Rampion 2 Wind Farm

Category 6: Environmental Statement

Volume 4, Appendix 17.2: Socio-economics cost and sourcing report

Date: August 2023

Revision A

Document Reference: 6.4.17.2
Pursuant to: APFP Regulation 5 (2) (a)
Ecodoc number: 004866497-01

Document revisions

Revision	Date	Status/reason for issue	Author	Checked by	Approved by
A	04/08/2023	Final for DCO Application	Hatch	RED	RED

Contents

1. Cost and sourcing

1.1.1 This Appendix presents preparatory work on the socio-economics assessment. The appendix outlines the approach to cost and sourcing which was used as a basis for the assessment of Rampion 2's impact on jobs and gross value added (GVA).

1.2 Introduction

1.2.1 At this stage, the total generation capacity of Rampion 2 is yet to be formally determined. This will depend on the number of turbines installed, their generation capacity as well as potential future improvements to WTG efficiency. However, for the purpose of this assessment it is estimated that Rampion 2 will have an overall generation capacity of 1,200 megawatts (MW). This capacity has been used to determine a number of assumptions which are used in the estimation of the economic impacts of Rampion 2. The assessment draws on published information to reach a best estimate of the construction and operation and maintenance costs rather than relying on this information from the Applicant Rampion Extension Development Limited (henceforth the Applicant or RED).

1.2.2 The assessment of economic impacts for Rampion 2 is an assessment of 'base-case scenario' economic impacts – in line with the approach for all parameters set in the Environmental Impact Assessment (EIA). The assessment provides an indication of base-case expectations with regards to economic benefits and worse case assumptions on dis-benefits.

1.2.3 The assessment of economic impacts for Rampion 2 relies on information for development, construction and operation and maintenance phases for the following:

- costs: how much different elements of the wind farm and associated balance of plant assets will cost to construct and operate; and
- sourcing: what proportion of the supply chain expenditure will be retained in each of the impact areas identified for the development, construction and operational phases (for instance, Sussex – defined as West Sussex, East Sussex and the Brighton and Hove Unity Authority area, and nationally).

1.2.4 The assessment also considers the economic impacts of Rampion 2's decommissioning phase. However, given that this is over 30-years into the future from commissioning and there is very little experience nationally (apart from the decommissioning of UK oil and gas rigs), the assessment of the decommissioning phase is primarily qualitative. It is therefore assumed that the decommissioning activities of Rampion 2 will be similar to, but no worse than the impacts identified during its construction phase.

1.2.5 It should be noted that a limitation of the methodology is that the cost estimates used to inform the assumptions were developed prior to the current global economic challenges and Covid-19 pandemic. The method uses conservative

assumptions where these uncertainties around the impacts of these major economic shocks exist.

1.2.6 This report sets out the methodology for estimating each of the cost and sourcing assumptions used for the economic assessment of Rampion 2.

1.3 Construction and operation and maintenance costs

1.3.1 Construction and operation and maintenance expenditure incurred by Rampion 2 is the key driver of economic impacts generated by the Proposed Development. At this stage detailed cost estimates are commercially sensitive. Given this, the approach is to estimate the development and operating costs on the basis of the most robust and up to date industry data which is publicly available.

1.3.2 A key source of information on development and operation and maintenance costs is The Crown Estate's (TCE) *Guide to an Offshore Wind Farm* (TCE, 2019). This provides a reasonably comprehensive breakdown in cost estimates by type of expenditure for wind farms due to be built out up to 2025. The Guide also includes detailed information on operations, maintenance, service activities, decommissioning, floating wind and emerging technologies in data, digital and robotics and autonomous systems. The report takes account of bid prices seen in UK Government Contract for Difference (CfD) auctions to ensure that the cost estimates reflect the evidence on price changes in the industry.

1.3.3 A number of studies have also considered the evidence for recent and future cost reduction potential. This evidence includes TCE's *Wind Cost Reduction Pathways Study* (TCE, 2012) and the *Cost Reduction Monitoring Framework* (Offshore Renewable Energy Catapult, 2016) in order to approximate the change over the period.

