



The economic contribution of the Maritime Sector in the Solent LEP

A Cebr report for Maritime UK
and the Solent LEP

May 2022

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Headline findings

Report purpose and scope

- The Centre for Economics and Business Research (Cebr) has been commissioned by Maritime UK and the Solent LEP to quantify the economic contribution of the Maritime Sector in the Solent LEP. This report forms one of ten reports assessing the contribution of the Maritime Sector as a whole, at industry-level, in Scotland, Northern Ireland, the Liverpool City Region and the Solent LEP region.
- The report assesses the economic importance of the Solent-based Maritime Sector and Portsmouth Naval Base from two perspectives:
 - I. The role that it plays as a gateway for trade with the rest of the world.
 - II. The economic impact of the Solent-based Maritime Sector and Portsmouth Naval Base in terms of the key macroeconomic indicators: gross value added (GVA), turnover, employment and the compensation of employees.
- The first perspective serves to capture downstream relationships, whilst the second perspective captures the conventional upstream relationships and direct impacts. These broader impacts are critically important for a specialised regional economy such as the Solent.

Providing a vital international gateway and broad downstream impacts

- The Maritime Sector in the Solent LEP plays an important role in facilitating UK trade with the rest of the world. International trade drives economic growth and better living standards.

Importance in facilitating exports

- In 2019 the Solent-based maritime sector facilitated 12% of the volume of total UK exports with non-EU countries, and 12% of the total value of these exports. This is highly significant in light of the UK's exit from the EU and emphasis on non-EU trade.
- The Solent is particularly important for the export of "machinery and transport equipment". The region facilitates £17.5 billion of exports, or 23% of the value of the UK total. The vast majority of exports falling under this category were road vehicles (£14 billion).

Importance in facilitating imports

- In 2019 the Solent maritime sector facilitated 9% of the volume of UK imports with non-EU countries, and 9% of the value total UK imports.
- Specifically, it facilitates 21% of the total value of UK imports of road vehicles. Furthermore, it accounts for 24% of the value of UK imports of parts and accessories for motor vehicles. This confirms the region's role in facilitating the supply chain needs of UK manufacturers of machinery and transport equipment.

Additional gateway functions: tourism

- The Solent-based Maritime Sector also acts as an important gateway for international tourism, with its share of UK international passenger movements at ports increasing by five percentage points over the period 2000 to 2019.
- Overall, the Maritime Sector in the Solent provides a vital cog in the wheel of UK manufacturing. This role comes in various guises from ensuring the movement of vital imported inputs to UK manufacturers, of valuable exports to our trading partners or in moving imported final goods that provide a competitive discipline for UK manufacturers looking to maintain global market share.

The economic footprint of the Solent-based Maritime Sector

- For the economic impact analysis, the Maritime Sector has been defined as consisting of the Shipping, Ports, Leisure Marine, Marine Engineering & Scientific (MES), and Maritime Business Services (MBS) industries, which for presentational purposes have been considered alongside Portsmouth Naval Base in this study. Each of these entities comprises a multitude of different activities, data for which has been aligned against the national accounts framework. A largely “top-down” approach has been used to quantify the size and value of each industries’ activities exclusively within the Solent LEP.
- The Solent-based Maritime Sector and Portsmouth Naval Base make a significant macroeconomic contribution through turnover, Gross Value Added (GVA), employment and the compensation of employees.
- After accounting for the wider economic impacts that occur through industry supply chains and induced effects of expenditure, in 2019 the Solent-based Maritime sector and Portsmouth Naval Base supported £17.2 billion in turnover, £7.7 billion in GVA, 198,500 jobs and £4.4 billion in employee compensation (wages and salaries), as summarised in the following figure:



- The Solent-based Maritime sector and Portsmouth Naval Base contributed significantly to tax revenues in 2019, with a direct exchequer impact of approximately £723 million. Of this, the five maritime industries (Ports, Shipping, Leisure Marine, Marine Engineering & Scientific and Maritime Business Services) accounted for over 14% of the total tax contribution of the UK Maritime sector, spread across Income Tax, National Insurance Contributions (NICs), VAT, Corporation Tax and Business Rates.
- The Solent economy as a whole makes a substantive macroeconomic contribution to both the South East and the UK. It is estimated that Solent directly supported approximately

600,600 jobs in 2020; this equates to 13.2% of total employment in the South East, or 1.8% of the UK workforce. In 2019, the Solent is estimated to have contributed £31.3 billion in Gross Value Added (GVA), accounting for 11.2% of GVA in the South East and 1.7% of the UK as a whole.

- Our forecast indicates that Solent-based maritime turnover and GVA are set to grow at a Compounded Annual Growth rate (CAGR) of 4.6% over the considered period. This translates into a cumulative nominal growth of 19.6% for 2021-2025, which is equivalent to about 7.2% growth in real terms, when considered alongside projected inflation.

1. Introduction

Cebr is pleased to present this report to the Solent LEP and Maritime UK on the economic impact of the Maritime Sector and Portsmouth Naval Base on the Solent economy. For the purposes of this study, the Maritime Sector is broadly defined as comprising of the individual shipping, ports, marine engineering and scientific (MES), marine leisure and Maritime Business Services (MBS) industries; each of these industries comprises numerous and diverse activities which are reflected in the study.

This report forms one of ten reports on the economic contribution of the Maritime Sector. The other reports focus on the economic contribution of each of the five industries at UK level, the contribution of the sector in Scotland, Northern Ireland, the Liverpool City Region, and the contribution of the Maritime Sector at UK-level. It is therefore important to consider this report as part of the wider framework set out in the ten reports, which set out the impact of the Maritime Sector both at a national and regional level.

Our examination spans the period from 2010 to 2019 (inclusive), with the latter being the latest year for which full data are available, and endeavours to capture the full economic ‘footprint’ of the maritime sector. As such, our report is not confined to direct ongoing contributions to GDP and employment through the maritime sector’s operations and activities in the UK, but also provides assessments of the associated indirect and induced multiplier impacts.

Maritime UK previously commissioned Cebr in 2017 and in 2019 to produce the same study focused on measuring the impact of the maritime sector to the UK economy.

1.1 About the Solent LEP

Local Enterprise Partnerships (LEP) are partnerships between local authorities and businesses, set up by the former Department for Business, Innovation and Skills (BIS, now the Department for Business, Energy and Industrial Strategy, BEIS) in 2011. LEPs decide what the priorities should be for investment in roads, buildings and facilities in the area; they can take advantage of tax incentives and simplified local planning regulations. The Solent LEP is one of the 38 LEPs currently in operation across the English regions.

The Solent LEP is “a partnership organisation between the business community, the Further Education and Higher Education sector, three unitary authorities, five district councils and one county council, all of whom are actively working together to secure a more prosperous and sustainable future for the Solent area”. Its purpose is to combine the voices of key stakeholders within the specified region of the Solent to create an environment in which businesses can prosper and fulfil its economic potential.

1.2 About Maritime UK

Maritime UK is the umbrella body for the maritime sector, bringing together the shipping, ports, services, engineering and leisure marine industries. Their purpose is to champion and enable a thriving maritime sector. Maritime UK has responsibility for the coordination and delivery of industry recommendations within Maritime 2050.

1.3 Purpose of this report

This research provides up-to-date insights on the size and performance of the Solent maritime sector, presenting a range of statistics and figures which demonstrate different aspects of the economic value brought by the sector to the Solent economy. The intention of this is to empower Maritime UK and the Solent LEP with a thorough and comprehensive knowledge and evidence base, such that they can support and advocate for the sector across the Solent.

As such, Cebr has focused on the following key economic indicators: business turnover, employment, Gross Value Added (GVA), the compensation of employees, the Exchequer contribution (through tax revenues raised) and exports of goods and services.

It should be noted that given the data lags associated with many of the official national statistics used within this study, it is not possible for our analysis to capture the full extent to which the sector was directly affected by the COVID-19 pandemic in 2020/21. As such, because of the timeframe examined in this report, this research offers a picture of the value of the maritime sector right before the pandemic occurred. Further to this, our research does consider the impacts of Covid in our Forward Look section, where we provide forecasts for the Maritime Sector as well as for each of its five constituent industries and the four regions included within our analysis.

1.4 Overview of the study and methodology

Objectives of the study

This report provides a thorough and comprehensive examination of the role of the Maritime Sector in the Solent LEP region. It presents a range of analyses demonstrating different aspects of the value contributed by the overall sector, including direct contributions to GDP and employment, indirect and induced multiplier impacts and the Maritime Sector's contribution to the UK Exchequer through tax revenues raised.

- **Role of the Solent LEP as an international gateway.**

Section 3 of the report analyses the important role that the Solent LEP performs as an international gateway for UK trade with the rest of the world. It examines the magnitude of this role – in both volume and trade terms – through a detailed examination of the HMRC's overseas trade statistics.

It is clear that the Solent Maritime sector provides a vital link in the integrated chain of globalised supply and demand. For example, industries such as motor manufacturing are composed of businesses across the UK that are, in summary, dependent on the ports in the Solent LEP and its Maritime Sector to get their final goods to the market, but also to get their essential inputs from abroad.

- **Economic impact of the Maritime Sector in the Solent LEP.**

Having established the important role that the Solent LEP plays as an international gateway for UK trade, the remainder of the report - Sections 5, **Error! Reference source not found.** and **Error! Reference source not found.** - presents a range of analyses demonstrating the different aspects of the value contributed by the Solent-based Maritime Sector, including direct contributions to GDP and employment, indirect and induced

multiplier impacts and the Solent-based Maritime Sector's contribution to the UK Exchequer through tax revenues raised.

To produce a robust study, it is necessary to analyse the available data to ensure that it captures the full range of activities that should be included in establishing the total economic 'footprint' of the industry. Following the collation of the necessary data which capture these activities, the values of key economic indicators were established to demonstrate the impact of the sector. The key macroeconomic indicators include:

- GVA¹ contributions to UK and regional GDP generated by the Maritime Sector, directly and through indirect and induced multiplier impacts.
- Jobs supported by the sector, including direct, indirect and induced jobs through multiplier impacts.
- The value of the turnover of the Maritime Sector and, again, the turnover supported in the UK and regional economies through multiplier impacts.
- The value of employee compensation² generated by the Maritime Sector, representing the total remuneration of employees operating in the sector.
- The contribution of the Maritime Sector through revenues raised for the Exchequer.
- The value of goods and services exported by the industries comprising the Maritime Sector.

In addition to the core modelling and analysis, we also undertake a range of comparisons to contextualise the findings, including:

- How the economic indicators vary over the period 2010-2019.
- How the economic indicators vary across the different industries of the maritime sector.
- How the economic indicators for the maritime sector vary across the different UK nations and regions.
- How the indicators for the maritime sector compare with other important sectors of the UK economy.

1 GVA, or gross value added, is a measure of the value of production in the national accounts. Conceptually it can be considered the value of what is produced, less the value of intermediate goods and services used to produce it. GVA is distributed in three directions – to employees, to shareholders and to government. It is often used as the proxy for the contribution of a sector or industry to GDP: strictly this relationship is $GVA + Taxes\ on\ products - Subsidies\ on\ products = GDP$.

2 Compensation of employees (COE) or employee compensation, is the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter. This consists of wages paid to employees; employers' actual social contributions (excluding apprentices); employers' imputed social contributions (excluding apprentices); and employers' social contributions for apprentices.

Mapping the UK Maritime Sector

Here we set out how the Maritime Sector has been defined for the purposes of the study. On a holistic level, the wider sector can be disaggregated into the shipping, ports, leisure marine, marine engineering and scientific and Maritime Business Services industries, which in themselves are formed of numerous individual and distinct activities.

