items. This proved to be a difficult activity to carry out for the following reasons.

- Few companies actually supply to wind farms currently, although many are able and willing, therefore the majority of the companies listed in the database could be seen as needing to adapt rather than be established.
- The most common response when asked if adaptation would be needed was 'No'. This was seen as being due to reluctance to let any potential work slip to a 'more established' firm in the database.
- Adaptation may have been needed for a variety of reasons and these would have required a considerable difference in cost and ability with some changes requiring minimal cost and others excessive costs. Some of the common reasons are outlined below.
 - Machinery changes
 - Personnel and/or skills
 - Changes to transport or logistics
 - Software

- Space requirements etc.
- Many companies could currently supply in some activities and could potentially supply to another. Differentiating between the two abilities was not something that was possible in the database.

It was therefore decided that unless the company would need radical changes to support the wind farm, or they could not currently supply at all, they would be listed as a supplier. Those companies who did require adaptation are listed in the database with the inclusion of a 'L4' entry.

2.4 Database Maintenance

The database that has been devised is robust and detailed. It is important that it is maintained in order to remain an efficient data source. The database can support a web based portal and could be used by all major stakeholders. Companies could locate other companies for collaboration, increased supply access and new markets. Local Authorities could use the database to target specific information, incentives and opportunities. E.ON could utilise the data for the purposes of developing the wind farm.

Future plans include a portal development for the purposes of procurement and information dissemination. It is proposed that the database designed for this project will be used as a tool going forward.

3 Database Analysis

There are a total of 689 individual companies listed in the database – and due to a continuous open feed via E.ON and MSE for more information this number will continue to grow. The following table (Table 3) highlights the total amount of companies and the activities that can be covered within each area and the percentage of activities that this covers overall. A cumulative percentage highlights the total coverage as each area is added to the total. The column 'Gaps' identifies the amount of activities not covered and the percentage of the activities this represents.

Table 3 Total amount of companies and activities included in the database

	West Sussex	East Sussex	Periphery Counties	Outside Area	Gaps	Total
Total Companies⁸	160	86	392	51	-	689
Total Activities⁹	396	263	987	128	214	1774 ¹⁰
Unique activities¹¹	237	198	358	89	214	482 ¹²
% Covered	28%	34%	52%	13%	31%	69%
% Accumulated	28%	48%	67%	69%	100%	100%

More than 1,700 activities are covered and a total of 69% of all activities – although there are many activities that are covered by more than one company and not all activities are able to be supplied in the local area. The database has been split into four areas: West Sussex, East Sussex, Peripheral Counties, and Outside Areas. The majority of companies in the ‘Outside Areas’ database are those who expressed a

⁸ This represents the total amount of companies that can supply to the wind farm in each designated region

⁹ This represents the total amount of activities that can be covered in each area and will include duplication where more than one company can carry out an activity

¹⁰ This highlights the duplication of activity coverage in the database

¹¹ This represents unique activities in each area and where more than one company can supply from that area the activity is only counted once. There may be duplication across the areas but this is represented in the total where each activity across the database is counted only once.

¹² This is a total of the unique activities covered and not a total of each areas unique activity.

desire to be included and those who were already part of one of the databases that were used to generate this research. The main analysis for this report takes the areas of East and West Sussex before highlighting the trends to be found in the entire database.

There are certain assumptions that should be made for the purposes of understanding the following analysis.

1. East and West Sussex includes only companies located within the county borders of each county
2. East Sussex includes Brighton and Hove
3. Peripheral Areas accounts for companies in the Southeast of England including Kent, Surrey, Hampshire, and the Isle of Wight
4. Outside Area contains all other companies located within the UK
5. Many of the activities are duplicated through the categories therefore there may be companies that serve more than one activity but essentially the activities are the same – i.e. food appears in more than one category and a company will be listed a number of times throughout the database for this one activity
6. Discrepancies in coverage
 - a. Few companies but lots of activities covered - Many companies can undertake more than one activity within the database therefore there may be a limited number of companies in the area that have the ability to target wind farm activities but the overall coverage of activities is high.
 - b. Lots of companies but few activities covered - There are many occasions where more than one company can supply a particular activity therefore there may be an increased number of companies and times an activity is covered but the overall coverage of activities may be low.

The following analysis will also include explanations of the criteria used to calculate the figures shown in the tables.

3.1 West and East Sussex

The following maps highlight the coverage of companies within West Sussex (figure 1) and within each tier (figure 3). Each marker represents a postcode therefore if more than one company shares a postcode there will only be one marker shown.

