



RWEGeneration UK: **The economic impact of the** **Pembroke Power Station**

Report for:

Pembroke Power Station
RWE Generation UK
Pembroke

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Research summary

This research was commissioned by RWE during February 2015. The aims of the research were to estimate the economic activity supported directly and indirectly in the Welsh economy by the RWE Pembroke Power Station.

The Power Station began commercial operations in the autumn of 2012, and is one of the most modern facilities in the UK for electricity generation. The combined cycle gas turbine (CCGT) can generate around 2.2 gigawatts of power in five separate turbine units.

The economic impacts were estimated using detailed spending information for RWE Pembroke. This included spending on its staff, as well as spending on other supplies and services, including subcontractors. A main task of the research was to identify the spending which was retained in Wales, which then supports economic activity in other sectors of the Welsh economy.

The detailed information on the sector and location of RWE Pembroke spending was incorporated into an economic model of the Welsh economy, through which the total economic impacts of the power station operations were estimated. These impacts arise as employment and economic activity is supported amongst RWE suppliers, and as a consequence of RWE employees spending their wages, some of which is within the region. However additional jobs and spending are supported further along the supply chain, in those firms which supply goods and services to RWE suppliers etc. The economic model enables the impacts of this spending, as it flows along the supply chain, to be estimated, together with the impacts associated with wage spending by RWE staff, or the employees of supplier companies in Wales.

The maintenance schedule of the power station varies from year to year so, for a more complete picture of the economic impact, the fluctuation in spend was examined. By averaging the economic activity an estimate of impacts can be derived. The table below shows that the Power Station directly employs an average of 97 full-time staff, and a further 130 FTE jobs are supported in other sectors of the Welsh economy, bringing total average employment supported to almost 230 FTES. Directly and indirectly, the Power Station supports an average of over £20m of gross value-added (GVA).

Average Annual Economic Impacts of RWE activity on the Welsh Economy, three year average.

	Employment (FTEs)	GVA (£m)
RWE direct	97	14.0
Impacts on Welsh economy sectors	130	6.3
Total	227	20.2¹

1. Total does not sum due to rounding.

A range of key local economic indicators point to a poorly performing Pembrokeshire economy, with relatively low wages and levels of GDP per head. The report suggests that without the activities of the Power Station, and other firms within the energy complex on the Haven waterway, economic prospects in Pembrokeshire (and Carmarthenshire) would be significantly decreased. The Power Station provides on-site skilled employment opportunities, and supports further local employment within subcontractor and supplier firms. It is also important to note that the impacts of the Power Station extend beyond the quantifiable estimates provided above. There are a number of ways in which RWE activities make a socio-economic contribution within Wales. Some of the important impacts relate to the Power Station's role within the community, and to knowledge and creativity, skills and training.



Introduction

This research was commissioned by RWE during February 2015. The research examines the economic activity that is supported throughout Wales by the operations of the RWE Pembroke power station and is set within the context of the Pembrokeshire economy.

The station began commercial operations in Autumn 2012 and is one of the most modern facilities in the UK for electricity generation. The combined cycle gas turbine (CCGT) can generate circa 2.2 gigawatts of power in five separate turbine units. RWE had operated a power station close to this site previously. However, while the new facility is somewhat similar in terms of installed capacity, it is far more efficient in terms of environmental emissions generated. The station's flexible design has been fully utilised with daily on/off and load following cycles - a key feature of the commercial operating regime of the plant. Further, the plant has provided a wide range of services to support the real time operation of the national grid. This mode of operation is expected to continue with grid services increasing in prominence as a consequence of marginal gas plant interacting with intermittent renewable energy supplies.

The rationale for the location of the power station was linked to the availability of gas supplies through the national grid pipeline which was completed in 2007-08. In addition, RWE were able to take advantage of existing high capacity overhead power lines and grid infrastructure that exists next to the site thereby minimising the adverse environmental impacts of development. The potential for a direct cooled power plant was also favourable. The total investment by RWE on the site was around £1bn and the construction process took just over three years. RWE have estimated that at peak construction activity that some 2,000 people were present on the site, and that an estimated 10,000 contractors worked 7.4m person hours to develop the facility.