1.3.4 The assessment will use the evidence from TCE's latest study to provide cost estimates for each phase of Rampion 2 on a per MW basis. It should be noted that cost reductions have not been modelled during each phase of construction as these are assumed to be average costs across the build period and operating lifespan of wind farms.

Construction costs

1.3.5 Construction cost estimates are drawn from TCE's *Guide to an Offshore Windfarm* (TCE, 2019), and are set out in **Table 1-1** below. The total estimated cost per MW is £2.37 million.

1.3.6 TCE's report is based on an export cable 60 kilometre (km) in length (59km assumed to be offshore, and 1km onshore). The offshore export cable corridor for Rampion 2 is expected to be approximately 19km (for instance, between the offshore substation and landfall). The onshore corridor will be approximately 38.8km in length. This comprises 36.5km from landfall to Oakendene and 2.25km from Oakendene to Bolney.. Therefore, the total length of the export cable (for instance, both onshore and offshore) will equate to approximately 55.8km.

1.3.7 To account for the variance in export cable length, and proportion that is located onshore/ offshore, construction costs have been adjusted for balance of plant and

installation and commissioning depending on export cable length. The updated construction cost estimates (on a Great British Pound per Megawatt (£/ MW) basis) for the Rampion 2 are set out in **Table 1-1**. On this basis, the adjusted construction cost (for instance, £/ MW) for Rampion 2 is estimated at £2.40 million per MW (2019-pricing).

Table 1-1 Estimated build costs for the construction phase (2019-pricing)

	TCE benchmarks (£/ MW)	Rampion 2 (£/MW)
1. Development and project management	£120,000	£120,000
2. Wind turbine	£1,000,000	£1,000,000
3. Balance of plant	£600,000	£595,000
4. Installation and commissioning.	£650,000	£689,000
Total	£2,370,000	£2,402,000

Source: TCE (2019).Cost estimates for Rampion 2 are generated by Hatch based on TCE's (2019) benchmarks.

Please note: figures may not sum due to rounding; the individual component figures provided within the guide do not sum to category totals and, as such, component proportions have been applied to category totals to ensure consistency

1.3.8 With an estimated capacity of up to 1,200MW and an export cable length of approximately 59km, these high level 2019 industry benchmarks would infer an indicative construction cost of £2.88 billion (2019-pricing). However, it is important to note that the costs of offshore wind deployment saw a large period of falling costs. In the long run this trend is expected to continue, as a result of increased competition for CfD electricity tariffs, supply chain economies of scale and further technology innovation. However recent increases in costs have been seen due to supply chain challenges and high levels of inflation in the construction industry.

1.4 Operation and maintenance costs

1.4.1 Past experience suggests that annual operation and maintenance costs for offshore wind farms range from approximately 1.5 to 3 percent of total construction costs (Wind Measurements International (WMI), n.d.). The assessment of the operation and maintenance phase is based on the least beneficial outcome, and therefore an annual cost amounting to 1.5 percent of initial investment is used. Furthermore, noting the above caveats (regarding the construction costs) this would amount to approximately £43 million per annum for Rampion 2.

1.4.2 During the operation and maintenance phase, costs are split into two elements:

- direct employment costs (for instance, those employed directly by the wind farm); and
- supply chain expenditure.

1.4.3 To estimate the direct jobs, previous experience has been drawn on from the offshore wind industry and current operation and maintenance employment at Rampion 1 Offshore Wind Farm. It is estimated that an offshore wind farm, the size of Rampion 2 (for instance, 1,200MW), will require between 40 to 50 full-time equivalent (FTE) posts across the wind farm, allowing for some degree of efficiency across the operation of Rampion 1 and 2. For the purposes of the assessment, a mid-point of 45 FTE operation and maintenance jobs is assumed.