Building up on the experience gained through previous studies for Maritime UK, Cebr has subsequently undertaken a mapping exercise based on the previous study to identify how each of these five industries align with the national accounts. For most industry activities, a corresponding Standard Industrial Classification (SIC) code exists which enables the identification and quantification of the direct economic impacts using publicly available data sources. A minority of activities do not map neatly against the SIC framework, necessitating the use of industry or local level data for quantification purposes.

The mapping of the maritime sector has remained the same as in the 2019 Cebr study and is broken down as follows:

- **Shipping industry**
 - International passenger transport (cruise and ferry);
 - Domestic and inland waterway passenger transport;
 - International freight transport (bulk, container, gas and tanker);
 - Domestic & inland waterway freight transport;
 - Other shipping activity.
- **Ports industry**
 - Warehousing and storage;
 - Port activities and management;
 - Stevedores, cargo and passenger handling;
 - Border agency, HMRC and public sector employees operating in ports.
- **Leisure Marine industry**
 - Recreational marine activities, marine finance and legal activities and general marine services;
 - Boatbuilding (marine leisure vessels);
- **Marine engineering and scientific industry**
 - Shipbuilding;
 - Marine renewable energy;
 - Marine support activities for offshore oil and gas, engineering and mining;
 - Marine science and academic activities, including government vessels and technical consulting;
- **Maritime Business Services industry**
 - Shipbroking services;

- Maritime Insurance services;
- Maritime Financial services;
- Maritime Legal services;
- Ship Surveying and Classification activities;
- Maritime Education (including Maritime university courses and cadetships);
- Maritime Consultancy; and
- Maritime Accountancy.

Here we focus solely on the Maritime Sector on a holistic basis; a full description of how the direct, aggregate and regional economic impacts of each industry have been measured can be found in Cebr's separate reports for each industry.

Data Sources

After completing the mapping of Maritime Sector activities, data for the macroeconomic indicators listed above have been obtained and collated by firstly interrogating the indicators gathered at UK level for the Maritime Sector and disaggregating this at Solent-level using a combination of publicly available data sources, industry sources and local estimates.

For those Maritime Sector activities which are in alignment with the SIC framework and are available on a disaggregated basis, the main source of information used in this study is Bureau van Dijk's Financial Accounts Made Easy (FAME) database. FAME provides detailed information on UK and Irish companies as taken from annual reports and other sources up to the latest available year. FAME has been used to establish the aggregated contribution of businesses in the Maritime Sector to the UK economy in terms of turnover, employee numbers and estimated GVA. We also evaluate the breakdown of these business contributions by SIC industrial sector, using the primary and secondary five-digit UK SIC (2007) codes associated with each company in FAME.

To capture the contribution of those Maritime Sector activities which do not map neatly across the SIC framework, and in order to disaggregate the economic contribution of the sector at Solent-level, a variety of other sources have been used. For the former, the study draws upon insight from sector bodies including (but not limited to) British Marine, the Society of Maritime Industries (SMI), BEIS and the UK Chamber of Shipping.

In order to separately quantify the economic contribution of the Portsmouth Naval Base to the Solent LEP region, we draw upon Cebr's previous experience on this topic, as well as a combination of desk research and a past analysis from the University of Portsmouth which quantified the economic contribution of the base in 2011.³ Due to the limited research carried out on this topic, the University of Portsmouth study is still the most recent analysis on the

³ University of Portsmouth, Centre for Economic Analysis and Policy (June 2012). "Socio-Economic Impact Assessment of Portsmouth Naval Base"

naval base in Portsmouth and as such it still informs many of the assumptions and figures for the first half of the decade examined.

Quantifying the wider economic impacts

After collation and interrogation, Solent-level data have then been embedded within Cebr's regional economic impacts models of the UK economy that we use to assess the kinds of impacts that can be associated with an entity such as the Solent-based Maritime Sector.

Cebr's models establish the relationships between industries through supply chain linkages, as well as industries' linkages with government, capital investors and the rest of the world (through trade). The models produce three types of impact for four indicators – turnover, GVA, the compensation of employees, and employment. The three types of impact are:

- **Direct impact:** this is the value generated and jobs supported directly by the economic activities of the Maritime Sector in the Solent.
- **Indirect impact:** this is the value generated and jobs supported in industries that supply inputs to the Solent-based Maritime Sector.
- **Induced impact:** this is the value generated and jobs supported in the wider economy when the direct and indirect employees of the Solent-based Maritime Sector spend their wages and salaries on final goods and services.

These three impacts are then combined to convey the total footprint associated with each Maritime industry and Portsmouth Naval Base in terms of GVA, employment and the compensation of employees.

Cebr has taken a 'top-down' approach to estimate the direct impacts of the five Maritime industries within the Solent region. In effect, this involves taking the UK direct impacts of each defined Maritime industry and applying relevant ratios from publicly-available data sources such as the UK Business Register and Employment Survey (BRES) – as well as private data sources such as Bureau van Dijk's Financial Accounts Made Easy (FAME) database – in order to attribute the contribution from the Solent LEP region.

For each of the five industries and Portsmouth Naval Base, the direct impacts are then combined with the regional economic multipliers provided by Cebr's suite of regional input-output models for the Solent, in order to then generate indirect, induced and subsequently aggregate impacts.

Changes from 2019 Cebr study

The main change to the methodology compared to the one used in the 2019 Cebr study is that we have developed an even more robust approach for the quantification of the economic impacts for the Maritime Business Services industry. Due to the difficulty in mapping and quantifying this particular industry, for our 2017 study we relied in large part on the 2016 PwC

report,⁴ at the time the only study that had been published on the industry. For the second iteration of our study, in 2019, we relied on a survey we carried out and discussions with industry representatives as well as our own expertise on the topic to develop a more advanced methodology. This involved a targeted approach whereby we could build up a picture of the industry and its associated activities on a bottom-up basis for a significant part of the industry, but still utilised PwC's 2016 report to drive some of the assumptions. For this new study we developed our bottom-up methodology even further such that it is even more robust and reflects the size and value of the industry more precisely.

Another change in our methodology is reflected within our aggregate impact analysis. Since our 2019 study, Cebr has made several changes to our input-output models, which underpin the calculation of the aggregate impacts. Firstly, we have updated the underlying supply-use data within the models, to reflect updated ONS data released over the intermediary period. This means the models now represent a more contemporaneous structure of the economy. Secondly, we have further refined our input-output modelling framework. The conceptual framing of our methodology remains the same, but for industries which span multiple SIC codes (such as the Maritime Sector and many of the constituent industries) the models themselves have been adjusted to remove potential double-counting and simplify the required data inputs.

Structure of the report

The remainder of the report is structured as follows:

- **Macroeconomic trends in the Solent LEP region** provides background information on the Solent, in terms of geographical location and some descriptive statistics for its economy over the years and how it compares to the rest of the South East and the UK as a whole.
- **Providing a vital international gateway** is an in-depth description of the Solent's role as an international gateway for the UK as a whole.
- **The Solent-based Maritime sector and** sets out how the Maritime Sector has been defined and identified within Scotland for the purposes of this study.
- **The Solent-based Maritime sector and** outlines the direct economic impacts of the Maritime Sector in the Solent. We consider the direct impacts through turnover, GVA, employment, the compensation of employees, the contribution to the UK Exchequer through tax revenues contributed by the industry in the region, and the contribution through exports.
- **The** considers the multiplier impacts of the Maritime Sector in the Solent through the activities it stimulates in local supply chains and in the wider economy when employees

⁴ PwC (2016), 'Catching the Wave: UK maritime professional services competitiveness study.'

directly and indirectly employed by the different industries spend their wages and salaries in the wider Solent economy.

- **The Solent-based Maritime Sector: A Forward Look** provides forecasting analysis for the Maritime Sector in the context of the current economic climate, with a focus on the impact of Covid-19 on the sector.
- **Annex A: Full set of direct economic impacts by region** sets out the full set of direct economic impacts by region.
- **Annex B: Supplementary results of aggregate economic impact analysis** presents the supplementary results of the aggregate economic impact analysis based on our updated input-output methodology.

2. Macroeconomic trends in the Solent LEP region

LEP region

The purpose of this section is to identify the scope of the study, in terms of geographical coverage (in other words, identifying the Solent LEP region).

2.1 Geographical location of the Solent LEP region

Located in the South-East of England, the Solent LEP has a population exceeding 1.25 million, and over 42,000 businesses operating in the region.⁵ The geography of the Solent region, disaggregated by local authority, is shown in Figure 1 below. In all, eight local authorities, as well as most of the New Forest National Park Authority and part of Hampshire County Council combine to form the Solent LEP.

Figure 1: The constituent geographic regions of the Solent LEP region



Source: Solent LEP

⁵ <https://solentlep.org.uk/the-solent/map>

2.2 Macroeconomic trends in the Solent LEP region

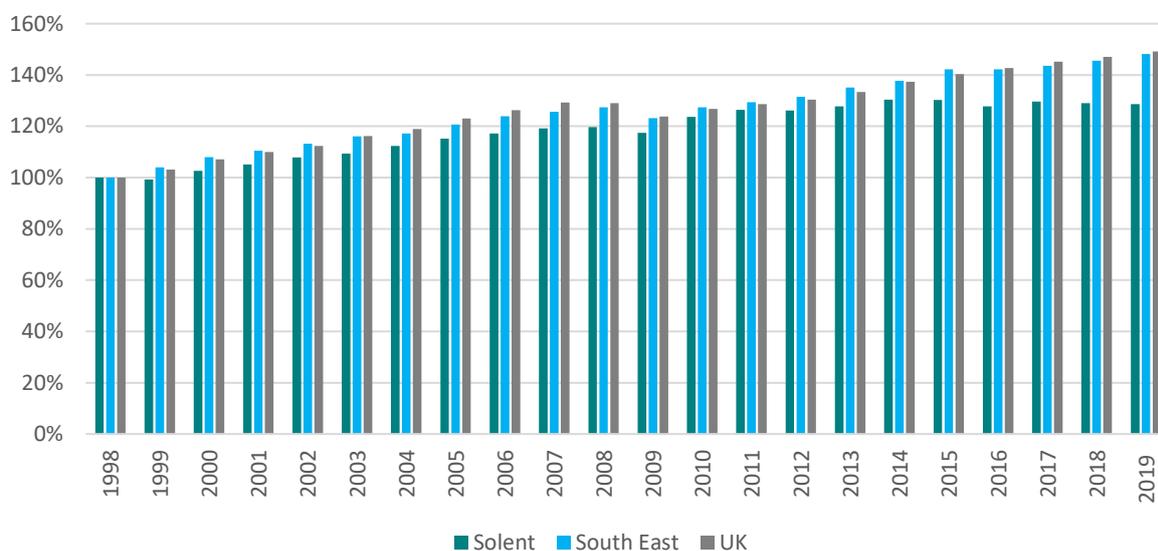
Before undertaking a comparison of the Solent-based Maritime sector against the wider UK sector, we compare the entire economy of the Solent LEP region against those of the South-East region, and the wider UK. With the Solent LEP region boasting a significant maritime presence, the constituent breakdown of economic activity by industrial sector is markedly different in the Solent.

The Solent LEP region had a GVA of £31.4 billion in 2019,⁶ accounting for 11.2% of the South East and 1.7% of the UK. The Solent LEP's GVA has experienced a growth of 4% since 2010, in constant prices chained to 2018.⁷

Employment in the region in 2020 was approximately 600,600 accounting for 13.2% of South East and 1.8% of total UK employment. The region's employment has also grown significantly with 40,600 additional employees since 2010, equivalent to a 7.3% increase.⁸

Figure 2 shows the growth in Solent LEP GVA in nominal terms since 1998 compared to the GVA growth performance of the wider South East region and the United Kingdom. In 2019, the GVA of the Solent LEP region was 29% higher in nominal terms than in 1998, compared to 48% across the wider South East region, and 49% for the UK as a whole. Therefore, in terms of GVA growth, the Solent LEP has lagged behind the wider region and UK average.