This report provides an appraisal of the economic effects associated with the operations of the Pembroke power station. The objectives are outlined as follows:

- To estimate the direct local economic activity dependent on the operations and maintenance of the Pembroke power station.
- To establish the amount of economic activity that is indirectly associated with the operation of the power station, for example in regional suppliers and subcontractors that work with RWE at Pembroke.

RWE staff assisted the research by providing details of the current operations of the power station. This included details on the spending of the plant and information regarding the activity supported during maintenance inspections. RWE also provided information on the location of power station spending and the extent to which goods and services were purchased from Welsh firms as opposed to goods and services imported into the area. This information was analysed and used as an input to an economic model of the Welsh economy through which the total economic impacts of the power station operations were estimated. Details of the economic modelling approach are found in the Appendix to this report.



Pembroke Power Station in the local economy

The Pembroke Power Station, operated by RWE, forms one important part of the energy hub on the Haven waterway. This area hosts several of Wales' largest inward investing firms. While the energy hub in the Haven was initially founded on the presence of a number of large oil refineries, the nature of the hub has gradually become more diverse. Over many years the refineries developed local supply chains to meet their operational needs and new inward investors in the energy hub have undoubtedly benefited from this.

The energy hub was expanded by two large investments to process incoming liquefied natural gas (LNG). These were completed and received their first inputs of LNG in 2009. The new terminals were supported by a substantial investment in a reliable, high-pressure gas pipeline. The proximity of this pipeline was one of the factors that attracted RWE to develop its power station on the site of the former Pembroke Power Station. This suite of inward investments (and the development of the gas pipeline from Milford Haven to the main UK gas grid) together represented inward investment of around £3.0bn in the Welsh economy.¹ RWE's contribution to this inward investment was circa £1bn.

Previous research has also cited the significance of relatively high earnings and skills requirements in the local oil, gas processing and energy generation sector, and moreover, that a very large proportion of employees in the sector resided in Pembrokeshire. For example, in 2010-11 it was estimated that employment in the local oil, gas processing and power generation sector was around 1,173 people. These same firms also supported a further 2,064 FTEs in the Welsh economy, (through their purchasing activities, and support for households) and around £316m of Welsh gross value-added directly and indirectly.²

The economic activity directly and indirectly supported by firms such as RWE also needs to be placed in the context of the very specific socio-economic needs of the Pembrokeshire and West Wales economies. The findings later in this report reveal that RWE, together with other firms in the oil, gas processing and energy generation sector, support relatively high paid and highly skilled work. This relatively high quality employment is in much demand in Pembrokeshire.

A review of the headline economic and employment statistics (shown in Table 2.1) for Pembrokeshire reveals some areas of particular difficulty for the local economy. Of particular concern in Pembrokeshire are very low levels of gross value-added per capita, some 41% below average UK levels, and with much of this 'gap' associated with the changing industrial structure of the county, and growth in employment in sectors where productivity growth is limited.

A review of recent economic analyses of the area reveals an economy growing at a slower rate than the Welsh/UK economies over the recent past, and with a weaker growth performance associated with relatively larger numbers of employees in the non-market sector, and distribution, retail, hotels and catering. In summary there is a strong need for new inward investment into the Pembrokeshire economy, and a need to keep existing inward investment that contributes to the maintenance of economic activity both directly and indirectly.

¹ http://www.mhpa.co.uk/uploads/MHPA_Cardiff_Uni_Report.pdf

² See footnote 1



Table 2.1 Pembrokeshire economy: headlines

	Pembrokeshire
Population (2013)	123,300
Gross value-added (GVA) per head (basically value- added in terms of wages, salaries, and company profits) (UK=100) 2013/130	c.59.0 (GVA per head in Pembrokeshire est. at 41% below average UK level)
Employment and self-employment (2014)	55,900
Employee jobs	41,300
<i>Of which: manufacturing</i>	3,200
<i>energy and water</i>	500
Enterprises (0-50 employees) 2014	5,170
Enterprises (51+ employees) 2014	55
Economic inactivity (proportion of working age population not in employment or seeking work - 2014)	23.7%
Gross weekly earnings (residence, 2014)	£432.50 (83% of GB average)
Jobseekers Allowance claimants (March 2015)	2.6% of working population

Source: NOMISWEB and STATWales

One conclusion is that without the presence of the larger firms in the energy generation, oil and gas processing sector economic prospects in Pembrokeshire (and Carmarthenshire) would be significantly decreased. Taken together, the activities of these industries directly and indirectly support the majority of the manufacturing and energy related employment in the area.