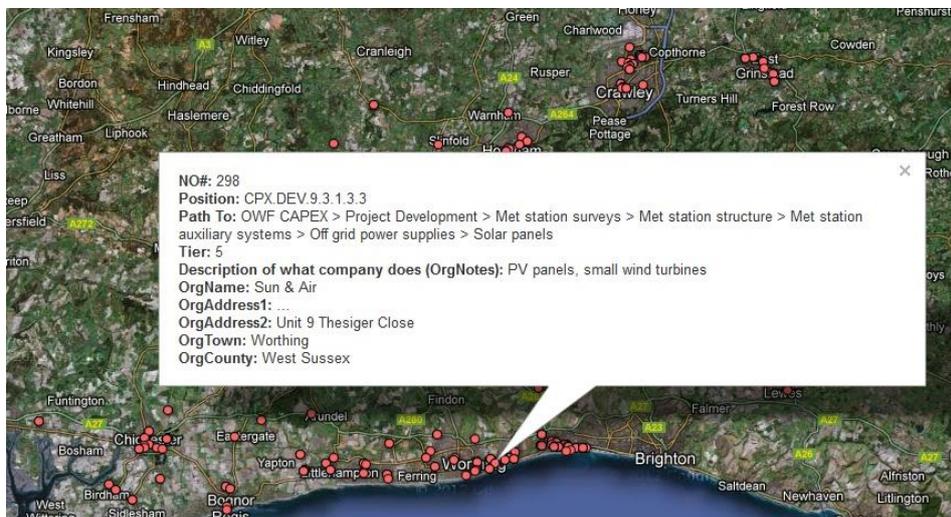
There are a total of 160 companies within West Sussex that are entered into the database and these companies can supply to 396 activities covering 28% of all activities necessary.

Figure 1 Companies in the database located in West Sussex

There are clear locational clusters of companies able to supply the wind farm in the Crawley, Shoreham, Worthing/Lancing, Burgess Hill, Haywards Heath and Chichester areas. The majority of companies sit along the main arterial routes or the coastline. Although this map provides a spatial awareness of the business coverage in West Sussex it does not identify the types of companies that are shown or any details on what they represent. An interactive version of this map would allow each 'dot' to be opened for additional details and this could be placed within a portal and supported by the database. Figure 2 highlights the information that is given when the data is interactive using Google Fusion¹³

¹³ Google Fusion allows the user to upload databases and, using postcode as location, map each entry.

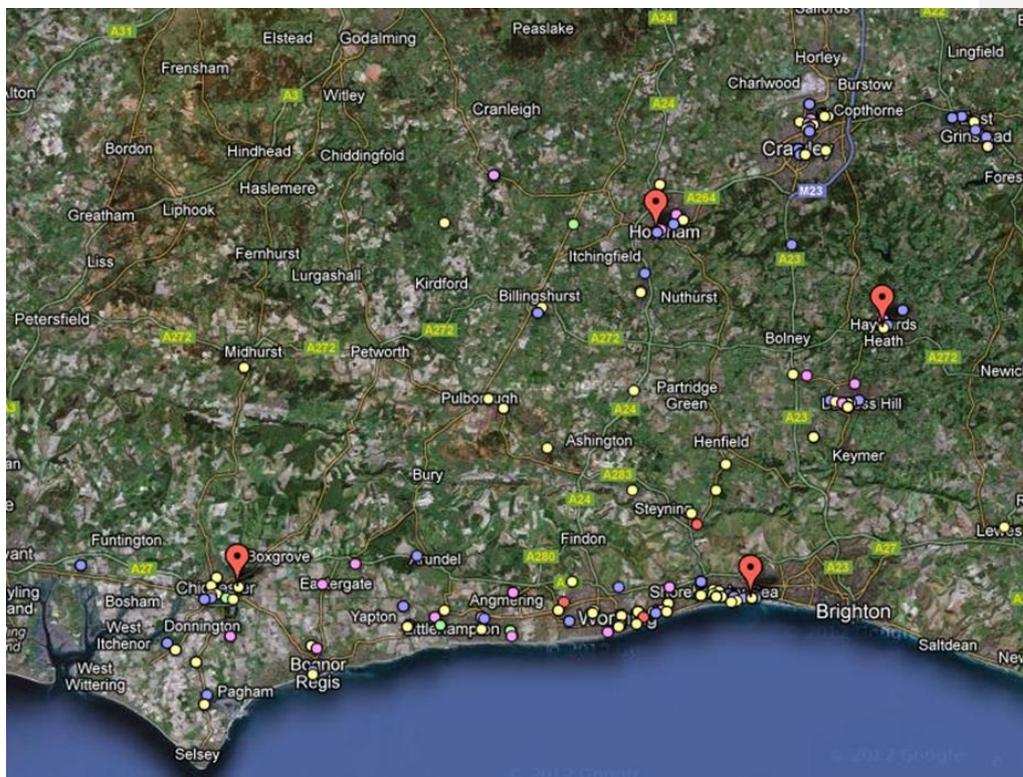
Figure 2 Interactive mapping using Google Fusion Tables



The information shown on the map can be adjusted to include specific details such as address and brief description and any information that is not required can be screened out.