1.4.4 Salary estimates are then based on earnings data from the Office of National Statistics (ONS) and past consultation with developers on the likely employment costs associated with these types of direct jobs. Non-salary employment related costs have been excluded as these are assumed to be included in the other operation and maintenance costs presented below. The estimated average gross annual employment costs for each post is £55,000, giving a total annual employment cost of approximately £2.5 million for Rampion 2.

1.4.5 The estimates for other operation and maintenance costs (for instance, supply chain expenditure) are estimated to be just under £41 million each year, or £33,800 per MW for Rampion 2. This has been split proportionately across the categories within the *Guide to an Offshore Wind Farm* (TCE, 2019) to provide an estimate of costs for individual elements of the supply chain expenditure as follows:

Table 1-2 Estimated annual supply chain cost for operation and maintenance, £/ MW

	Rampion 2 (£/ MW)
Operations*	£11,100
Maintenance and service	£22,700
Total	£33,800

Source: Calculations by Hatch, based on TCE (2019).
Please note: this excludes salary costs which are calculated separately, but includes the associated on-costs such as employers pension contributions and national insurance and health insurance.

1.5 Geographical sourcing and expenditure retention

1.5.1 Building on the estimate of costs for each element of Rampion 2, the next step is to estimate the level of expenditure within the UK and Sussex study areas respectively.

1.5.2 The retention of expenditure is the proportion of Rampion 2 expenditure that is likely to be spent with suppliers located in the study area and hence support jobs and gross value added (GVA) in the supply chain within the area.

1.5.3 The analysis which informs the sourcing assumptions draws on the following sources of evidence:

- Ex-Post Assessments. The amount of UK and local supply chain sourcing which occurred during construction of existing UK wind farms provides useful context for the development of sourcing assumptions. UK content analysis by RenewableUK (2017) is the most up to date study available which informed the development of scenarios; and
- an assessment of local and national supply chain strengths. The level and type of capacity that exists in the local and national business base and the presence of companies already trading in or with capability to diversify into the offshore wind sector are important considerations. The following sources have been used to identify the construction and operation and maintenance activities which could feasibly be carried out by companies in the UK and local economic development study areas:
  - the Business Register Employment Survey – this dataset provides a detailed sectoral breakdown of national and local employment. Concentrations of employment and sector strengths were identified using a location quotient (LQ) analysis; and
  - local supply chain intelligence – drawn from local sector studies (such as (BVG Associates, 2015, 2014) and various locally produced policy and strategy documents (including (Coast to Capital Local Enterprise Partnership (C2CLEP), 2018; South East Local Enterprise Partnerships (SELEP), 2014) and Hatch's' wider knowledge of the local economy.

Local and national supply chain strengths

1.5.4 Offshore wind and other energy development in the UK presents a significant opportunity for the local and national economy.

1.5.5 The UK is a market leader in offshore wind having the highest operational capacity globally. The *Industrial Strategy* (HM Government, 2017) has set clean growth at the heart of its four grand challenges. Since then, the offshore wind sector has also issued a Sector Deal (HM Government, 2018) together with the government, which helps the industry raise productivity and competitiveness of UK-based companies to ensure the UK continues to play a leading role as the global market grows in the decades to 2050.

1.5.6 At the local (for instance, Sussex) level, there are no Tier 1 major plant suppliers (for example manufacturers of wind turbines and foundations) and despite efforts on the original Rampion project there is not yet an established Sussex subcontractor supply chain cluster. This is due in part to the south coast having not been one of the UK epicentres for offshore wind development and investment to date (in contrast to areas such as the Northeast, Humber and East Anglia). It is estimated that currently there are in the order of 20 businesses directly engaged with the offshore wind supply chain, a number of which are local offices of much larger (often national/ international) players within the sector (RenewableUK, n.d.). That being said, a review of employment in local sectors relevant to the offshore wind supply chain indicates that there is considerable employment in these sectors.