RWE Pembroke: Current activities

This section of the report provides a brief review of the operations of the RWE power station as they relate to the support of economic and social activity in the locality and in the region.

RWE made an application for the construction of a direct cooled power station on the site in January 2005 after having already applied in 2004 for grid connection. A gas pipe-line planning application was then made in 2006. The necessary environmental impact assessments and environmental permit applications commenced co-incident with the planning applications. An Abstraction License for the direct cooling water was granted in December 2008 and Planning Consent for the station was granted in February 2009. Station construction activities commenced at the site shortly thereafter in April 2009. Gas pipe-line planning consent was granted in February 2009. Both of these major construction projects were successfully implemented, with national and international recognition from the construction industry. The Environmental Permit, necessary for the operation of the plant, was granted by the Environment Agency Wales in November 2011. Final commissioning and plant trials took place in late 2011 and early 2012 with a phased hand-over into full commercial operation by September 2012. The operations and maintenance team were recruited through 2010, training and operational readiness activities were completed in 2011 to support the commissioning and operational trials of the plant.

The RWE Pembroke plant currently (2014-15) employs 97 full time equivalent staff. Additional to this is employment connected to scheduled plant maintenance and inspection outages. The scheduled outages for the Pembroke Power Station are classified as A, B, and C inspections. The 'C' inspections occur every four years, and with 2 'A' and 1 'B' inspections in between. 2015 is a C inspection year which means that there is an estimated additional average of 150 subcontract staff on site per day over an eight month period, together with additional RWE staff. A and B inspections typically involve an average of 75 people over a period of 60 days. Clearly this strong variation in annual levels of activity makes it quite

difficult to generalise on an average economic impact over any given period.

The economic activity supported in Pembrokeshire and Wales from RWE operations comes largely through power station spending on local goods and services and through payments to households. The total payroll costs associated with 97 permanent employees was around £6.4m in 2014.

In large measure wages and salaries paid by RWE are to households that are local. All of the core staff at the power station live in either Pembrokeshire or Carmarthenshire. Compared to average earnings in Pembrokeshire (and Carmarthenshire) pay levels at RWE are relatively high. Estimated salaries (with bonuses) average around £47,500 (or over £900 per week and around twice the Pembrokeshire average in 2014, see Table 2.1). A proportion of these monies are spent in the local economy supporting further economic activity.

Economic activity is also supported as RWE purchases goods and services in the Welsh economy. For example the spending of RWE supports economic opportunities in both local and Welsh suppliers. Some of these suppliers could be local engineering contracts etc. Furthermore the employees of the businesses supported by RWE themselves spend money in the local economy that supports further regional economic output and jobs. These types of effects through the supply chain and household sector are termed indirect and induced effects respectively.

The magnitude of RWE indirect effects is therefore largely determined by the extent to which purchases of goods and services are within in the Welsh economy as opposed to outside of Wales. Similar arguments apply to the employees of RWE. This analysis requires care. For example, RWE employees largely live in Pembrokeshire and Carmarthenshire. However, an employee may spend within local shops and on local services and products but the majority of those products will have been made outside of the locality. In this case the retail 'margin' would be a local spend whereas the spending relating to the product itself would 'leak' out to the rest of the UK or overseas.



The impacts of RWE activity wage in the regional economy are constrained by the fact that only selected goods and services can be bought locally, and in many cases with little prospect of import substitution.

In summary the approach taken to understand the economic activity supported by RWE in Wales is summarised in Figure 3.1.