Figure 2: GVA in the Solent LEP, South East and United Kingdom expressed at 2018 levels, 1998 to 2019 (1998 = 100%)



Source: ONS, Cebr analysis

6 ONS, GVA, Regions, Cities, and Enterprise Regions, 1998 to 2019.

7 ONS, GVA, Regions, Cities, and Enterprise Regions, 1998 to 2019.

8 Office of Labour Market Statistics

Table 1 shows the breakdown of employment across each broad category of industrial sector in 2019. We find that Solent LEP has a higher-than-average concentration in three sectors which have been highlighted in bold. For example, the proportion of employment in Public Administration and Defence, Education and Health is around 4.2 percentage-points higher than the South East and UK in general. As many of the Maritime Sector activities are found within these broader industry categories, this provides initial evidence of the importance of Solent LEP to the UK maritime sector.

Table 1: Breakdown of employment in 2019 by industrial sector: Solent LEP, South East and the UK

Sector	Solent LEP	South East	United Kingdom
Agriculture, forestry and fishing	0.6%	1.0%	1.1%
Mining; Energy and Water	8.5%	1.2%	1.2%
Manufacturing	8.5%	5.6%	7.6%
Construction	2.9%	7.3%	6.7%
Wholesale and repair; transportation; accommodation and food	24.2%	26.2%	26.2%
Information and communication	3.3%	5.4%	4.2%
Financial and insurance activities	2.3%	2.6%	3.2%
Real estate activities	1.4%	1.4%	1.6%
Professional, scientific and technical, Administrative	14.8%	18.3%	17.5%
Public Administration and Defence, Education and Health	29.0%	24.8%	24.9%
Arts, entertainment and recreation, household and other services	4.6%	6.0%	5.8%

Note: Sector U has been excluded. Source: ONS NOMIS and Workforce Jobs, Cebr analysis

Table 2 below shows the same industrial sector breakdown for GVA in 2019.⁹ In contrast to the employment breakdown shown in Table 2 above the proportion of GVA attributed to combined Wholesale and repair, transportation and accommodation and food sector is slightly higher than that of the South East and UK.

⁹ The data for Solent is based on the GVA distribution by industry in 2015 and employment changes since.

Table 2: Breakdown of GVA in 2019 by industrial sector: Solent LEP, South East and the UK

Sector	Solent LEP	South East	United Kingdom
Agriculture, forestry and fishing	0.5%	0.4%	0.7%
Mining; Energy and Water	3.2%	3.2%	3.7%
Manufacturing	9.7%	8.0%	9.7%
Construction	6.9%	7.0%	6.6%
Wholesale and repair; transportation; accommodation and food	21.8%	19.1%	17.5%
Information and communication	5.5%	9.7%	7.0%
Financial and insurance activities	3.3%	4.0%	6.4%
Real estate activities	14.7%	15.3%	13.4%
Professional, scientific and technical, Administrative	9.4%	13.1%	13.1%
Public Administration and Defence, Education and Health	21.4%	16.6%	18.4%
Arts, entertainment and recreation, household and other services	3.7%	4.1%	3.7%

Note: Sector U has been excluded. Source: ONS, Cebr analysis

3. Providing a vital international gateway

A useful lens through which the importance of the maritime sector in the Solent LEP can be understood is the role it plays as an international gateway for UK trade with the rest of the world. This section examines the magnitude of this role – in volume and value terms.

Non-EU trade statistics for the UK and the Solent region are readily available from HMRC Trade Statistics. This gives a detailed breakdown of trade by Standard International Trade Classification (SITC) to five digits by weight and value.¹⁰ No such data exists for UK-EU trade as EU trade does not pass through Customs when entering the UK. As such, we have had to derive total UK-EU and Solent-EU trade value and volume which inhibits our ability to disaggregate the EU trade by SITC codes.

To derive EU trade statistics, Eurostat provides trade volume statistics between UK ports and the EU. From this we derived total UK-EU trade and also Solent-EU trade in tonnage. This was done for the entire time period, 2010 to 2019.

To derive the value of EU trade from the volume statistics, we leveraged results from a study by Transmodal¹¹ and coupled this with ONS EU Imports PPI growth figures.¹² The Transmodal study provided an estimate for the value of total trade through Solent in 2014. From HMRC's Trade Statistics, the value of non-EU trade through Solent is known, thus using the Transmodal and HMRC Trade Statistics we were able to derive a value per unit ton for EU trade through Solent in 2014.

Using ONS EU Import PPIs, we were able to scale up and down the 2014 unit ton value so that we produced an EU trade value for the period 2010 to 2017. However, as stated, this methodology does not allow for disaggregation of EU trade by SITC. It is also too great of an assumption to apply non-EU SITC proportions to EU trade as given the lack of Customs, integrated supply chains occur and hence will skew proportions compared to non-EU.

3.1 The importance of trade and enabling role of maritime

International trade drives economic growth and better living standards. The ability to export enables specialisation and increases the potential for businesses to exploit economies of scale by opening up new markets. Exporting is thus, associated with significant productivity benefits. Economies of scale imply falling unit costs and increasing levels of output being generated for each £1 of input. They increase the overall supply potential of the economy.

But, without the ability to import the capital equipment required to deliver investment programmes across all sectors of the economy and the raw materials and sub-components needed by UK manufacturers from a variety of locations around the world according to where

¹⁰ HMRC. (2019). 'HM Revenue & Customs. Trade Statistics'.

¹¹ Transmodal. (2016). 'The value of goods passing through UK ports'.

¹² ONS. (2019). 'Total EU Imports'.

they are produced most efficiently, industry would grind to a halt, not least through a lack of competitiveness. Global sourcing, by further reducing the unit costs of production and enabling UK firms to take advantage of foreign know-how, helps UK businesses maintain and improve competitiveness on global markets.

Importing is also of significant benefit to UK consumers, not only as a result of the competitiveness of domestic businesses as a result of global sourcing of inputs, but also more directly from the competition that imports deliver to the market. This can mean lower prices for the same or superior quality and greater choice. Domestic firms must respond and improve efficiency to remain competitive vis-à-vis foreign suppliers.

The maritime sector, and the sea transportation it enables, are ultimately a means to an end rather than an end in themselves. Before the explosion in commercial aviation, maritime was about the only means of connecting UK people and goods with the rest of the world. But people and goods travel beyond the UK for a range of different reasons and it is from these activities that the demand for maritime and aviation services is ultimately derived. For example, people travel to holiday, to meet friends and relatives, or to attend a conference or meeting in a business capacity. Goods are sent to and from the UK either as final goods or as inputs to final goods, which are then exported or sold on the domestic market.

Moving people who want to travel beyond the UK in their own car – typically for family holidaymakers – remains an important aspect of the maritime services sector but, in overall terms, it has declined in popularity, especially since the low-cost carrier revolution in aviation. Today, one of the maritime sector's principal functions is to provide an international gateway for the movement of goods between the UK and the rest of the world. The choice between sea and air transport boils down to the relative levels of the value per tonne of goods being moved and the cost per tonne of transporting those goods to or from the UK. Due to lower costs, sea transport tends to attract goods of relatively low value-to-weight that are less time-critical. As it stands, sea trade accounts for 95% of the UK trade by volume which includes 48% of UK food supplies, illustrating its importance.¹³

But not all high-tech manufacturing industries produce high value-to-weight goods like pharmaceuticals or computer chips. Machinery and transport equipment is a key UK export sector and was worth £1.75 billion in export value terms to the UK economy in 2019, equating to 23.36% of all UK exports with non-EU countries.¹⁴ The importance of maritime to this high-tech, high-value manufacturing sector is unlikely to be anywhere more clearly reflected than in the statistics on the volume and value share of total UK trade with non-EU countries in these goods that is being handled by the Solent ports.

Given the commonality in the statistics between the top 20 exports from and the top 20 imports to the UK, there seems little doubt that the Solent maritime sector provides a vital link in the integrated chain of globalised supply and demand for the goods of key UK export sectors,

13 Department for Transport. (2019). 'Maritime 2050'.

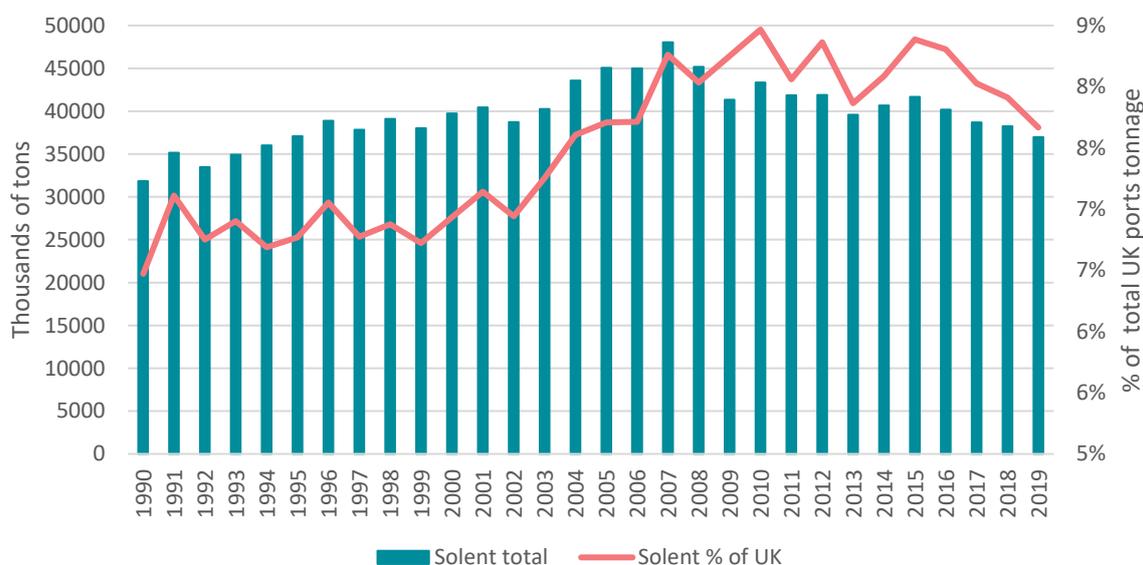
14 HMRC Trade Statistics – SITC code 7 'Machinery & Transport Equipment'.

such as machinery and transport equipment. In other words, industries like motor manufacturing consist of businesses up and down the UK that are dependent on the Solent LEP ports and its maritime sector both for getting their finished goods to market and getting their essential inputs from abroad. This, along with analysis of other sectors that appear to depend on the maritime sector in the Solent, is the subject of later subsections.

3.2 The Solent's share of freight volumes through seaports

The Solent LEP region contains the major ports of Southampton and Portsmouth, as well the port of Cowes on the Isle of Wight. Underpinned by these national assets, the Solent makes a significantly large contribution to the level of freight traffic handled in the UK, both in an inwards and outwards direction. Figure 3 below shows trends in the total level of freight traffic handled by ports in the Solent LEP region between 1990 and 2019 and expressed as a share of the UK total. This information is taken from the Department of Transport's Port Freight Statistics.

Figure 3: Total freight traffic in ports in the Solent LEP region, and as a share of the UK total (EU and non-EU)



Source: Department for Transport, Cebr analysis

Recent trends suggest that the Solent has become increasingly important as a hub for UK port freight traffic. Freight traffic passing through the ports of Portsmouth, Southampton and Cowes steadily increased between 1990 and 2007, rising from 31.8 million to 48.0 million tonnes. The Solent's share of total freight traffic handled in the UK also rose in this period from 6.5% to 8.3%.