Figure 3 highlights the location of companies and the tier that each one represents. Tiers 1 & 2 are quite well represented and the tiers are evenly spread throughout the county. It is worth highlighting the previous comments regarding the tier structure and the limitations that this presents. Where Tier 0 is highlighted this represents an overarching policy and support role i.e. council, advisory service, government department etc. that provides more than just individual activities or consultancy.

Figure 3 Company location and tier representation in West Sussex



Where: yellow = tier 1, blue = tier 2, pink = tier 3, green = tier 4, and red = tier 5. The four large icons are the main category tier 0 and provide advice and support

The main category for tier 1 in West Sussex lies in the Support Services with the majority of activities necessary covered within the county. There are also a large proportion of tier 1 companies in the Project Development and Construction of Port categories. West Sussex appears to have expertise in development services such as consultancy, business support and local authority support using established support companies and an established Port. Tier 2 is evenly spread but Installation and Commissioning features prominently.

The following map (figure 4) highlights the picture that is to be found in East Sussex.

Figure 4 Company Location in East Sussex



Whereas West Sussex appears to have distinct clusters of companies in most of the large urban areas the majority of businesses in East Sussex are in the southwest of the County in the Brighton, Hove and Newhaven areas. This highlights the importance of the SE of West Sussex and SW of East Sussex as a potential geographic cluster for wind farm supply chain activity. The actual area stretches from Worthing in the west to Newhaven in the east. Figure 5 highlights the companies in East Sussex according to the tier they represent.

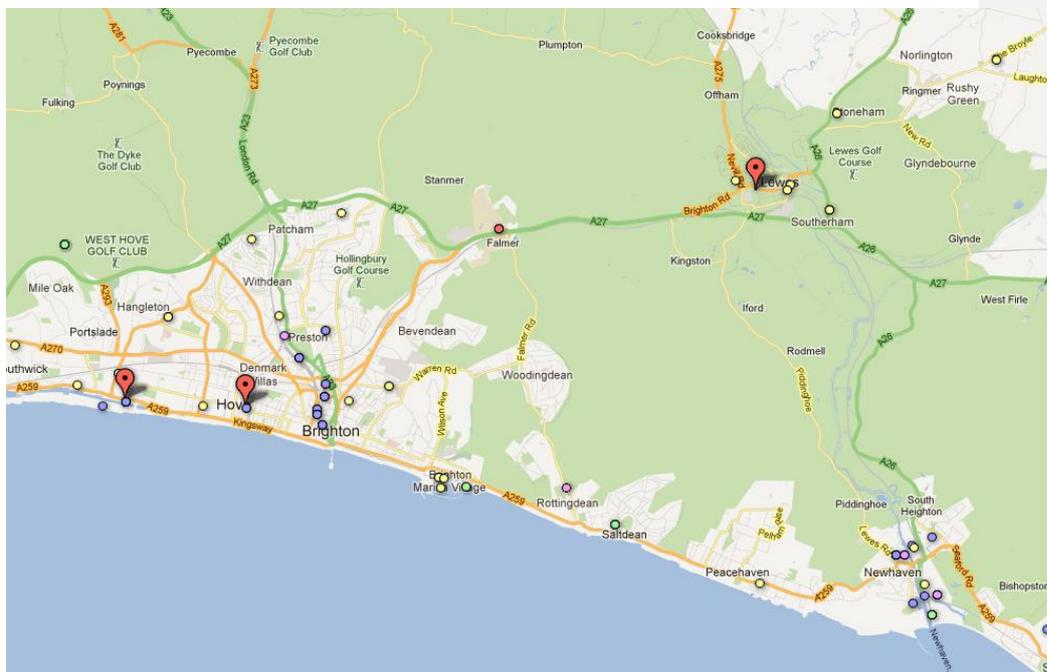
Figure 5 Company location and tier representation



Where: yellow = tier 1, blue = tier 2, pink = tier 3, green = tier 4, and red = tier 5. The four large icons are the main category tier 0 and provide advice and support

As with West Sussex, the coverage of the tiers in East Sussex is fairly evenly spread both across the county within the tier structure. Due to the agglomeration of companies around the SW it is beneficial to visualise this area in detail. This could be completed for other areas in the database as well. Figure 6 takes a closer look at the SW area.

Figure 6 Company Location in the SW of East Sussex and Tier Represented



Where: yellow = tier 1, blue = tier 2, pink = tier 3, green = tier 4, and red = tier 5. The four large icons are the main category tier 0 and provide advice and support

The majority of companies are located along the main arterial roads and the town of Newhaven. Brighton Marina also features as a location for wind farm supply. East Sussex appears to have fewer companies within the county that can supply a wind farm and although this is true, it is also important to note that some of the large companies that can address a wealth of activities are also present. These include Elmeridge Cable Services and Mott MacDonald in Brighton, Atlantic Marine, Hove, and Coussens (Cranes) in Bexhill.