Figure 3.1 Approach to Understand Economic Effects associated with RWE Pembroke

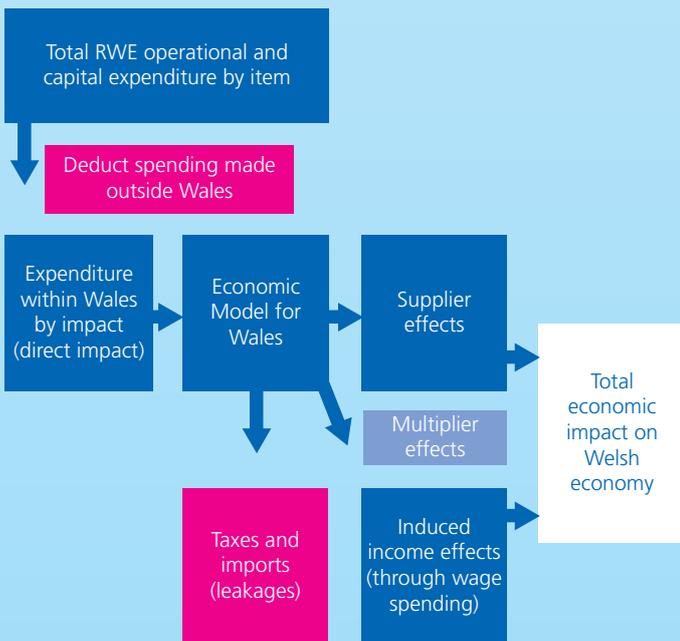


Table 3.2 shows RWE spending on subcontractors and suppliers was almost £29m in 2014. The table also shows how this spending is distributed by Welsh industrial sector. Whilst spending is distributed to many sectors of the Welsh economy, most of the regional spending is in the metals, machinery and industrial equipment sectors and business services. Together these broad sectors account for almost 80% of Welsh supplier spending.

Table 3.2: RWE spending on subcontractors and suppliers, 2014

	£000
Total spending on subcontractors and suppliers	28,963
<i>Of which in Wales</i>	
Metals, Machinery, Industrial electrical equipment	3,649
Other Manufacturing	379
Energy and Construction	832
Distribution, Retail, Hotels, Catering	191
Business Services	1,018
Public sector and other sectors of the economy	69
Total Wales	6,138
% Wales	21

Total Welsh supplier and subcontractor spending was just over £6m, and analysis of purchase information shows that this spending is in over 100 separate firms and organisations.

Table 3.3 includes the Welsh total from Table 3.2, (although this has been adjusted slightly to just under £6m for use within the economic modelling framework). The Table also includes other items of operational plus regular capital expenditures, such as RWE direct wage costs, which were over £6m, and payments of business rates, which were almost £8m in 2014.



Non-domestic business rates are collected by Pembrokeshire County Council and sent to the Welsh Government in Cardiff. The Welsh unitary authorities are then reallocated monies based loosely on their population. It is estimated that Pembrokeshire collects around £48 million a year in non-domestic rates, of which £38 million is reallocated back to the area on a population basis. In this context rates paid by RWE make up a significant share of the monies that are remitted to Cardiff, and then indirectly support the monies that come back to support local services and jobs. Business rates are included within GVA calculations as a tax on production, see later.

The final row of Table 3.3 shows 'other spending', of almost £38m, bringing total identified spending to almost £58m. This 'other spending' includes grid connection charges and payments to subcontractors and suppliers outside of Wales and the UK.

Table 3.3: RWE Spending - Operational spending and routine/regular capital expenditure¹ 2014

	£000
Spending in Wales on Subcontractors and Suppliers	5,996
Direct Wage Costs	6,361
Rates	7,776
Other spending (including grid charges and subcontractors and suppliers outside Wales)	37,809
Total	57,942

Tables 3.2 and 3.3 show significant sums of money entering the Welsh economy. The initial RWE spending will however support additional economic activity further along the supply chains, and as a result of wage spending, either by RWE direct employees, or through the wage spending of suppliers and subcontractors down the supply chain. These further indirect and induced economic impacts have been estimated using an economic model of the Welsh economy, and the total effects of this spending are shown in Table 3.4.