Table 1-3 Employment (FTEs) in sectors related to offshore wind supply chain in Sussex

Sector	GB employment (FTEs)		Sussex Employment (FTEs)		
	Number (000s)	Percent	Number (000s)	Percent	Sussex LQ
Manufacturing	2,185	9%	37	6%	0.75
Construction	1,361	5%	33	6%	1.07
Land based transport	525	2%	10	2%	0.80
Civil Engineering	180	1%	4	1%	1.02
Energy Generation	128	1%	2	0%	0.82
Marine Transport	14	0%	0	0%	0.35

Source: ONS (2022).
*Please note: ONS data suggests that there are currently fewer than 50 FTE jobs in sea and coastal freight water transport, with the majority of jobs in transport services being in freight transport by road and support activities.

1.5.7 Sussex forms part of two local enterprise partnership (LEP) areas – the C2CLEP and the SELEP. Both LEPs identify offshore wind and a number of related sub-sectors (such as advanced manufacturing) as key for the recovery and growth of their respective local economies. Furthermore, both LEPs identify clean growth as a major objective over the coming years, along with skills provision, and increased productivity. This prioritisation is helping to direct investment towards these sectors, which will play some part in helping to develop the offshore wind supply chain in the longer term.

Establishing base case for UK content assumptions based on Ex-Post Assessments

1.5.8 The scale of offshore wind development in the UK over the last two decades means there are now a number of examples of built out wind farms. Although information on the precise contracting arrangements for individual developments can be commercially sensitive, there are a number of summary studies that draw together evidence from developments to estimate average levels of UK sourcing. Two useful examples of this are:

- the UK content of operating offshore wind farms (BVG Associates, 2015); and
- offshore Wind Industry Investment in the UK (RenewableUK, 2017).

1.5.9 BVG's analysis of ten windfarms built between 2009 and 2013 in the UK provides the following range at the development (DEVEX), construction (CAPEX), and operational (OPEX) phases are set out in **Table 1-4**.

Table 1-4 UK supply chain content in offshore wind farm developments (percent)

	Lower	Upper	Weighted Average
DEVEX	16	90	57
CAPEX	12	32	18
OPEX	64	82	73
Total	30	57	43

Source: BVG Associates (2015).

1.5.10 The RenewableUK (2017) report provides a range for UK content from eight more recent offshore wind farms in the UK for each of the categories listed above (**Table 1-5**).

Table 1-5 UK supply chain content in offshore wind farm developments (percent)

	Lower	Upper	Weighted Average
DEVEX	27	92	73
CAPEX	22	38	29
OPEX	52	89	75
Total	44	53	48

Source: RenewableUK (2017).

1.5.11 The change between the two reports shows an increase in total UK content of around 5 percent as well as lower variability between the upper and lower bounds. This is helpful in providing more confidence in the estimates used for sourcing assumptions.

1.5.12 The BVG Associates (2015) report also provides a breakdown of CAPEX by category of expenditure as set out in **Table 1-6**.

Table 1-6 UK supply chain content in CAPEX, 2015 (percent)

	UK Content
Project development	67
Installation and Commissioning	33
Balance of Plant	18
Turbines	3

Source: BVG Associates (2015).

Note: UK Content has been calculated by dividing the proportion of capex by the contribution to UK content from the BVG Associates report

1.5.13 TCE's research (2019) builds on the research undertaken by BVG (2015) and provides an update to UK content sourcing throughout a project lifecycle (including development, construction, operation and maintenance and decommissioning). The research suggests that for recent windfarms, the overall UK content is a little under half (or 48 percent) of undiscounted lifetime spend. The key contributions typically include:

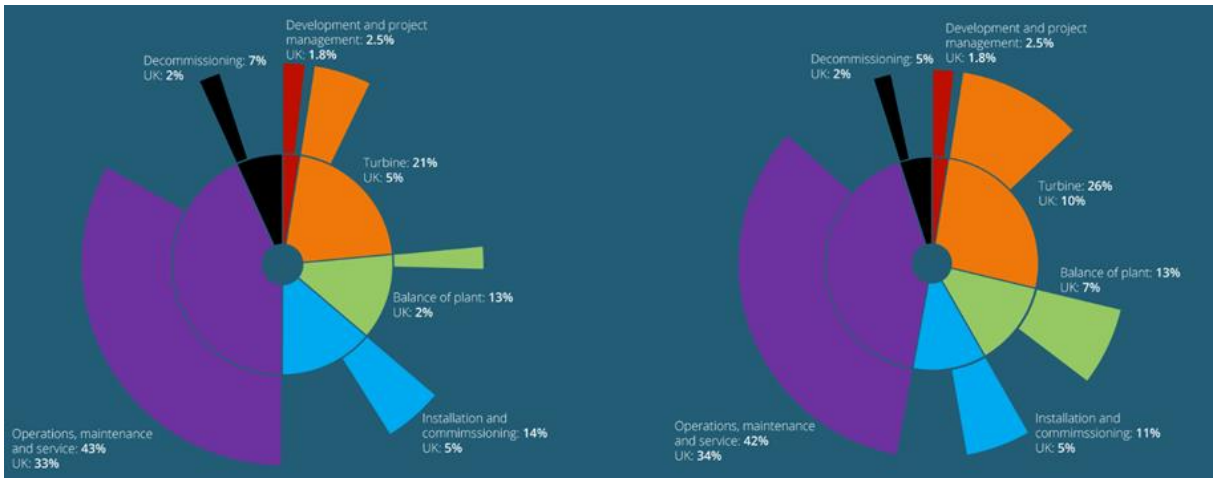
- operations, maintenance and service where much of the activity is close to the wind farm site;
- installation and commissioning where the UK has several leading marine contractors and equipment suppliers; and
- turbine-related expenditure, where most blades and some towers are supplied from the UK.

Anticipating future trends

1.5.14 As the EIA methodology seeks to establish a worst-case assessment (which in the case of socio-economics can be redefined as the least beneficial assessment), using current (for instance, available) industry averages (in terms of UK-based sourcing) for current projects, presents a reasonable conservative base case.

1.5.15 Nonetheless, it may be useful for stakeholders to be aware that the past trend of increased UK content over time is one that is likely to continue. The Offshore Wind Sector Deal (HM Government, 2018) commits the sector and Government to work to increase UK content up to 60 percent by 2030, including increases in the capital expenditure phase. This is represented in **Figure 1.1**.

Figure 1.1 UK Content for Recent Projects (left) and Aspiration for 2030 (right)



Source: TCE (2019).

1.5.16 Similar to the BVG Study (2015), TCE's (2019) research provides a breakdown of current UK content estimates by phase and sub-phase (for CAPEX spend) (**Table 1-7**).

Table 1-7 UK Supply Chain Content in CAPEX, 2019 (percent)

	UK Content
DEVEX	71
CAPEX	25
Turbines	24
Balance of plant	16
Installation and commissioning	36
OPEX	77
Decommissioning	2
Aggregate UK lifetime content	48

Source: TCE (2019).Note: UK Content has been calculated by dividing the proportion of CAPEX by the contribution to UK content

1.5.17 Based on the above, capturing a minimum 50 percent UK content for the project lifetime is being applied to represent the 'base case' scenario (for instance, a conservative assessment of the beneficial economic impacts of Rampion 2). The latest offshore wind industry assessment on UK content, published in 2017 reported UK offshore wind farms achieving 48 percent UK content (RenewableUK,

2017), which represents the starting for *The Guide to an Offshore Wind Farm* (TCE, 2019).

1.5.18 The offshore wind sector committed to increasing this to 50 percent UK content by the end of 2020. Under the least beneficial approach to socio-economics, it is assumed that UK content achieved for the Rampion 2 remains at 50 percent over the lifetime of the project.

1.5.19 It is worth noting that Rampion 2 will be working to achieve higher UK content than the base case used here for the purposes of the EIA. This is in line with target set out in the Offshore Wind Sector Deal struck with Government, which commits the offshore wind sector as a whole to reach 60 percent UK content by 2030.