3.1.1 Conclusions

There is a fairly even spread of tiers in both East and West Sussex and the location of companies within both counties tends to be around the main road network and

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urban areas. West Sussex has more individual companies that can supply the wind farm whereas the companies in East Sussex can provide for more of the activities per business. The following section looks at the activity coverage per area and the gaps in provision that can be accounted for. The analysis centres on tiers 2, 3 and 4 due to the amount of companies that could potentially supply at this level.

3.2 Sussex In-Depth

It appears from the database that East and West Sussex complement each other with regards to the supply of activities associated with the wind farm. Due to the location of Elmeridge Cable Services in East Sussex the county has good coverage of the actual supply of cabling. West Sussex has a good coverage of the support services such as safety and communications necessary for cabling. West Sussex can supply more infrastructure support requirements to the development of the wind farm whereas East Sussex has more industry around the actual infrastructure necessary for the Balance of Plant sub-category.

Both counties are well placed to supply to the wind farm through the Project Development sub-category. Consultancy, design, research and survey assessments are all well catered for. West Sussex can contribute to the Met Station activities and both counties can service the geophysical and geotechnical aspects.

The Installation and Commissioning sub-category has many gaps within the main cable and substation activities but the majority of cabling support for this major activity can be covered. This includes the dredging and supply of vessels, aggregates, diving support and sea based support. Monitoring in the form of noise, mammal, fish and coastal processes can be covered to some degree but the National Oceanographic Centre in Hampshire has a wider range of experience of supplying these activities.

There is limited cover of activities in the Wind Turbine sub-section but this was expected due to the lack of support in this area nationally. Support on the more generic activities of this sub-section can be found in the counties, especially around the electrical systems and support activities. The sub-section Operations and

Maintenance has better coverage in West Sussex but this is also around the support activities rather than the provision of large components and vessels.

Both East and West Sussex are well equipped to service the Support Services activities with the majority of these activities covered by at least one company and in some instances many more. West Sussex can facilitate 395 activities in total whereas East Sussex can cover 263.

The following section looks at the database as a whole and highlights the activities that can be covered over the entire database.

4 Analysis of the Data Set

The main data set has been disaggregated in to four spatial areas. The following section analyses each area and provides comparison.

Table 4 identifies the eight categories (and the additional section for Communication, Oil spill and Navigation) and shows the amount of activities that can be covered by each area. A table for those activities not covered is included later in this section.

Table 4 Total Activities covered by Companies for each category in each area

Category	West Sussex	East Sussex	Periphery Counties	Outside Area	Total
Balance of Plant	89	72	185	20	366
Construction Port	20	13	36	1	70
Project Development	82	67	204	36	389
Installation and Commissioning	55	48	209	40	352
Project Monitoring	2	3	7	1	13
Wind Turbines	50	24	117	7	198
Operations and Maintenance	27	13	71	8	119
Support Services	62	22	105	15	203
Navigation	5	0	28	0	33
Oil Spill	1	0	11	0	12
Communication	3	1	14	0	18
Total	396	263	987	128	1773

It is quickly apparent that the peripheral counties can provide a significant proportion of the activities necessary. This is mainly due to the Solent area of Hampshire and the location of one of the countries busiest ports and subsequent commercial infrastructure.

Each activity sector contains a different amount of activities therefore it is not easy to see from the table how many of the activities are actually covered. In many instances there are a variety of companies that can cover a specific activity giving a choice of supplier. An example of this is Project Development: In the sub-category University of Chichester SEMAL

Project Development there are 120 individual activities that could be supplied to. The database includes companies that can supply this categories activities 389 times, but, not all activities can be covered, and many are able to be supplied to many times by different companies. The following table (Table 5) identifies the number of companies in East and West Sussex that can carry out the activities in each sub-category, and tier, and the percentage of activities that each sub-category and tier contains that can be covered.

Table 5 Total of Companies covering activities and percentage of activities covered in each tier In Sussex

Category /Tier	West Sussex			East Sussex		
	2	3	4/5	2	3	4/5
Balance of Plant	11 24%	51 40%	21 19%	6 28%	18 19%	45 58%
Construction Port	3 100%	0	0	1 33%	0	0
Project Development	38 43%	8 32%	17 37%	27 44%	13 53%	2 6%
Installation and Commissioning	46 38%	2 2%	0	32 28%	5 10%	0
Project Monitoring	0	0	0	0	0	0
Wind Turbines	13 31%	27 19%	9 30%	11 25%	10 10%	2 9%
Operations and Maintenance	18 62%	0	0	6 29%	0	0
Support Services	10 56%	2 50%	0	5 22%	2 50%	0

Comment [DC1]: Maybe worth including this in the exec summary

Sometimes there are a greater number of companies that can carry out a particular activity but the overall coverage of activities can be quite low. This is due to either there being a lot of activities within the category and tier or a number of companies that can supply to one particular activity.