Table 3.4 shows the total impacts on other sectors of the Welsh economy of over £12m as a result of spending on subcontractors and suppliers in Wales, and spending on wages. Whilst total direct wage costs are over £6m this includes employers costs, such that only a proportion of this total is received by employees as gross wages. Of this, a further proportion becomes disposable income that could then be spent on goods and services, some of which will be on goods and services produced outside Wales.

The largest total impact is within the metals, machinery and industrial electrical equipment sectors of the economy. Table 3.2 showed this to also be the highest direct spend sector, and indirect and induced impacts bring this total to over £4m in Table 3.4. Distribution, retail etc. accounted for a relatively small share of direct RWE spend in Table 3.2, however this impact increases significantly in Table 3.4. This is largely due to the induced-income effects associated with wage spending by direct or indirect employees.

Table 3.4: The impacts of RWE on Welsh economy sectors, 2014

Impacts on Welsh economy sectors	£m
Metals, Machinery, Industrial electrical equipment	4.1
Other Manufacturing	1.0
Energy and Construction	1.7
Distribution, Retail, Hotels, Catering	1.3
Business Services	3.4
Public sector and other sectors of the economy	0.5
Total¹	12.1

¹ Total does not sum due to rounding



Table 3.5 translates the impacts in Table 3.4 into employment and GVA supported in other sectors of the economy. As already discussed direct employment is almost 100 FTEs. However due to the significant sums of money spent with local suppliers and subcontractors, a further 112 FTEs are estimated to be supported in other sectors of the economy, bringing total employment supported to over 200 FTEs. Each direct RWE FTE job therefore supports a further indirect job in the Welsh economy.

The final column of Table 3.5 provides an estimate of GVA supported by RWE. In addition to RWE direct GVA of £14.1m (here direct wage costs plus business rates³), an additional £5.4m of GVA is supported in the Welsh economy.

Table 3.5: Employment and GVA Impacts of RWE activity on the Welsh Economy, 2014

	Employment (FTEs)	GVA (£m)
RWE direct	97	14.0
<i>Impacts on Welsh economy sectors</i>		
Metals, Machinery, Industrial electrical equipment	28	1.4
Other Manufacturing	7	0.3
Energy and Construction	13	0.5
Distribution, Retail, Hotels, Catering	25	0.7
Business Services	31	2.2
Public sector and other sectors of the economy	8	0.3
Sub total	112	5.4
Total	209	19.5

As already noted, 2015 is a 'C' inspection year. During this year there will be a significant increase in economic activity in and around the power station.

Table 3.6 shows estimates for total subcontractor and supplier spend during 2015 of around £60m during the year (compared to total spending of around £29m in 2014, see Table 3.2), with Welsh spending in 2015 of almost £11m (compared with £6m in 2014). The percentage retained locally is slightly lower during the 'C' inspection period, as a slightly higher percentage of maintenance service contract spending is due to the import of high value components.

Table 3.6: RWE spending on subcontractors and suppliers, 2015

Total spending on subcontractors and suppliers	60,189
Total Wales	10,842
% Wales	18

As in 2014, RWE incurs additional spending in 2015, relating to direct wages, grid connection charges and rates. Adding these items brings total identified spending to almost £87m.

Table 3.7 shows how this additional local spending will support further impacts on the Welsh economy during 2015. Comparing the results in Table 3.7 to those in Table 3.5, shows that an estimated additional 54 Welsh FTEs are supported in 2015 compared with 2014, and an additional £2.2m of gross value-added is supported in 2015.

³ Business rates are a tax on production, and included within GVA. See <http://www.ons.gov.uk/ons/rel/regional-analysis/measuring-the-economic-impact-of-an-intervention-or-investment/measuring-the-economic-impact-of-an-intervention-or-investment/index.html>



Table 3.7: Economic Impacts of RWE activity on the Welsh Economy, 2015

	Employment (FTEs)	GVA (£m)
RWE direct	97	13.7
<i>Impacts on Welsh economy sectors¹</i>	166	18.0
Total	263	21.7

1. The spending or output impact related to the employment and GVA supported is £18.7m. This compares with £12.1m in 2014.