However, the recession in 2008-09 has coincided with a fall in freight traffic both in the Solent and at UK-level. Solent freight traffic was 41.7 million tonnes in 2015, recovering beyond the 2009 level of 41.3 million tonnes. Despite this, the Solent share of UK freight traffic remained at historically high levels, peaking at 8.5% in 2010 and reaching 8.4% in 2015. Since 2015, the Solent's share of UK trade has fallen sharply to 7.6% in 2019.

3.3 The share of all non-EU, UK trade facilitated by the Solent Maritime sector

The analysis above is useful in understanding the importance of the Solent LEP Maritime sector in providing a key gateway for international trade. However, it is rather limited in two respects:

- It sets the Solent LEP Maritime sector within the context of freight that is facilitated by seaports only. Airports are also important international gateways and, so, understanding the role of the Solent LEP within the context of total UK trade is also important. This is important given that although 95%¹⁵ of UK trade volume is through shipping, air freight accounts for 40% of the value of UK trade.¹⁶
- The analysis of tonnage alone fails to convey the important gateway role of the Solent LEP Maritime sector in terms of the value of trade that it facilitates.

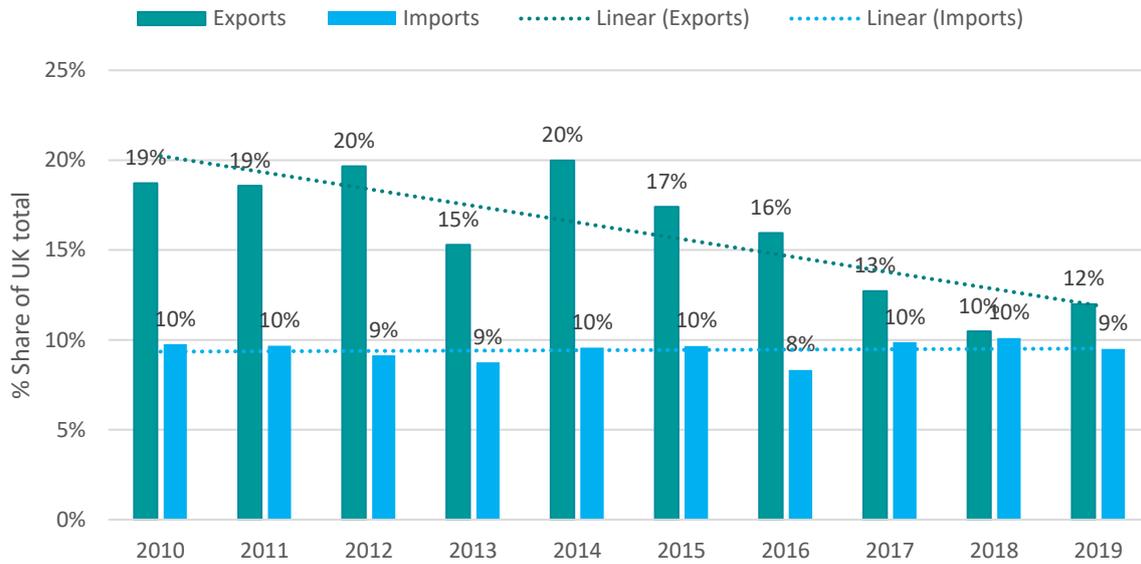
This broader perspective can be gleaned through an examination of the Overseas Trade Statistics produced by Her Majesty's Revenue and Customs (HMRC).

Figure 4 illustrates the Solent LEP share of total UK trade with non-EU countries, in terms of both import and export volumes, for each year in the period 2010 to 2019. In 2014, the Solent LEP accounted for 20% of UK exports by volume, and 10% of UK imports by volume, with non-EU countries. While the share of exports by volume fell to 12% in 2019, this is unsurprising as there can be large fluctuations in trade when drilling down to individual products, ports and trading partners. Fluctuations in the Solent percentage shares can be as much driven by changes in total volumes and the volumes passing through other seaports and airports as they are by changes in volumes through the Solent.

¹⁵ Department for Transport. (2019). 'Maritime 2050'.

¹⁶ Steer. (2018). 'Assessment of the value of air freight services to the UK economy'.

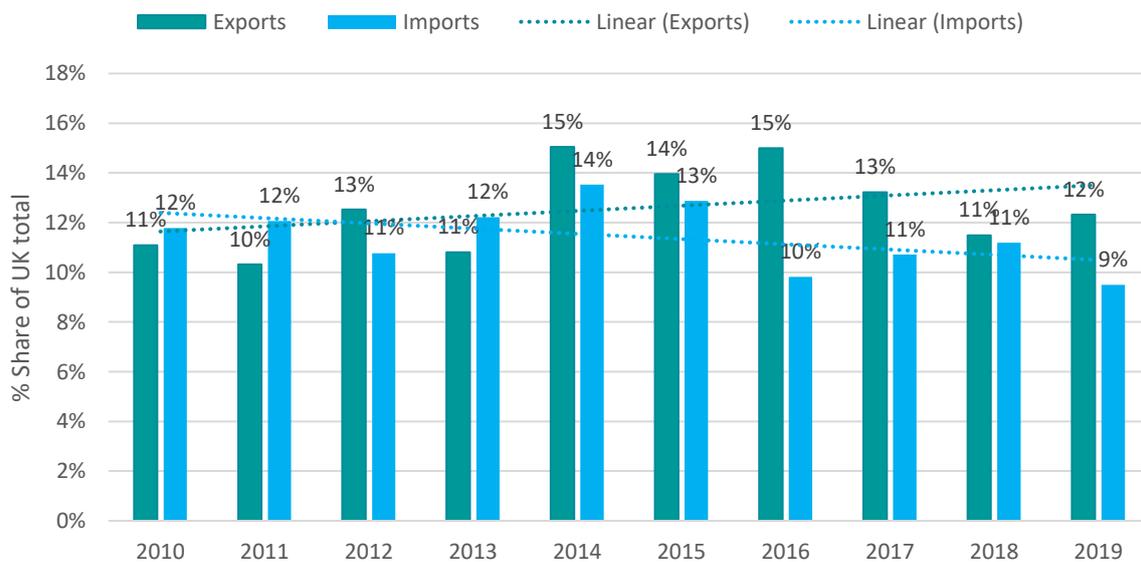
Figure 4: Solent LEP shares of total UK trade with non-EU countries, exports and imports by VOLUME, %, 2010-2019



Source: HMRC Overseas Trade Statistics, Cebr analysis

While Figure 4 provides important information on volumes of international trade that are facilitated by the Solent LEP maritime sector, it is effectively silent on the value of this trade. With this in mind, Figure 5 illustrates the Solent LEP share of total UK trade with non-EU countries by value, for the period 2010 to 2019. In 2019 the Solent LEP share of total UK export value was 12.3%, while the share of imports by value was 9.4%. While the Solent export shares were higher in 2015, the same issues around fluctuation apply here. In any case, the overall trend for exports is upwards meaning that the Solent maritime sector has grown in importance in terms of the share of the value of trade being facilitated. However, the trend for imports is slightly negative, suggesting a lesser role for the Solent region for non-EU imports.

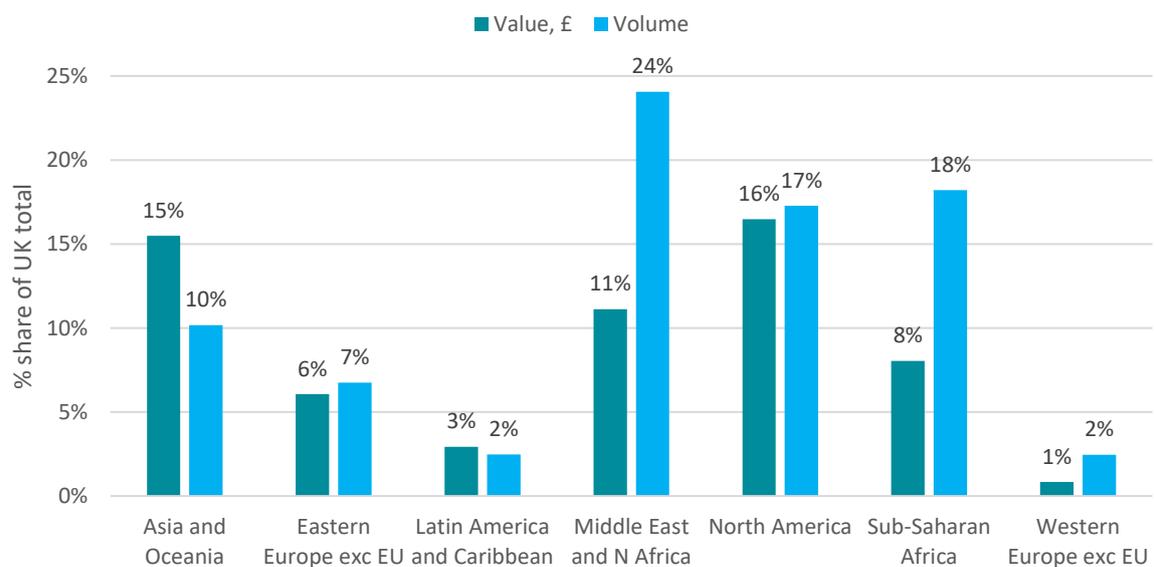
Figure 5: Solent LEP shares of total UK trade with non-EU countries, exports and imports by VALUE, %, 2010-2019



Source: HMRC Overseas Trade Statistics, Cebr analysis

Figure 6 provides a detailed breakdown of how the Solent share of UK exports to non-EU countries was split across continents in 2019, by both value and volume. The continental regions that account most for volume of trade are the Middle East and North Africa (24%), Sub-Saharan Africa (18%) and North America (17%). In terms of value, the most prominent regions are North America (16%), Asia and Oceania (15%), and the Middle East and North Africa (11% each). The fact that trade by volume is high with Sub-Saharan Africa, but the share of value is low (8%), indicates that while the goods being traded are of high volume, they are of low value. The reverse is true with Asia and Oceania; trade volume is low, but value is high.

Figure 6: Solent LEP shares of non-EU exports by continent, value and volume, 2019

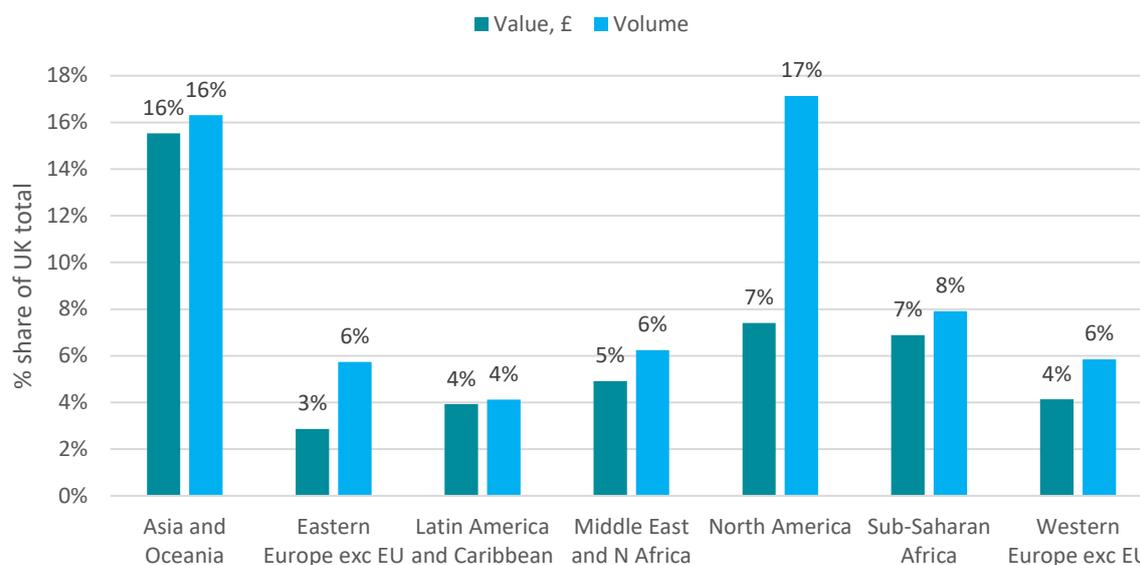


Source: HMRC Overseas Trade Statistics, Cebr analysis

Figure 7 focuses on imports: it provides a detailed breakdown of how the Solent LEP share of total UK imports with non-EU countries is split across continents in 2019, by both value and volume. The continental regions that account for the largest share of imports by volume are East and North Africa (11%) and Sub-Saharan Africa (8%).