From the table it can be seen that the main gaps appear to be in the Installation and Commissioning, Project Monitoring and Wind Turbines. This is an unsurprising result and not necessarily something that should be tackled at a local level. All of the other categories are fairly well covered but an understanding of whether the gaps are specific to an industry sector or a gap in a range of areas would enable both E.ON and the Local Authority to decide if the gaps could, or should, be filled through incentivising or facilitating new business or business relocation.

It would also be interesting to know if the gaps can be covered from outside of Sussex and Table 6 identifies the total amount of companies and percentage of activities that are covered in those counties adjoining Sussex (Peripheral Area). This is particularly interesting when it is remembered that East and West Sussex are bordered by two main industry areas:

- Kent has experience of off shore wind farms through the positioning of the London Array and other wind farms
- Solent, Hampshire, is one of the hubs for marine and maritime sector including major manufacturing and research centres

The fourth dataset categories 'other areas' has not been included as many of these companies are as far afield as Scotland.

Table 6 Total of Companies covering activities and percentage of activities covered in each tier in Adjoining Counties

Category/Tier	2	3	4/5
Balance of Plant	23 45%	59 29%	89 64%
Construction Port	4 67%	0	0
Project Development	89 72%	30 68%	33 48%
Installation and Commissioning	127 51%	33 38%	0
Project Monitoring	0	0	0
Wind Turbines	29 48%	58 34%	14 39%
Operations and Maintenance	44 81%	0	0
Support Services	22 41%	6 100%	0

On their own the peripheral areas can cover a large majority of the activities that are necessary. If this data was combined with the East and West Sussex data it would be possible to see which activity sectors are covered and which need support from elsewhere.

The following table (Table 7) highlights where the gaps are and the percentage of activities that are NOT covered in the database. There are a total of 695 individual activities (including the three added activities) of which 32% cannot be covered; or it

has not been possible to identify companies; either within West or East Sussex or the peripheral areas.

Table 7 Gaps in the database- number of activities not assigned to companies and the percentage of total activities this represents

Category/Tier	2	3	4/5
Balance of Plant	8 38%	45 48%	20 25%
Construction Port	0 0%		
Project Development	6 13%	1 5%	13 37%
Installation and Commissioning	22 30%	23 56%	
Project Monitoring	0 0%		
Wind Turbines	12 37%	56 56%	10 42%
Operations and Maintenance	2 9%		
Support Services	5 26%	0 0%	

The areas that are underrepresented are Balance of Plant, Installation and Commissioning, and Wind Turbines. Overall coverage appears to be good and the inclusion of the peripheral areas has reduced the amount of activities needing to be covered quite considerably in some places.

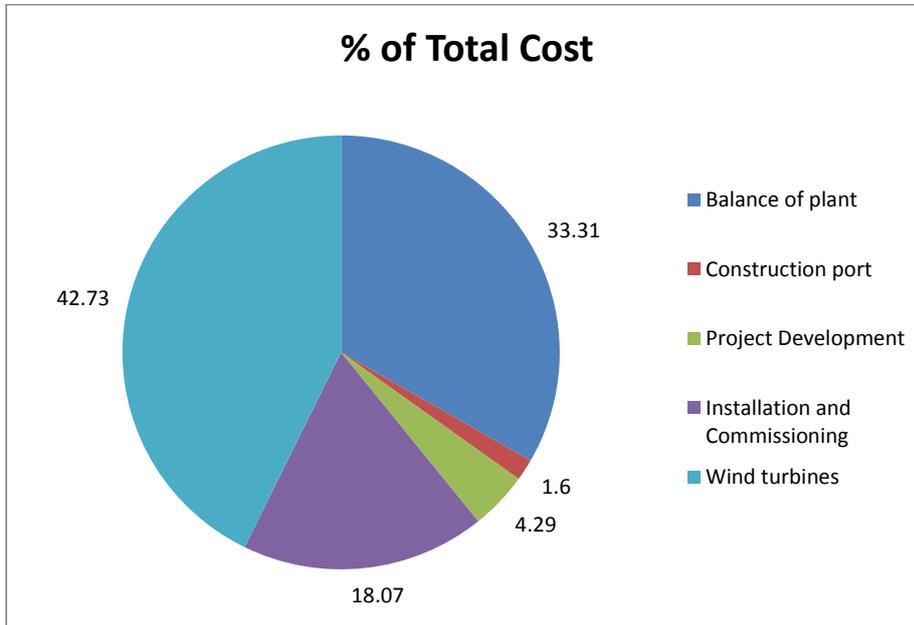
4.1 Value of Supply

The values of procurement for the activities within the supply chain are identified for all those activities that have a significant cost. The values that have been identified are estimated cost contribution from a generic wind farm model and not specific to the Rampion site. The breakdown of value has been ascribed to the different categories and subsequent tiers. Therefore:

- 100% of procurement value is split between the eight categories
 - Three categories have no value assigned – Support Services and Operations and Maintenance and Project Monitoring. This is due to each category contributing an estimated 1% or less to the overall cost.
- Where a category has a percentage of total value this is then split between the tiers
 - Mainly tiers 1 and 2 but sometimes tier 3
- The value is sometimes split further within the tier
 - depending on the size of the tier and the value to be split

The following graphs highlight the split between the different categories and the further disaggregation between the individual categories for the value of procurement. Figure 7 shows how much of the total cost of a wind farm procurement is ascribed to each category.