Local sourcing

1.5.20 There is considerably less evidence on sourcing for local areas. This is in part because it is much more difficult to record. The variability in local supply chain strengths also means averages from different locations are less useful in providing a robust basis for sourcing assumptions for economic impact modelling.

Construction phase

1.5.21 The evidence above has been drawn together to develop the proposed sourcing assumptions. These use TCE's (2019) figures as a base, with adjustments to the individual components depending on the port scenario.

1.5.22 The base case scenario illustrates the likely scale of impact where ports in Sussex are not used extensively during construction. As a result of all major construction port functions being located outside of Sussex, the scope to capture supply chain expenditure locally is very limited due to the limited presence in non-related parts of the offshore wind construction supply chain. That said, the base case assumes that some installation/assembly/staging occurs in (at least) one UK port – in line with the targets set out in the Offshore Wind Sector Deal (HM Government, 2018).

1.5.23 Under the base case scenario use, it is assumed that port-related activity in Sussex would be minimal. The specific capabilities which exist locally would result in opportunities associated with the charter and operation of non-specialist vessels (for example, for crew transfer).

1.5.24 **Table 1-8** compares the assumed proportion of retained expenditure for Rampion 2 based on UK content from TCE (2019) and RenewableUK (2017).

1.5.25 This is equivalent to the retention of between £30.4 million of first round construction related expenditure within the Sussex economy, and £1.12 billion nationally (2019-pricing).

Table 1-8 Construction phase sourcing assumptions (percent)

	Sussex	Rest of UK
Base case scenario	1.1	38.8
TCE (2019)	39.9*	

Source: Hatch calculations, based on TCE (2019).

*Please note: Totals may not add up due to rounding.

1.5.26 **Table 1-9** sets out in more detail the total level of DEVEX and CAPEX captured within Sussex and the rest of the UK under the base case scenario outlined above.

Table 1-9 Overall DEVEX and CAPEX for Rampion 2 captured within Sussex, the rest of the UK and total UK by phase and sub-phase (£ million)

	Sussex	Rest of UK	Total UK
DEVEX	£7.4	£94.6	£102.1
CAPEX	£23.0	£1,024.8	£1,042.5
1) Turbines	£0.0	£445.4	£445.4
2) Balance of plant	£0.4	£291.1	£291.5
3) Installation and commissioning	£22.6	£288.3	£311.0
Total: DEVEX + CAPEX	£30.4	£1,119.4	£1,149.8

Source: Hatch calculations, based on TCE (2019).

Operation and maintenance phase

1.5.27 It is assumed that the operation and maintenance port will be located in Sussex and it is assumed that all direct labour will be based within the area.

1.5.28 It is likely that the existing facilities at Newhaven Port would be utilised (and expanded where necessary) as the base for operations management of Rampion 2, as this would yield synergies and enable effective coordination with the existing operations team on Rampion 1.

1.5.29 That being said, the possibility of a supplementary (in addition to Newhaven) satellite facility further west in Sussex has not been discounted. Whether this would be advantageous will depend on the eventual westward extent of the offshore wind farm and whether, for example, having crew boat(s) stationed to service the most westward turbines, with vessels from Newhaven servicing the central/eastern parts of the turbine array.

1.5.30 For the first round operation and maintenance supply chain expenditure the benchmarks are used from TCE (2019) as a starting point. This assumes that on average 77 percent of overall OPEX (including employee costs) is retained within the UK. It has been assumed that this is a reasonable level of UK sourcing for Rampion 2 and the sourcing is split 15 percent and 85 percent between Sussex and the rest of the UK respectively (or 11 percent and 65 percent of total annual operation and maintenance expenditure respectively).

1.5.31 On this basis £7.1 million in direct staff wages and first round supply chain expenditure would be retained within Sussex each year (2019-pricing).

Table 1-10 Operation and maintenance phase sourcing assumptions (percent)

	Sussex	Rest of UK
Direct Employment	100	0
Supply Chain	11	65
Total operation and maintenance	16	61

Source: Hatch calculations, based on TCE (2019).