In terms of the share of imports by value, Asia and Oceania is by far the largest contributor, with 16%, while North America and Sub-Saharan Africa are the next highest contributor – albeit with a significantly smaller share of 7%. In contrast to the discussion surrounding exports, Asia and Oceania is both a high volume and high value region the UK imports from compared to North America which is high volume, lower value.

Figure 7: Solent LEP shares of non-EU imports by continent, value and volume, 2019



Source: HMRC Overseas Trade Statistics, Cebr analysis

3.4 The key non-EU exporting sectors that depend on the Solent Maritime sector

This subsection is structured as follows: we first provide a broad overview at the SITC 1-digit level of the products whose exports are most facilitated by the Solent-based Maritime sector. We then proceed to assess the more granular 2-digit and 3-digit SITC codes focusing on the key export and import sectors. It is important to note that very little meaningful insight can be obtained beyond the 3-digit split (particularly for the types of goods being exported) and so for the purposes of tractability we have not gone beyond the 3-digit level.

Table 3 presents results for the SITC 1-digit product categories. For each, the table provides the value of export trade that is facilitated by the Solent-based Maritime sector, and also the Solent percentage share of the value of total UK exports of this product category. As illustrated, products that fall under “Machinery & Transport equipment” account for £1.75 billion of exports through the Solent region: this represents a 23.3% share of the total value of UK exports of this product category in 2019.

Products that fall under “Crude materials, inedible, except fuels” are also particularly dependent on the Solent region, with 13.95% of UK exports of this product depending on the Solent region. The value of this export trade is significantly lower than that of “Machinery & transport equipment” at £5.99 million. Other sectors that are particularly dependent on the Solent region for exports – by share of UK totals – include those whose products fall under “Food and live animals” (10.89%) and “Mineral fuels, lubricants & related materials” (8.74%).

Table 3: Exports to non-EU countries by SITC 1-digit product category in 2019

SITC 1-digit product categories	£ millions	% share of UK total non-EU trade
0 - Food & live animals	505	10.9%
1 - Beverages & tobacco	272	5.5%
2 - Crude materials, inedible, except fuels	599	14.0%
3 - Mineral fuels, lubricants & related materials	829	8.7%
4 - Animal & vegetable oils, fats & waxes	6	8.1%
5 - Chemicals & related products, nes	1,633	6.1%
6 - Manufactured goods classified chiefly by material	1,357	9.6%
7 - Machinery & transport equipment	17,530	23.4%
8 - Miscellaneous manufactured articles	610	2.5%
9 - Commodities/transactions not class'd elsewhere in SITC	14	0.1%
Total	23,356	12.3%

Source: HMRC Overseas Trade Statistics, Cebr analysis

Table 4 provides an additional layer of granularity at the SITC 2-digit level, emphasising sectors where Solent's facilitation is a significant proportion of UK trade. This illustrates that, within machinery and transport equipment, road vehicles are the dominant category with 65.7% of UK exports (£12.7 billion) to non-EU countries moved by the maritime sector in the Solent LEP in 2019. Other important categories in terms of the Solent share include and Gas, natural and manufactured (40.36%), and specialist industrial machinery (23%) The value involved is significantly smaller than that of road vehicles measuring at £72 million and 1 billion respectively.

Table 4: Exports to non-EU countries by SITC 2-digit product category in 2019

SITC 2-digit product categories	£ million	% share of UK total non-EU trade
01 Meat & meat preparations	53	10.1%
08 Feeding stuff for animals (not inc.unmilled cereals)	54	14.0%
12 Tobacco & tobacco manufactures	6	14.2%
22 Oil seeds & oleaginous fruits	7	20.1%
23 Crude rubber (including synthetic & reclaimed)	47	42.1%
27 Crude fertilizers & crude minerals (exc fuels etc)	67	35.7%
34 Gas, natural & manufactured	72	40.4%
57 Plastics in primary forms	215	20.2%
72 Machinery specialized for particular industries	1036	23.0%
78 Road vehicles (including air cushion vehicles)	13845	65.7%
82 Furniture & parts thereof; bedding, mattresses etc	10	8.2%

Source: HMRC Overseas Trade Statistics, Cebr analysis

Table 5 drill further down to the SITC 3-digit level, which magnifies even further the important role played by the maritime sector in the Solent LEP. The tables have been separated into the

most important 3-digit SITC sectors; Mineral fuels, lubricants and related materials, and road vehicles.

For instance, of the £13.8 billion exports of road vehicles (SITC 2-digit), £13.3 billion relates to motor cars and motor vehicles for the movement of people (SITC 3-digit). The Solent LEP is recorded as facilitating 59.7% of UK exports of these products to non-EU countries.

The value of exports moved by the Solent LEP maritime sector is not as significant for other goods, but the percentage shares of UK totals to non-EU countries are even higher in some cases. For instance, 67.0% Motor Vehicles for the transport of goods (SITC 782) are facilitated by the Solent region. The shares are also considerable for car trailers (32.6%).

Table 5: Exports to non-EU countries by SITC 3-digit product category in 2019 – Mineral fuels, lubricants & related materials (SITC 1-digit disaggregated)

SITC 3-digit product categories	£ millions	% share of UK total non-EU trade
334 - Oils obtained from petroleum or bituminous mnl, prp nes, containing by weight nlt 70%.of these oils	1,003	8.2%
335 - Residual petroleum products, nes and related materials	86	10.7%
342 - Liquefied propane and butane	75	25.7%

Source: HMRC Overseas Trade Statistics, Cebr analysis

Table 6: Exports to non-EU countries by SITC 3-digit product category in 2019 – Road vehicles (SITC 2-digit disaggregated)

SITC 3-digit product categories	£ millions	% share of UK total non-EU trade
781 - Motor cars & other m/vehicles principally designed for transport of persons (o/t public-transport vehicles)	13,392	59.7%
782 - Motor vehicles for the transport of goods and special purposes motor vehicles	1,406	67.0%
783 - Road motor vehicles, nes	118	38.8%
784 - Parts and accessories of the motor vehicles of group 722, 781, 782 and 783	753	19.2%
785 - Motorcycles (including mopeds) and cycles, motorized and non-motorized; invalid carriages	192	18.6%
786 - Trailers and semi-trailers; other vehicles, not mch propelled; specially designed & equipped transport ctr	170	32.6%

Source: HMRC Overseas Trade Statistics, Cebr analysis

Note that, in contrast to

Table 3, there is no total row in either Table 5 or

Table 6 this is because these tables provide a more granular snapshot of some of the information contained in

Table 3 but not the whole picture and so will not sum to the same total value.

The results presented here are clearly illustrative of the vital international gateway role played by the Solent LEP and its maritime sector. In the area of machinery and transport equipment, it is clear that the associated manufacturing industries have a significant dependence on the services offered by the maritime sector in the Solent LEP. However, it is clear that a very wide range of manufacturing industries up and down the country are dependent on the maritime sector in the Solent LEP to get their finished goods to market.

3.5 The key imports facilitated by the Solent maritime sector from non-EU countries

This subsection concerns the imports of goods that are facilitated by the Solent maritime sector. It is structured in a manner similar to Section 3.4. We commence with a broad overview of the import product categories that are moving through the Solent with the help of its maritime sector. Imports can be expected to include final goods for consumption and investment and intermediate products that provide vital inputs for UK manufacturers, including those heavily engaged in exporting.

At the SITC 1-digit level, .

Table 7 illustrates that the Solent moves a 17.8% share of all miscellaneous manufactured articles that are imported to the UK from non-EU countries. This includes goods like:

- Pre-fabricated buildings;
- Furniture;
- Travel goods;
- Clothing and footwear;
- Professional and scientific instruments and apparatus; and
- Photographic and optical goods, including clocks and watches.

Many of these goods can be expected to be dominated by goods in final form to support consumption or investment programmes. As such, the maritime sector in the Solent LEP plays

an important role in facilitating competition for domestic manufacturers of the same kinds of product.

In value terms, the highest category is machinery and transport equipment, of which imports to the value of £7.9 billion were moved through the Solent in 2019. This is likely to include final goods and, thus, again a source of competition for UK manufacturers. However, it is also likely to include parts and components that are built into machinery and transport equipment being manufactured in the UK, either for export or for the domestic market.

Table 7: Imports to non-EU countries by SITC 1-digit product category in 2019

SITC 1-digit product categories	£ millions	% share of UK total non-EU trade
0 - Food & live animals	1,246	12.5%
1 - Beverages & tobacco	103	5.5%
2 - Crude materials, inedible, except fuels	718	12.8%
3 - Mineral fuels, lubricants & related materials	4,303	11.7%
4 - Animal & vegetable oils, fats & waxes	8	2.4%
5 - Chemicals & related products, nes	1,472	9.5%
6 - Manufactured goods classified chiefly by material	3,109	12.8%
7 - Machinery & transport equipment	7,976	10.2%
8 - Miscellaneous manufactured articles	7,228	17.8%
9 - Commodities/transactions not class'd elsewhere in SITC	0.3	0.5%
Total	26,163	10.7%

Source: HMRC Overseas Trade Statistics, Cebr analysis

At the SITC 2-digit level, the picture is somewhat different.

Table 8 suggests that, by value, 27.4% of the UK's imports of Furniture from non-EU countries are moved through the Solent ports, amounting to £11.3 billion. Similarly, £2.1 billion worth of road vehicles pass through the Solent, amounting to 23.5% of UK imports.

The machinery and transport equipment categories are much less prominent in the Solent in terms of imports. Indeed, the £2.2 billion of imports from non-EU countries in the road vehicles category pales in comparison to the export numbers. We suspect that parts and components, required by UK manufacturers to produce motor vehicles for the domestic market or for export, accounts for a relatively sizable share of this. Nonetheless, the Solent is responsible for moving a sizeable share of the UK's total imports of products in this category.

Table 8: Imports to non-EU countries by SITC 2-digit product category

SITC 2-digit product categories	£ million	% share of UK total non-EU trade
09 Miscellaneous edible products & preparations	173	25.7%
26 Textile fibres not manufactured & their waste etc	76	21.3%
28 Metalliferous ores & metal scrap	475	24.6%
61 Leather, leather manufactures n.e.s & dressed furskins	33	24.5%
62 Rubber manufactures n.e.s.	354	22.9%
73 Metalworking machinery	118	20.7%
78 Road vehicles (including air cushion vehicles)	2,187	23.6%
81 P/fab buildings;sanit.,plumbing,heating &lighting fixt.	335	22.6%
82 Furniture & parts thereof; bedding, mattresses etc	1,132	27.4%
83 Travel goods, handbags & similar containers	281	23.3%
85 Footwear	595	24.3%

Source: HMRC Overseas Trade Statistics, Cebr analysis

Table 9 displays results as the SITC 3-digit level; the picture largely mirrors that in

Table 8 above. In value terms, petroleum oils and oils obtained from bituminous minerals are dominant at £3.9 billion imports from non-EU countries passing through the Solent, a 20.7% share of the UK total.

It can also be seen from Table 10 that the Solent handles 67.38% of UK imports from non-EU countries in motor vehicles for the transport of goods and other special purposes and 24.3% of the UK's imports of parts and accessories of motor vehicles. This confirms the role of the maritime sector in the Solent LEP in facilitating the supply chain needs of UK manufacturers of machinery and transport equipment, as well as providing the route to market for their exports.