To estimate average economic activity supported by the Power Station, one approach is to average the results over the different inspection cycles. From discussion with RWE staff, it was established that whilst some different activities take place during 'A' and 'B' inspection years, that the level and direction of expenditure would be broadly similar. The main difference is with the 'C' inspection period, as has been discussed above. By assuming that an 'A' period is equal to a 'B' period in terms of economic impact, the average impacts over a three yearly cycle can be estimated, and these are shown in Table 3.8.

In summary, and of particular interest here, is the role of RWE spending in supporting additional employment opportunities in the regional economy, and with much of this linked to the spending of the firm on regionally produced goods and services.

Table 3.8: Average Annual Economic Impacts of RWE activity on the Welsh Economy, three year average

	Employment (FTEs)	GVA (£m)
RWE direct	97	14.0
<i>Impacts on Welsh economy sectors¹</i>	130	6.3
Total	227	20.2²

1. The spending or output impact related to the employment and GVA supported is £18.7m.

2. Total does not sum due to rounding.



4. The Wider Socio-economic and Cultural Impacts of the RWE Power Station

Previous sections of this report have identified significant economic impacts associated with RWE activity. Whilst these impacts are certainly important for the local and regional economy, a focus on quantifiable impacts can neglect other equally important impacts associated with the operations of major firms. Indeed these 'harder to quantify' benefits may assume a greater importance when the direct operations of an industry are relatively capital intensive and may provide fewer direct employment opportunities. The larger multinational firms in an area can often lever greater socio-economic and community impacts because of their greater experience in terms of corporate social responsibility, larger resources, and their ability to draw from valuable experience elsewhere.

Table 4.1 Pembroke Power Station: Framework of Economic, Social and Cultural Benefits

Benefits/Services	Scale of benefits
1 Economic (direct) <ul style="list-style-type: none"> • Safeguarding of specialist suppliers/subcontractors in locality • Employment opportunities 	Local, regional
2 Economic (indirect) <ul style="list-style-type: none"> • Improving location competitiveness of Pembrokeshire • Role in generating agglomeration benefits • Impact on property and housing prices • Infrastructure support to local clusters/industries 	Local, regional
3 Socio-Community <ul style="list-style-type: none"> • Provision of new community space • Improving quality of life for residents • Improving sense of place, and pride in place • Role in developing social cohesion/inclusion 	Local
4 Knowledge and creativity <ul style="list-style-type: none"> • Learning and support pre-school and primary • Learning resource for schools/national curriculum links • Learning resource and support for FE/HE • Learning resource and support for specialists • Learning and support for organisations and societies 	Local
5 Skills and training <ul style="list-style-type: none"> • Role in specialist training and skills development 	Local
6 Networks, institutions & partnerships <ul style="list-style-type: none"> • Role in strengthening socio-economic partnerships • Being an actor in socio economic partnerships 	Local



Source MHPA

Table 4.1 provides a structure through which to understand the wider impacts that might be associated with the presence of large industrial firms. The discussion in section 3 of the report was largely with reference to direct economic and 'selected' indirect economic effects. In what follows the framework of Table 4.1 is used to explore some of the wider socio-economic and community impacts of RWE operations (additional on those discussed in section 3), and to provide examples of different types of effects.

Economic indirect effects: The presence of large and prestigious inward investments can have a role in promoting the competitiveness of a region and a locality. In this regard RWE should be seen as part of the energy complex on the haven waterway embracing the operations of Dragon LNG, National Grid, the Port of Milford Haven, Murco (Puma Energy), SemLogistics, South Hook LNG and Valero (Figure 4.1). The critical mass and joint demands provided by these firms not only supports a local agglomeration of supply and subcontractor service activity, and related skills, but also represents a cluster which defines the area, and potentially provides a lever for further inward investment into Pembrokeshire. Were it not for this critical mass of activity it is unlikely that demand thresholds for suppliers and subcontractors would be met, such that they could relocate and serve the West Wales industries from elsewhere. The presence of this energy cluster has an important advertisement effect for Pembrokeshire as an industrial location.