1.5.32 **Table 1-11** sets out in more detail the total level of annual operation and maintenance expenditure (defined as direct annual employment and supply chain expenditure) within Sussex and the rest of the UK.

Table 1-11 Overall annual OPEX for Rampion 2 captured within Sussex and the rest of the UK by phase and sub-phase

	Sussex	Rest of UK	Total UK
OPEX	£7.1	£26.3	£33.4
Direct employment	£2.5	£0.0	£2.5
Supply chain expenditure	£4.6	£26.3	£30.9

Source: Hatch calculations, based on TCE (2019).

Total sourcing

1.5.33 The operational lifetime of the proposed development is expected to be around 30 years. Assuming an estimated capacity of 1,200 MW, and around 30-year operational lifespan for Rampion 2, it is estimated the overall share of the construction and lifetime operation and maintenance expenditure retained within the UK will add up to 50 percent, which is the equivalent to £2.28 billion nationally (2019-pricing).

1.5.34 At the Sussex level it is not possible to quantify the overall total lifetime expenditure retained (for instance, for construction, operations and decommissioning) due to limited experience nationally in the decommissioning of offshore wind farms. That being said, total construction and lifetime operations expenditure sourced from within Sussex is estimated to be around £243.8 million (2019-pricing).

Table 1-12 Overall indicative lifetime sourcing assumptions for Rampion 2 (percent)

	Sussex	Rest of UK	Total UK
Construction (incl. DEVEX)	1.1	38.8	40
Operations	16	61	78
Decommissioning*	n/a	n/a	30
Total Lifetime (incl. Decommissioning)	n/a	n/a	50
Total Lifetime (excl. Decommissioning)	6	46	52

Source: Hatch calculations, based on TCE (2019).

*Please note: This is based on benchmarks for the Decommissioning phase presented in TCE (2019), where decommissioning costs represent 7 percent of total lifetime costs, of which 2 percent are to be retained by UK businesses. Given the limited number of projects undergoing decommissioning, it is not possible to generate estimates for supply chain retention at the Sussex level. Within the Environmental Statement (ES), the decommissioning phase is assessed qualitatively.

Table 1-13 Overall indicative lifetime Sourcing Assumptions for Rampion 2 (£ million)

	Sussex	Rest of UK	Total UK
Construction (including DEVEX)	£30.4	£1,119.4	£1,149.8
Operations	£213.4	£793.2	£1,006.6
Decommissioning*	n/a	n/a	£119.6
Total Lifetime (including Decommissioning)	n/a	n/a	£2,276.0
Total Lifetime (excluding Decommissioning)	£243.8	£1,912.6	£2,156.4

Source: Hatch calculations, based on TCE (2019).

*Please note: This is based on benchmarks for the Decommissioning phase presented in TCE (2019), where decommissioning costs represent 7 percent of total lifetime costs, of which 2 percent are to be retained by UK businesses. Given the limited number of projects undergoing decommissioning, it is not possible to generate estimates for supply chain retention at the Sussex level. Within the ES, the decommissioning phase is assessed qualitatively.

2. Glossary of terms and abbreviations

Table 2-1 Glossary of terms and abbreviations

Term (acronym)	Definition
CAPEX	Construction Expense/Expenditure
CfD	Contract for Difference
Construction effects	Used to describe both temporary effects that arise during the construction phases as well as permanent existence effects that arise from the physical existence of development (for example new buildings).
C2CLEP	Coast to Capital Local Enterprise Partnership
Decommissioning	The period during which a development and its associated processes are removed from active operation.
DEVEX	Development Expense / Expenditure
Direct employment and gross value added	Employment and gross value added which is associated with the first round of capital expenditure, for instance, Rampion 2's spend with prime contractors within each impact area of the study.
Environmental Impact Assessment (EIA)	The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or 'baseline').
ES	Environmental Statement
Full-time equivalent (FTE)	A unit for measuring employment which indicates the workload which indicates the workload associated with each post. One FTE is the equivalent of a full-time post, whilst an FTE of 0.5 suggests half-time.
Gross value added (GVA)	The measure of the value of goods and services produced in an area, industry or sector of an economy. At the level of a firm, it is broadly equivalent to employment costs plus a measure of profit.
Impact	The changes resulting from an action.
Local Enterprise Partnership (LEP)	Voluntary partnerships between local authorities and businesses set up in 2011, by the Department for Business, Innovation and skills to help determine local