However, it is clear that the maritime sector in the Solent LEP provides a vital cog in the wheel of most, if not all, of the full range of manufacturing sectors in the UK, from food and clothing, to motor cars and goods vehicles to aircraft, spacecraft and satellites. This role comes in various guises from ensuring the movement of vital imported inputs to UK manufacturers from abroad, of valuable exports to our trading partners or in moving imported final goods that provide a competitive discipline for UK manufacturers looking to maintain global market share.

Table 9: Imports to non-EU countries by SITC 3-digit product category in 2019 – Mineral fuels, lubricants & related materials (SITC 1-digit disaggregated)

SITC 3-digit product categories	£ millions	% share of UK total non-EU trade
333 - Petroleum oils and oils obtained from bituminous minerals, crude	3,963	20.7%
334 - Oils obtained from petroleum or bituminous mnl, prp nes, containing by weight nlt 70%.of these oils	334	3.5%
335 - Residual petroleum products, nes and related materials	2	1.3%
342 - Liquefied propane and butane	3	2.1%

Source: HMRC Overseas Trade Statistics, Cebr analysis

Table 10: Imports to non-EU countries by SITC 3-digit product category in 2019 – Road vehicles (SITC 2-digit disaggregated)

SITC 3-digit product categories	£ millions	% share of UK total non-EU trade
781 - Motor cars & other m/vehicles principally designed for transport of persons (o/t public-transport vehicles)	457	10.6%
782 - Motor vehicles for the transport of goods and special purposes motor vehicles	819	67.4%
783 - Road motor vehicles, nes	34	26.9%
784 - Parts and accessories of the motor vehicles of group 722, 781, 782 and 783	585	24.3%
785 - Motorcycles (including mopeds) and cycles, motorized and non-motorized; invalid carriages	176	20.1%
786 - Trailers and semi-trailers; other vehicles, not mch propelled; specially designed & equipped transport ctr	116	38.6%

Source: HMRC Overseas Trade Statistics, Cebr analysis

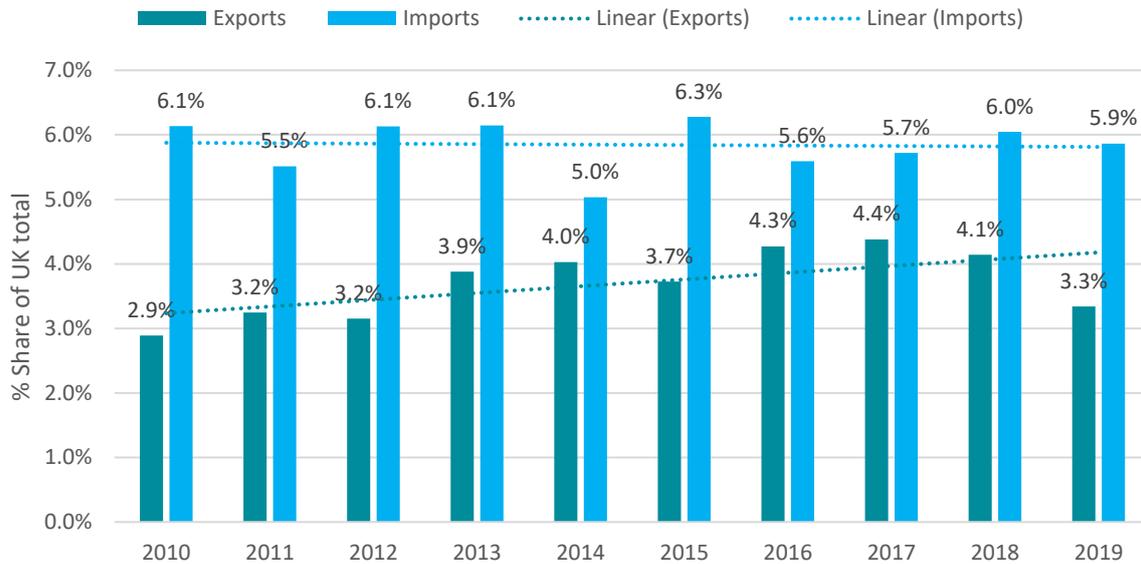
3.6 The Solent's facilitation of EU trade

As explained prior, due to data limitations and the fact that EU traded goods do not (yet) pass through Customs when entering the UK, disaggregated data and SITC code breakdowns found in HMRC Trade Statistics are not available for EU trade. As such, this section will provide an overview of the Solent's facilitation of EU trade by volume and value over the period 2010 to 2019.

Figure 8 below illustrates the Solent LEP share of total UK trade with EU countries in terms of both import and export volumes for each year in the period 2010 to 2019. Throughout the period, the Solent LEP has accounted for between 5% and 7% of total imports, with a slightly declining trend. As explained with regard to Figure 4, fluctuations in shares year to year may simply be a function of changes in total trade volumes and volumes passing through alternative ports rather than a definite trend.

However, the Solent LEP's facilitation of UK exports to the EU has been on a steady rise since 2010, peaking in 2017 at 4.4%. This trend appears to be more indicative of the Solent LEP becoming a more important port for EU trade than mere fluctuations as a result of total trade.

Figure 8: Solent LEP shares of total UK trade with EU countries, exports and imports by VOLUME, %, 2010-2019



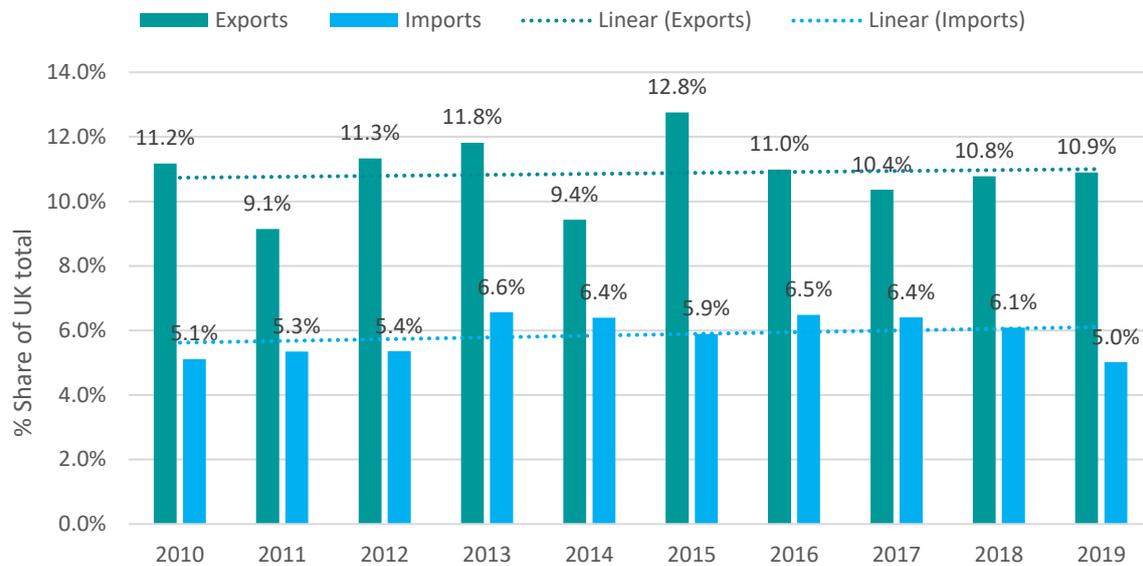
Source: Eurostat, HMRC Overseas Trade Statistics, Transmodal, ONS, Cebr analysis

Figure 9 shows the Solent LEP share of UK trade with the EU by value. This figure illustrates that the Solent region is more important in terms of value than volume with regards to EU trade. The proportion of the Solent's facilitation of imports peaked in 2013 at 6.6%, where in 2019 we observe a low of 5%. Unlike the volume representation, it appears the facilitation of imports by value is on a slight increasing trend.

The value of exports to the EU that is facilitated by the Solent LEP is significant and increasing. In 2015, 12.8% of the value of exports to the EU passed through the Solent LEP compared to only 3.7% by volume. This has remained largely stable: the Solent LEP facilitation of exports by value in 2010 was 11.2%. Although year to year there is minor fluctuations such as from, it appears that the Solent LEP is becoming more important for UK exports to the EU by value.

As stated, due to data limitations we cannot disaggregate this by sector as was done in Section 3.4 and 3.5.

Figure 9: Solent LEP shares of total UK trade with EU countries, exports and imports by VALUE, %, 2010-2019



Source: Eurostat, HMRC Overseas Trade Statistics, Transmodal, ONS, Cebr analysis

3.7 The Solent's facilitation of total UK trade

The previous sections gave a breakdown of the Solent's facilitation of trade with EU and non-EU countries. For completeness, the section provides an overview of the Solent's total trade facilitation by volume and value.

Figure 10 illustrates the Solent's trade facilitation with both EU and non-EU countries, by volume. This is, in effect, an average of the previous two depictions of Solent's trade. It is clear that the Solent region is a significant port for UK trade volumes, facilitating 8% of imports on average throughout the period. Likewise, it also shows that the importance of the Solent is increasing with regard to the volume of UK exports passing through its ports.

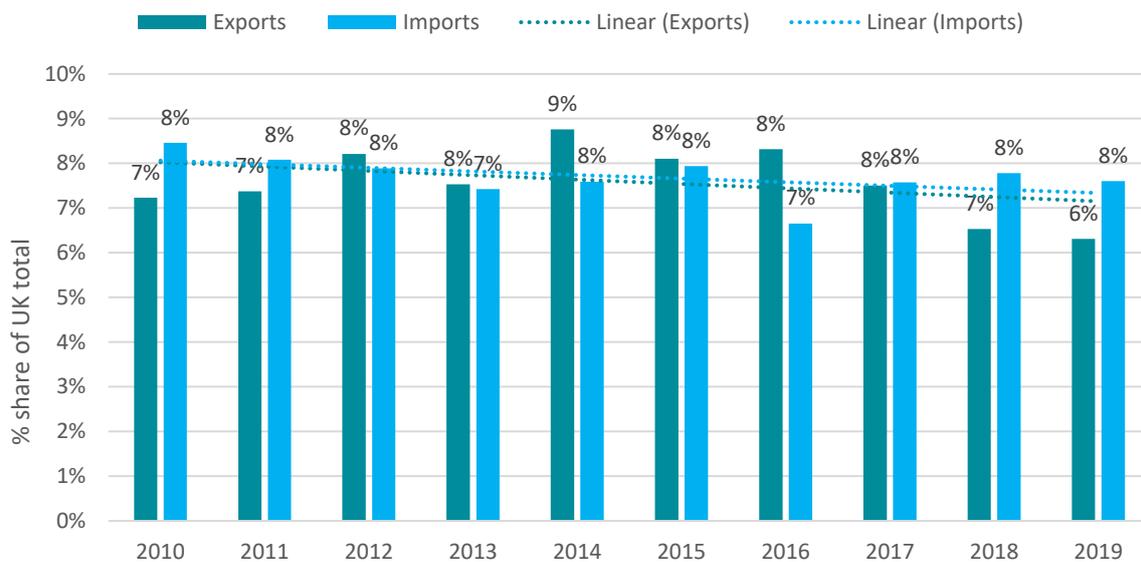
Similar to the disaggregation, the Solent's importance in trade facilitation by value is greater than that of volume.

Figure 11 illustrates that both import and export facilitation by the Solent is greater by value than in Figure 10 where it shows by volume. Similarly, the Solent ports are shown to have a fluctuating role in exports of UK trade to both EU and non-EU countries, where in 2015 it peaked around 13% of total UK exports by value and by 2019 this had declined to 7%, a level observed in 2014 and 2017. The share in total value of exports however an increased from 11% in 2018 to 12% in 2019.