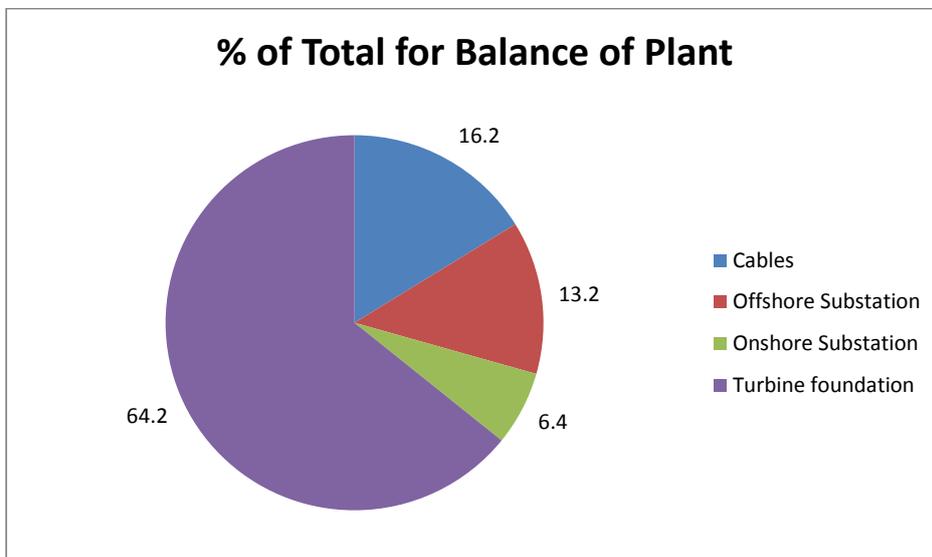
Figure 7 the % value of the total cost of procurement between the categories



The turbines are the highest value item in a wind farm supply chain with the balance of plant taking the next largest share. Although installation is a high value set of activities it is only a fifth of the total cost of developing a wind farm.

Balance of Plant is further split to include the main activities within tier 1. This is shown in figure 8.

Figure 8 the % value of the total cost of procurement for Balance of Plant



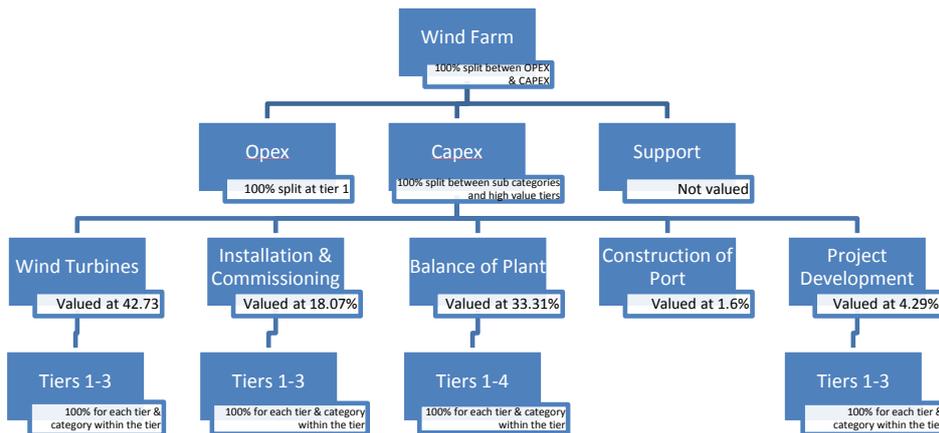
This highlights the high cost of supplying the turbine foundations for the production of electricity from a wind farm. Sussex can supply in many of the areas that have significant value. It is possible to see where the main tier one value is distributed between both the categories and the counties. Table 8 shows the actual value of the main categories followed by the percentage share for East and West Sussex at the tier 2 level and the total value that this represents as a whole. Both East and West Sussex have many of the lower tiers for Construction of Port which is valued at only 1.6%. To understand the total value of these activities in the local area would require deep drilling into the data which is not possible under this current remit. What can be provided is an estimation of the value at tier 2 for each county. Firstly the value allowance needs some explanation.