Figure 4.1 The Energy Complex at Milford Haven and Pembroke

Similarly, the cluster of which RWE forms an important part undoubtedly has a role in strengthening local (Pembrokeshire and Carmarthenshire) commercial and domestic property markets. The loss of opportunities within the cluster could create downward pressure in property markets.

Socio-community effects: The Socio-community effects include factors such as provision and support of new community space, industries working to improve the quality of life of residents, improving a local sense of place and a role of developing local social cohesion. This embraces part of the corporate social responsibility umbrella.





RWE at Pembroke has shown itself to be a responsible part of the community and has sought, since operations started in 2012, to actively contribute to its local community. This has been achieved through various mechanisms, for example:

- Local Liaison Committee - this is a committee made up of local town and county councillors, representatives from regulatory bodies and, of course, RWE staff. The committee engages with local residents on issues connected with operations and to inform local communities of developments and opportunities at Pembroke Power Station and beyond.
- Support of local events such as the county show, town shows, community events, concerts, local awards ceremonies, local theatre productions and events designed to attract tourism.
- A Community Fund is operated to support local grass-roots organisations by means of a donation. Applications are considered throughout the year and donations are made to a wide variety of organisations from sports clubs to mother and toddler groups.
- Election of a Station Charity - Annually, the station team selects a local charity by means of a vote. Fund raising activities are then focussed on this selected charity for the year.
- Corporate charity - RWE also has a corporate charity which is supported on a national basis.

Pembroke Power Station hosts an events to support the corporate charity.

- Site Tours - The station has hosted a number of tours for both educational and community purposes. Groups hosted consist of University students and local community organisations. The station also works with a local charity to provide educational tour opportunities for school groups.
- Assisting local charities to raise their profiles by providing platforms for them to engage with the public. E.g. exhibition space at the county show.
- Support of village halls and other community spaces. The station hosts leadership meetings and staff events in village halls and other such spaces, making a donation each time for its use. Many local village halls have also benefitted from successful applications to the power station's community fund.
- Community Space - Greenhill Farm which is owned by RWE, neighbouring the power station, has been leased to a local charitable organisation for provision of community space. Plans are in the very early stages but there are high hopes for a variety of community opportunities at the site.
- Match funding for sponsored events - the station is very supportive of employees' participation in sponsored events. There is match funding available for funds raised and, the station will sponsor registration fees for an event in order to encourage employees to get involved.



- Volunteering - many employees at the power station spend time volunteering with numerous local organisations from sports clubs to animal welfare. The station encourages this and ensures that employees are supported in their endeavours.

Knowledge and creativity: While inward investment is primarily sought as a basis for new employment and local incomes it also has a role in supporting and increasing skill and knowledge levels. This is often thought of in terms of knowledge spillover to suppliers and subcontractors, and effects on competitors. The RWE facility is state of the art in terms of CCGT technology and an important learning resource for the industry nationally and internationally.

RWE has welcomed visits to the facility from schools, colleges and community groups. This provides not just an educational resource in terms of a modern CCGT system, but also provides learning into how the environmental effects of electricity production are managed and minimised.

Skills and training: The strict operational and regulatory standards that are part and parcel of everyday power station life mean that RWE invests heavily in the vocational training of its staffs. In 2014-15 the power station supported 7 power trainee technicians and 4 industrial intern students. In addition, RWE encourages lifelong learning by sponsoring further education for their staff. Moreover, the health and safety and technical skill requirements of RWE at Pembroke also means that

there is indirect pressure on suppliers and subcontractors to invest in training. This then creates demand on local further education colleges. As previously discussed, the demands of the cluster of firms in the oil, gas processing and energy sector on the haven waterway creates strong demands for training and education in local institutions such as Pembrokeshire College. Direct and indirect demands placed by the wider sector supported the development of £4.2 million engineering facility at Pembrokeshire College with courses offered in engineering, engineering construction, electrical engineering and with part of the campus dedicated to an energy centre specialising renewable technologies.