Emphasising the Solent's importance as a trade hub is the value of trade that passes through it. In 2019, Solent's gross trade was £81,645 million (net trade was £2,221 million). This gross trade is equivalent to 3.8% of the value of UK GDP in 2019, highlighting the sheer value of trade that the ports facilitate.

Interestingly, a study by the OECD17 found that a 10% increase in trade openness stimulates a 4% increase in GDP per capita. The reason for this tends to be that trade allows for a country's productivity to increase through avenues such as taking advantage of economies of scale, comparative advantages and general spill over effects. As such, a country which opens its trade can benefit through enhanced productivity which ultimately stimulates economic growth. That said, if Solent gross trade increased by £8,165 million, this would increase UK GDP per capita by £1,225. Since 2010, gross trade through the Solent has increased each year by £2,083 million on average thus illustrating how the Solent's importance as a trade hub is transmitted through the economy.

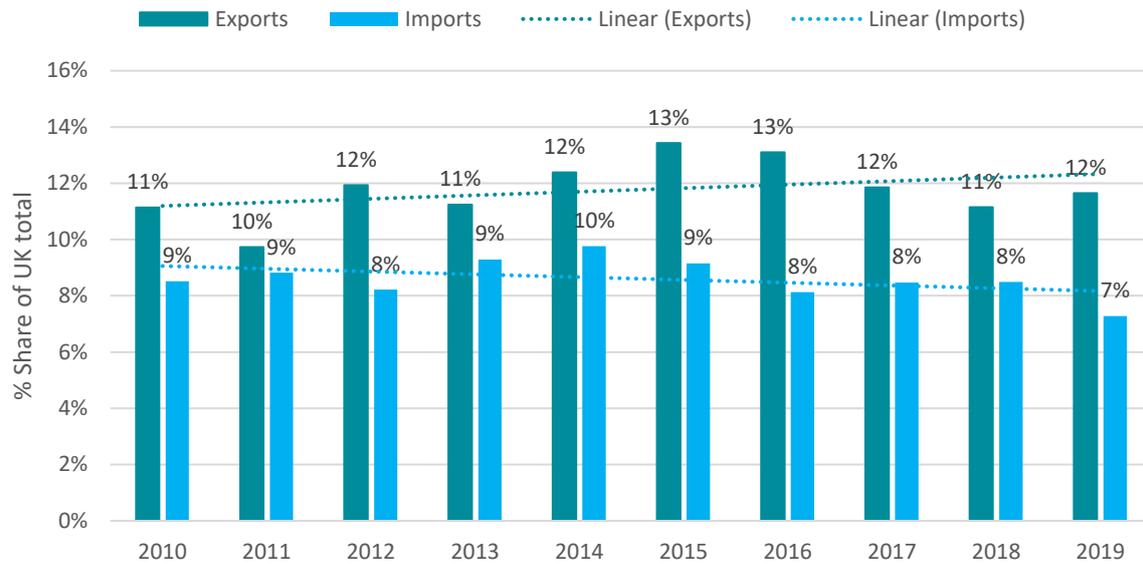
Figure 10: Solent LEP shares of total UK trade, exports and imports by VOLUME, %, 2010-2019



Source: HMRC Overseas Trade Statistics, Transmodal, ONS, Cebr analysis

17 OECD. (2007). 'The Effects of Globalisation on Labour Markets, Productivity and Inflation'.

Figure 11: Solent LEP shares of total UK trade, exports and imports by VALUE, %, 2010-2019



Source: HMRC Overseas Trade Statistics, Transmodal, ONS, Cebr analysis

3.8 A Gateway for international tourism

It is important to recognise that inbound tourism is a UK export: in the same way that producers of goods exports rely on the Solent maritime sector to get their goods to the international market; the tourism-orientated sectors – including travel, accommodation, arts and culture and so forth – rely on the maritime sector to bring people to the UK and in turn purchase from them.

With the low-cost carrier revolution in aviation and the emergence of rail services to continental Europe via the Channel Tunnel, travel by sea has declined in popularity. But the mode remains important for luxury cruising and when people want to travel to or from the UK with their own cars.

Table 11 illustrates how important the Solent is for inbound tourism – that is foreign individuals who come to the UK via the Solent through Ferries and spend money in the UK. As already stated, the value of inbound tourism is declining year on year, likely due to the rise of aviation and the Channel Tunnel rail crossing. However, although the number of ferry passengers has been decreasing, the last two years of data saw a reversal of the trend in terms of value. In 2019 an estimated 1.7 million ferry passengers came to the UK through Portsmouth, with an average spend of £385 each, amounting to just over £700 million in expenditure through the UK.

Table 11: Number and value of inbound tourism through the Solent, 2010 to 2019

	Ferry Passengers on Short Sea Routes (000s), Portsmouth	Overseas residents travelling by sea to the UK, average spend per visit, £	Inbound tourism value, £m
2010	2,212	358	791
2011	2,065	352	727
2012	1,880	344	647
2013	1,871	351	657
2014	1,913	353	676
2015	1,896	323	612
2016	1,920	305	586
2017	1,845	297	549
2018	1,848	352	677
2019	1,715	385	706

Source: ONS, Department for Transport, Cebr analysis

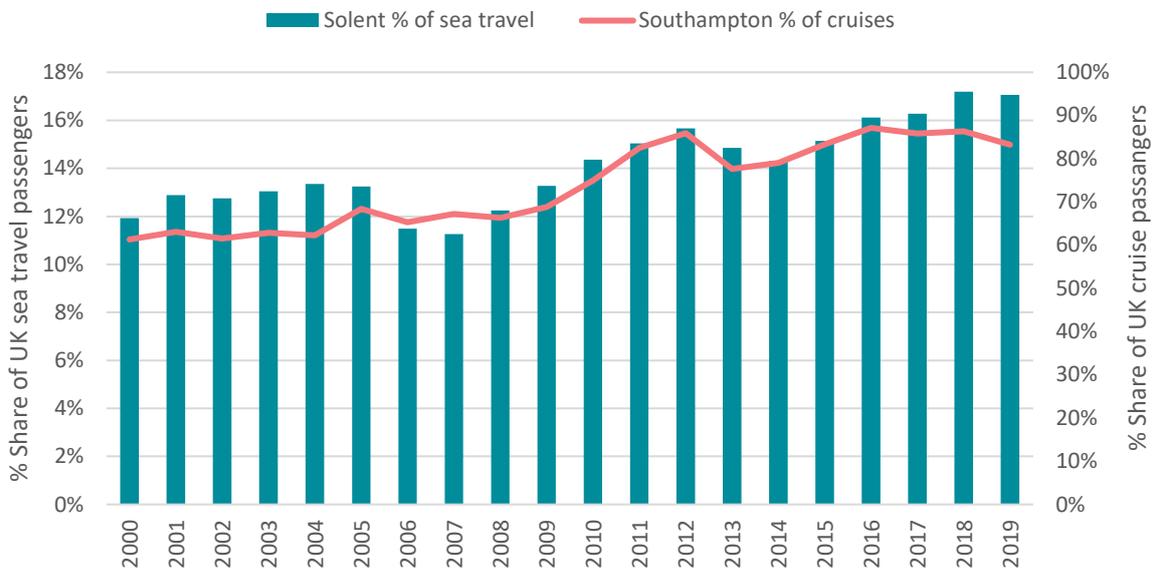
Worth bringing attention to is Southampton's importance as a cruise hub for the UK. The value of this is captured under the 'Shipping' category however, the scale of facilitation is still worth highlighting.

Figure 12 below illustrates both the Solent share of international passenger movements relative to the total level of international passenger movements at UK ports; and the percentage share of total international cruise passengers that can be attributed to Southampton port. As is clearly illustrated, the Solent share of international passengers at UK Ports has increased markedly over the period 2000 to 2019; from 12% to 17%. Similarly, the Southampton share of international cruise passengers has grown from 61% to 86%. These trajectories are indicative of the importance of the Solent maritime sector as a gateway for international tourism.

Part of the reason that Southampton is so important for the UK cruise industry is because Carnival Cruises has their head office in the Solent. As well as this, Southampton is the only port P&O Cruises and Cunard operate out of in the UK – two of the major cruise companies in the UK. Southampton through P&O and Cunard serve cruises to the Mediterranean, the Caribbean, the Baltic, the Canary Islands and the Norwegian Fjords.¹⁸

¹⁸ P&O Cruises. (2022). 'Destinations'.

Figure 12: The Solent's share of international passenger movements and Southampton's share of the cruise market



Source: Department for Transport, Cebr analysis

3.9 The Solent's facilitation of advanced petrochemicals

Southampton houses a large advanced petrochemical refinery, owned by Exxon Mobil, which directly benefits from the port's infrastructure. It is the idea that the refinery benefits from being located within the Southampton Port as it minimises the costs associated with transporting the advanced petrochemicals to be refined. The refinery effectively can take the product directly off oil tankers for refinement instead of relying on additional transport networks in the UK.

To calculate the Solent's facilitation of the Standard Industrial Classification (SIC) code 19.2: 'Manufacture of coke and refined petroleum', we used a combination of the Office for National Statistics' (ONS) Annual Business Survey (ABS) data and ONS' Business Register and Employment Survey (BRES) data. The ABS provides information of GVA of the SIC code 19.2 for the whole UK by year. BRES provides data on employment numbers for the SIC code 19.2 in the UK and also by regions i.e. the Solent.

We have assumed that the number of employees is a good proxy for value creating and activities within the SIC code 19.2. As such, using the proportion of the Solent employees within oil refinement to the UK level, we can derive the GVA for each year for the Solent region. Although attributable to the whole Solent region, it is likely that the vast majority of this value creation is from the Southampton Port given the scale of Exxon Mobil's operations.

Table 12 outlines both the UK and the Solent GVA for the SIC code 19.2 'Manufacture of coke and refined petroleum'. It is clear that the Solent is very important for the UK oil industry given that in 2019, 9% of total GVA was created there. There appears to be a significant declining trend in the Solent's importance for advanced petrochemicals; the Solent in 2010 facilitated 17% of total GVA created for SIC code 19.2, compared to 9% in 2019.

This declining trend is driven by the ONS' BRES data on employment. In 2010, BRES estimated 1,500 employees in the Solent working within the SIC code 19.2. By 2019, this estimate had fallen to only 800 indicating a shrinking industry within the Solent region.

It may be the case that Table 12 understates the true proportion of the advanced petrochemical industry facilitated by the Solent region. Data is only available on the SIC code 19.2 (Manufacture of coke and refined petroleum), whereas 19.201 (Mineral oil refining) would likely be a better metric as it relates closer to activities undertaken at Solent ports. As such, we estimate the Solent's contribution at a broader SIC code level, potentially understating its true proportion of contribution.

ExxonMobil estimates have put the Solent's contribution closer to 20% of the UK oil refinement industry.¹⁹

Table 12: The Solent's facilitation of advanced petrochemicals (SIC code 19.2) in GVA, 2010 to 2019

	19.2 Manufacture of coke and refined petroleum, GVA, £m		
	UK	Solent	Solent refinement as a % of UK
2010	2,248	375	17%
2011	2,232	372	17%
2012	2,226	371	17%
2013	1,321	165	13%
2014	901	113	13%
2015	2,955	369	13%
2016	2,555	319	13%
2017	2,575	229	9%
2018	2,115	185	9%
2019	2,453	235	10%

Source: BRES, Cebr analysis

3.10 The Solent's facilitation of the UK automotive industry

As detailed in Section 3.4 and Section 3.5, the Solent facilitates a very significant proportion of the non-EU automotive trade. The Solent facilitates 59.66% of car exports and 67.38% of automotive vehicles for the transport of goods imports to the UK from non-EU countries. However, although we cannot disaggregate the SITC codes of EU trade through Solent, it is likely the case that the Solent provides significant trade facilitation for the automotive industry with Europe.