Term (acronym)	Definition
	economic priorities and lead economic growth and job creation within the local area.
Location quotient (LQ)	A measure of a region's industrial specialisation relative to a larger region (for example, England). A LQ of 1.0 indicates that both regions have the same level of specialisation, whereas a LQ > 1.0 means that the smaller region has a higher concentration of a particular sector than is seen in the larger region.
km	Kilometre
MW	Megawatt
ONS	Office for National Statistics
OPEX	Operating Expense / Expenditure
£/ MW	Great British Pounds per Megawatt (MW)
Proposed Development	The development that is subject to the application for development consent, as described in Chapter 4.
Rampion 1	The existing Rampion Offshore Wind Farm located in the English Channel off the south coast of England.
RED	Rampion Extension Development Limited
SELEP	South East Local Enterprise Partnerships
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
Significance	A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect.
TCE	The Crown Estate
The Applicant	Rampion Extension Development Limited (RED)
WMI	Wind Measurements International

3. References

BVG Associates (2015) *The UK content of operating offshore wind farms.* BVG Associates; Swindon.

BVG Associates (2014) *UK offshore wind supply chain: capabilities and opportunities.* BVG Associates; Swindon.

Coast to Capital Local Enterprise Partnership (C2CLEP). (2018). *Gatwick 360 The Coast to Capital Strategic Economic Plan 2018-2030*. [online] Available at: https://www.coast2capital.org.uk/storage/downloads/coast_to_capital_strategic_economic_plan_2018-2030_pdf-1535099447.pdf [Accessed January 2021].

HM Government. (2017). *Industrial Strategy, Building a Britain fit for the future.* [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/730048/industrial-strategy-white-paper-web-ready-a4-version.pdf [Accessed December 2022].

HM Government. (2018). *Industrial Strategy, Offshore Wind Sector Deal.* [online] Avail;able at: https://www.gov.uk/government/publications/offshore-wind-sector-deal/offshore-wind-sector-deal [Accessed December 2022].

Offshore Renewable Energy Catapult. (2016). *Cost Reduction Monitoring Framework.* Offshore Renewable Energy Catapult; Glasgow.

Office for National Statistics (ONS). (2022). *BRES*. ONS; London.

RenewableUK. (2017). *Offshore Wind Industry Investment in the UK, 2017 Report on Offshore Wind UK Content.* [online] Available at: https://www.renewableuk.com/resource/resmgr/publications/Offshore_Wind_Investment_V4.pdf [Accessed December 2022].

RenewableUK. (n.d.) *Supply Chain Map* [online]. Available at: https://www.renewableuk.com/page/SupplyChainMap [Accessed 15 January 2021].

South East Local Enterprise Partnerships (SELEP). (2014). *South East LEP Growth Deal and Strategic Economic Plan.* [online]. Available at: https://www.southeastlep.com/app/uploads/Strategic_Economic_Plan_2014.pdf [Accessed January 2021].

The Crown Estate (TCE) (2019) *Guide to an offshore wind farm, Updated and extended*. TCE; London.

The Crown Estate (TCE) (2012) *Offshore Wind Cost Reduction, Pathways Study.* TCE; London.

Wind Measurements International (WMI) (n.d.) *Operational and Maintenance Costs for Wind Turbines*. [online]. Available at: http://www.windmeasurementinternational.com/wind-turbines/om-turbines.php [Accessed 15 January 2021].

Rampion 2
WIND FARM