4.1.1 Data value disaggregation

As highlighted in the introduction to this section the value of procurement is only assigned where the value is more than 1% of the total for the category. Only 5 of the 8 categories have values assigned at the tier one level and only 4 of these categories have any values assigned beneath this tier. In effect, the value of the lower tiers is an estimation of the value of the sub category that is then a percentage of the total

value of the category which is a percentage of the total of the wind farm development. This can be highlighted as shown in figure 9.

Figure 9 Value distribution



Therefore an activity that is placed as a tier 2 (where there are 4 subcategories within the tier) will be the % value given at that level, of the sub category % total, of the % value of the tier 1 category, of the % value of the total wind farm. An example of this can be seen below:

Ornithological environmental survey is valued at 25.9% at tier 2. This is:

25.9% of 2.2% (the value of tier one) of 4.29% (the value of the category at the level of the total wind farm):

This gives a total value of the ornithological environmental survey as 0.024% of the total value of the wind farm.

If the total value of the wind farm is £2billion then the value of the ornithological environmental survey will be 0.024% of this: £480,000.

The next section will look at the tier 2 value of the Installation and Commissioning as this is an area that both East and West Sussex can supply to.

4.2 Value of Procurement for East and West Sussex

Project development has already commenced therefore looking at the possible income for this area is circumspect. The majority of Balance of Plant and Wind Turbines are sourced from outside the area. Construction of Port has a low value of 1.6% overall and does not disaggregate to the lower tiers. As the port has now been agreed as Newhaven, the majority of the value for this category will come to East Sussex.

Installation and Commissioning is a fairly high value category where the value has been disaggregated through the tiers. It is therefore possible to estimate a value to each county if the Tier one companies sourced their requirements from the local area.

Table 8 highlights the approximate value to both East and West Sussex in this category at tier 2.

Table 8 Value of procurement for Sussex

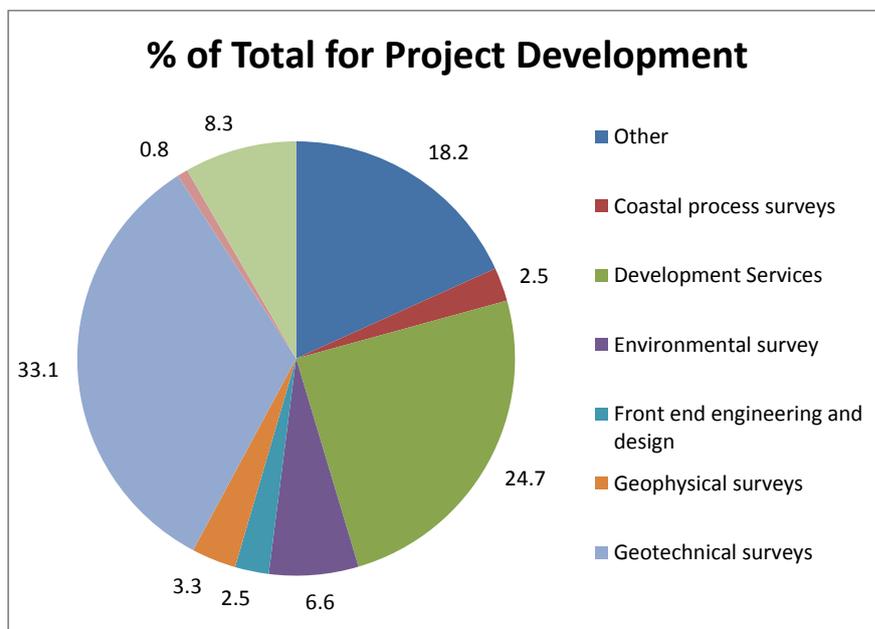
Category	Total value of category (%)	East Sussex		West Sussex	
		County share of value at Tier 2 (%)	Total County value of procurement at Tier 2(%)	County share of value at Tier 2 (%)	Total County value of procurement at Tier 2(%)
Installation and Commissioning	18%	24%	4.3%	22%	4%
Approx value based on a total £2b spend	£360Mil		£15mil		£14.5Mil

The table highlights the capacity of each county to provide to the tier one procurement companies at tier 2 within the Installation and Commissioning category. It is important to remember that there is duplication across the counties

therefore it is highly improbable that each county could attain this amount of procurement as the activity may not be distributed to more than one company – and if it was, the value shown is the total value and would therefore reduce to allow for this.

Project Development, although now mainly completed as the Rampion development is underway, is also a category that both East and West Sussex have ability in and may have secured procurement opportunities in. This category is mainly surveying and consultancy. Figure 8 identifies the split between the main activities for tier one in the Project Development category.

Figure 10 % split for the Project Development Category



It is important to note that a portion of this development work has already been commissioned and work is already underway to further the progress of the Rampion wind farm.

Services and support areas are not included in the value calculations. Due to the strength that East and West Sussex have shown in the support service area the ability to represent the true value of the supply chain opportunities for the counties

is somewhat limited. It is recommended that additional work is carried out on the value of the supply chain that includes size, distance and infrastructure needs.