Local economic networks: As a major industrial player in the energy complex on the Haven waterway, RWE has played a role in representing the interests of the wider sector and is an active member of the Haven Energy Forum. The firm also plays an active role in other local and regional industry groups helping the voice of Pembrokeshire to be heard in different places.

In summary, the effects discussed in this section are difficult to quantify, but demonstrate the role of RWE in supporting the welfare of local people, and supporting local social and community networks.



Conclusions

The aims of this report were to estimate the economic activity supported directly and indirectly by the Pembroke Power Station.

Economic activity at the Power Station can vary significantly according to the scheduled maintenance. Outages are classified as A, B, and C inspections. The 'C' inspections occur every four years, and with 2 'A' and 1 'B' inspections in between. The main analysis in this report relates to 2014, which is an 'A' inspection year. Detailed purchase ledger information was provided by RWE to assist in the estimation of local purchasing with suppliers and subcontractors. The impacts on the local economy which are linked to local spending were estimated using an economic model of the Welsh economy.

In 2014 RWE spent almost £29m on subcontractors and suppliers. Of this total, some £6m (21%) was with around 100 separate subcontractor firms or suppliers in Wales.

In addition to spending with local subcontractors and suppliers, RWE operational expenditure included £6.4m of wage costs relating to its 97 direct employees, and payments of business rates of almost £8m.

This report estimates that in 2014, RWE activity supported a total of over 200 FTEs in Wales (of which 97 were direct RWE staff, and more than 100 were additional jobs supported through supply chain spending), and more than £19m of gross value-added.

In a similar way, estimates of direct and indirect economic impacts were provided for 2015. 2015 is a 'C' inspection year, which involves a larger scale of activity. The analysis in this report suggests that during 2015, the Power Station will support more than 260 FTE jobs in total, and almost £22m of gross value-added.

By assuming that 'A' and 'B' inspections support similar levels of economic activity, and accounting for the increase in scale of a 'C' inspection, an average annual estimate can be derived. Using this assumption, the Power Station will, directly and indirectly, support over 220 FTEs, and over £20m of gross value-added.

The review of the local Pembrokeshire economy notes that key overall indicators point to a poorly performing economy, with relatively low wages and levels of GDP per head. The report however suggests that without the activities of the Power Station, and other firms within the energy complex at Milford Haven, economic prospects in Pembrokeshire (and Carmarthenshire) would be significantly decreased. The Power Station provides on-site skilled employment opportunities and supports further local employment within subcontractor and supplier firms.

The impacts of the Power Station however extend beyond the quantifiable estimates provided above. The final section of the report has provided a review of the socio-economic contribution of RWE activities. Some of the important impacts noted relate to the Power Station's role within the community, and to knowledge and creativity, skills and training.



Appendix: Welsh Input-Output Tables

The analysis of indirect and induced effects in this report has made use of economic data contained within the Welsh Input-Output Tables. The Welsh Input-output project has been in progress since 1993. Tables have been published for each of the years 1994 to 1996, and for 2000, 2003 and 2007. The 2003 Tables were supported by the Welsh Development Agency and Cardiff Business School, and their development and construction undertaken by members of the Welsh Economy Research Unit at Cardiff Business School. The construction of the 2007 tables was supported by Environment Agency Wales.

The Welsh Input-Output tables reveal the different industries that make up the Welsh economy, and show how they fit together in terms of their sales and purchasing patterns. Each industry in Wales relies to a greater or lesser extent on local, regional, national and then international markets. Each industry also uses labour inputs, and imports goods and services. The Input-Output tables then allow comparisons between industries in terms of their pattern of resource use, and the sectoral and geographical destinations of their outputs, including the level of export activity.

The Tables can be used to identify sectors which are important to the local economy by virtue of their spending, employment, exports, or local linkages and consequent economic activity supported directly and indirectly in the Welsh economy. Then the Input-Output framework should also be seen as a detailed statement of account, with tables allowing reconciliation of the supply of, and demand for, goods and services in Wales.