4.3 Summary of Gap Analysis

There are a significant amount of companies in the Sussex and peripheral areas that can supply to the development of the Rampion wind farm. Where gaps have been located they have tended to be in the Wind Turbine and Installation sub-categories. A greater understanding of the gaps can be seen by analysing them by sector, tier, component size and relevant transport costs but to carry out this analysis it would be necessary to know the size of the item, the number that would be needed, the frequency that they would be purchased and the technical aspects of transport and logistics that would be necessary to provide them.

Where gaps have been identified it may be possible to identify companies that could undertake the work, but it would require a more detailed evaluation than was funded and that it might be better addressed using market dynamics with a procurement process focused on the local area.

5 Conclusion and Recommendations

The data collected has enabled a greater understanding of the support available within the area of the planned wind farm – Rampion. Analysis has shown that the local area can provide good support and, including the peripheral areas, allows for more than two thirds of the supply activities to be covered. The strengths of the region are in support services and support infrastructure and not in the supply of the turbines themselves. Estimates around the value of the supply chain show that there is a potential £15mil of procurement in the Installation and Commissioning category but duplication across the counties will mean it is highly unlikely this figure could be attained.

The research has shown there are many small companies that can and want to supply to a wind farm and this supports the findings of previous studies in the area and on the maritime sector as a whole. The majority of companies are eager to

adapt in order to support a wind farm development, although what adaptation would be needed varies between companies.

The database can be used to keep the industry informed of progress and should, if maintained, provide a resource for the development of the wind farm.

5.1 Recommendations

The database that has been created is considered unique in that it not only provides the contact details of relevant suppliers but also assigns them to specific tasks within the development of a wind farm. The database has been designed and maintained in such a way that it could be used to support a local wind farm portal. This portal could provide relevant news and information of the Rampion Wind Farm, progress reports, and legal and environmental advice for potential suppliers. The database could provide the directory necessary for companies, local authorities and E.ON to search and utilise for a variety of reasons including

- Searching for specific companies or components
- Developing internal supply chains
- Targeting specific industry sectors
- Identifying cluster potential

The mapping tool can be installed on the portal to support transport and logistics information and for ease of identifying location for collaborative activities.

It is recommended that any portal development includes the ability for companies to communicate through a forum to increase the potential for knowledge transfer, market development, and innovation. It is important that the database is maintained to reflect any changes in company location and ability to supply. This could be achieved by requesting companies 'take ownership' of their data entry and by allowing companies to register themselves into the database online.

Now E.ON are working within the development phase of the wind farm the database would provide the tool for locating potential suppliers. As development increases the amount of companies who are willing to adapt to supply the wind farm will increase and will request access and inclusion into the database. It is anticipated

that some of the gaps that are currently apparent will be filled as the project progresses. How these companies are able to access the database/portal and how the database is maintained is something that requires consideration.

It is possible that the development of a portal will increase the potential for cluster activities to take place. Once companies are aware of a useful resource such as a portal one of the initial barriers to clustering – that of awareness of where potential growth and development opportunities within a supply chain can be sought – will have been overcome. It is recommended that maintaining the database and portal would increase the potential for a natural cluster to develop.

It is further recommended that consideration is given to developing the understanding of the database potential through an in-depth study on how each component contributes towards the supply output. This would involve looking at the approximate cost of the product/service, the contribution to the overall cost of the wind farm, the size and amount of items as well as frequency of need and the transportation costs. This further develops the initial value of procurement that has been carried out in the report. A study of this sort could potentially reduce overall costs, increase local employability and impact on urban congestion during the development phase. The study would also highlight collaborative activities that could occur through the supply chain and develop knowledge transfer and innovation. The impact could also increase environmental and economic sustainability along the supply chain and within the local area.

5.2 Concluding Comments and Action Points

This report has outlined the development of a comprehensive database of companies that are able to supply to the Rampion Wind Farm. It has also highlighted where the strengths and weaknesses of the supply chain currently lie and recommended courses of action to increase the possibility of filling the gaps. Although completed, the actual population and evaluation of the database should be considered as on-going. The list is never going to be definitive and the

opportunities for increasing the local aspect of the supply chain and developing the sector will increase as the wind farm develops.

A high level of interest from potential suppliers has been generated by a sequence of workshops organised by Marine South East. These were held in Chichester, Shoreham and Newhaven over Q1 2012. A total of 165 companies attended these events, and 33 went on to attend specialist training on bid and tender preparation organised by Marine South East. During 2013, this engagement will be advanced further through a number of Meet-the-Buyer type events. These will provide an opportunity for potential suppliers to hear first-hand about specific contractor requirements and pre-qualification criteria.

Utilising and developing the value estimates in the database will increase the understanding of the impact of the supply chain on the local area in terms of employability, infrastructure, skills and policy development. It is highly recommended that consideration is given to this more in depth study.