The primary difference between non-EU trade and European trade with respect to the automotive industry is that European trade is likely highly intertwined with supply chains as there is no Customs barrier between EU countries. That is, products may begin their manufacturing process in the EU and be finalised in the UK for resale back to the EU. This supply chain element is very significant for EU trade and the UK automotive industry as it, through economies of scale, minimises the costs of production.

To estimate the Solent's facilitation of the automotive industry, we can attribute a share of the UK automotive industry's turnover to the trade facilitation that makes the production and final

¹⁹ ExxonMobil. (2019). 'Fawley refinery'.

stage selling possible. As such, we have used the trade facilitation found in HMRC Overseas Trade Statistics data (as detailed in Sections 3.4 and 3.5), the ONS' ABS and a previous study by the European Automobile Manufacturers Association²⁰ to derive the Solent's facilitation.

The UK automotive manufacturing industry in 2019 had a turnover of £60.8 billion.²¹ From our calculations, we estimate that the Solent facilitates 53% of the UK automotive industry through it facilitating trade with the EU and non-EU destinations on such a large scale. As such, the Solent region is estimated to have facilitated £32.4 billion of UK automotive manufacturing turnover in 2019.

20 The European Automobile Manufacturers Association. (2019). 'Brexit and the auto industry: Facts and figures'.

21 ONS. (2018). 'Annual Business Survey'.

4. The Solent-based Maritime sector and Portsmouth Naval Base

Here we set out how the Maritime Sector has been defined for the purposes of the study. On a holistic level, the wider sector can be disaggregated into the shipping, ports, leisure marine, marine engineering, and maritime business services industries. In addition to these five industries we also consider the activities of Portsmouth Naval Base.

4.1 The definition of the Maritime sector and its constituent industries

Maritime UK has provided a list of activities which fall under the Maritime Sector; Cebr has subsequently undertaken a mapping exercise using this list to identify how each of these five industries aligns with the national accounts. For most Maritime Sector activities, a corresponding Standard Industrial Classification (SIC) code exists which enables the identification and quantification of the direct economic impacts using publicly available data sources. A minority of activities do not map neatly against the SIC framework, necessitating the use of industry or local-level data for quantification purposes.

The Maritime Sector in the Solent LEP region has therefore been identified as consisting of the following activities. Each of the sub-sectors have been mapped to their sector by Cebr, in order to attribute Standard Industrial Classification (SIC) codes to the activity to allow their direct impacts to be measured.

- **Shipping industry**
 - International passenger transport (cruise and ferry);
 - Domestic and inland waterway passenger transport;
 - International freight transport (bulk, container, gas and tanker);
 - Domestic & inland waterway freight transport;
 - Other shipping activity.
- **Ports industry**
 - Warehousing and storage;
 - Port activities and management;
 - Stevedores, cargo and passenger handling;
 - Border agency, HMRC and public sector employees operating in ports.
- **Leisure Marine industry**
 - Recreational marine activities, marine finance and legal activities and general marine services;
 - Boatbuilding (marine leisure vessels);
- **Marine engineering and scientific industry**
 - Shipbuilding;

- Marine renewable energy;
- Marine support activities for offshore oil and gas, engineering and mining;
- Marine science and academic activities, including government vessels and technical consulting;
- **Maritime Business Services industry**
 - Shipbroking services;
 - Maritime Insurance services;
 - Maritime Financial services;
 - Maritime Legal services;
 - Ship Surveying and Classification activities;
 - Maritime Education (including Maritime university courses and cadetships);
 - Maritime Consultancy; and
 - Maritime Accountancy.
- **Portsmouth Naval Base²²**
 - Shipbuilding, Marine Engineering and the Naval Defence industry;
 - Naval defence activities (MOD and Civilian);
 - Other activities (including heritage and cultural services) and ship services.

4.2 Mapping Maritime Sector activities against the national accounts framework

Here we set out how the direct economic contribution of the industries and activities listed in the previous subsection have been mapped against the national accounts framework. For activities which do not map neatly against this framework – in other words, when SIC codes cannot be used to accurately reflect or capture a particular maritime-related activity – we outline the industry-level sources to separately quantify the economic contribution.

It should be stressed that the Maritime industries as defined here are unlikely to be exhaustive, and that further work may be necessary to fully capture the fullest extent of activities taking place in the Maritime Sector, several of which are often difficult to define within the existing national accounts framework. There may therefore be a greater role for the UK Government

²² The Portsmouth Naval Base (PNB) is included within our economic impacts of Solent LEP Maritime Sector for presentational purposes. Some of the impacts (for instance shipbuilding and marine engineering) are ordinarily included in other industries of the Maritime Sector. In these cases, the impacts of PNB are stripped out from the rest of the Maritime Sector in order to ensure there is no double counting. Other impacts of the PNB (such as naval defence activities) are not ordinarily included within Cebr's definition of the Maritime Sector. These impacts are included within this report for presentational purposes, but are excluded from the national impacts of the Maritime Sector.

to expand the existing definition of the Maritime Sector, in order that the true value of economic activity supported is then measured.

The shipping and ports industries

Table 13 below shows how activities for the shipping and ports industries have been identified, and the data sources used to capture and quantify the associated economic activity.

Table 13: Mapping of Maritime sector activities: Shipping and Ports industries

INDUSTRY	ACTIVITY	MAPPING	SOURCE(S) USED
Shipping	Transport of Passengers International / Sea Faring	Identified through SIC code 50100, "Sea and Coastal Passenger Water Transport".	FAME, BRES
	Transport of Passengers on Inland Waterways	Identified through SIC code 50300, "Inland Passenger Water Transport".	FAME, BRES
	Transport of Freight International/ Sea Faring	Identified through SIC codes 50200 and 77342, "Sea and coastal freight water transport", and "Renting and Leasing of Freight Water Transport Equipment".	FAME, BRES
	Transport of Freight on Inland Waterways	Identified through SIC code 50400, "Inland Freight Water Transport".	FAME, BRES
	Other Shipping activity not captured through SIC codes 50100 - 50400	Identified through Chamber of Shipping statistics for shipping-related employment	CoS Manpower Survey
Ports	Warehousing and Storage	Identified through SIC code 52101, "Operation of Warehousing and Storage Facilities for Water Transport activities". Activities are then mapped to council wards containing major and minor UK ports.	FAME, BRES
	Port Authority Management, Security and Marshals, Marine and Vessel Management Services, Marine Pilots, Harbour Support, Engineering and Maintenance	Identified through SIC code 52220, "Service activities incidental to water transportation". Activities are then mapped to council wards containing major and minor UK ports.	FAME, BRES
	Stevedores, cargo and passenger handling including crane/vehicle/plant drivers/operators	Identified through SIC code 52241, "Cargo Handling for Water Transport Activities". Activities are then mapped to council wards containing major and minor UK ports.	FAME, BRES
	Border Agency, Home Office and HMRC staff operating in Ports	Identified as public sector employees operating in UK ports. Activities are then mapped to council wards containing major and minor UK ports.	Institute for Government, Port Freight Statistics, Cebr analysis

Source: Maritime UK, Cebr analysis

For the majority of shipping and Ports industry activities, business demography data taken from the FAME database has been used to generate UK-level estimates for the direct economic impacts of each activity. Data taken from the ONS Business Register of Employment Survey (BRES) has then been used to disaggregate national level data at both regional and Solent-level. In the case of activities for the Ports industry, only activity taking

place in council wards within the Solent LEP which contain a major or minor UK port has been captured, on the assumption that warehousing and storage and other activities taking place in these locations relate to the associated port.

The leisure marine and marine scientific and engineering industries

Table 14 below shows how activities for the marine industry have been identified, and the data sources used to capture and quantify the associated economic activity.

Table 14: Mapping of Maritime sector activities: Marine industry

INDUSTRY	ACTIVITY	MAPPING	SOURCE(S) USED
Leisure Marine	Boatbuilding (marine leisure vessels)	Identified through SIC codes 3012 ("Building of pleasure and sporting boats") as well as the British Marine "Key Performance Indicators for the Leisure, Superyacht and Small Commercial Marine Industry"	British Marine, Cebr analysis
	Recreational marine activities, marine finance and legal activities and general customer and business marine services	Leisure marine activities do not map neatly across the SIC framework, as they are typically bundled together with others within the leisure industries; this precludes the effective use of FAME to gather economic impact data. Cebr has therefore drawn upon the British Marine "Key Performance Indicators for the Leisure, Superyacht and Small Commercial Marine Industry" to derive employment, turnover and GVA estimates.	British Marine, Cebr analysis
Marine Engineering	Shipbuilding and Marine Engineering	Identified in the National Accounts framework through SIC code 3011 ("Building of ships and floating structures") and 3315 ("Repair and maintenance of ships and boats")	ABS, BRES, FAME, Cebr Analysis
	Marine renewable energy	Marine renewable energy activities do not map neatly across the SIC framework. Cebr has therefore drawn upon the BIS report, "The size and performance of the UK-low carbon economy" BIS report (2013) to derive employment, turnover and GVA estimates.	BIS, Cebr analysis
	Marine support activities for offshore oil and gas, engineering and mining	Identified through SIC code 91, "Support activities for petroleum and natural gas extraction".	FAME, Cebr analysis
	Marine science and academic activities, including government vessels and technical consulting	Marine scientific activities do not map neatly across the SIC framework, as they are typically bundled together with other activities within the Manufacturing and "Other Scientific and Professional" sectors; this precludes the effective use of FAME to gather economic impact data. Cebr has therefore drawn upon the Society of Maritime Industries (SMI) "Annual Review of UK Marine Scientific Industries reports to gather data.	SMI, Cebr analysis

Source: Maritime UK, Cebr analysis

The marine industry is defined as encompassing a wide range of activities, ranging from leisure boat manufacturing to renewable energy generation and marine scientific activities. It is important to note that manufacturing and repair of ships is separately defined as falling under the activities of Portsmouth Naval Base (see below) as part of our Solent LEP analysis.

A key source of information used by Cebr to capture marine leisure activities is the Key Performance Indicators (KPI) analysis produced by British Marine. The KPI analysis is produced each year, drawing upon information supplied to British Marine by its membership, such as company turnover and statistics declarations. KPI analysis covering the years 2010 to 2015 (inclusive) has therefore been used as a major source of information for capturing and quantifying leisure boatbuilding as well as business and customer marine activities.

The Maritime Business Services industry

The methodology of the Maritime Business Services industry is unique compared to the other reports of this study into the Maritime Sector. The MBS industry is a fairly abstract concept comprising of, for the purpose of this study, eight sub-industries which are not exclusively maritime related and hence do not map neatly onto SIC codes.

For this analysis Cebr has drawn on a variety of data sources to produce a bottom-up analysis for each of the sub-industries. Data is limited for Maritime Financial services and Maritime Accountancy and as such for these sub-industries, we rely on PwC's 2016 study 'The UK's Global Maritime Professional Services: Contribution and Trends', augmenting it with trends in the broader industry to generate estimates for the entire period, 2010 to 2017. The other sub-industries have been computed through a combination of bottom-up analysis using company and financial accounts, FAME, ONS and insights from representatives of the industry.

For a more detailed description of the individual methodologies, please see 'The economic contribution of the UK Maritime Business Services industry' report.

Portsmouth Naval Base

In addition to the economic contribution supported by the five Maritime industries detailed above, this study also considers the major economic contribution of Portsmouth Naval Base to the Solent LEP region. As set out in the Introduction, our major source of information is the 'Socio-Economic Impact Assessment of Portsmouth Naval Base' report produced by the University of Portsmouth in 2012. This report identifies the direct and indirect contribution in terms of GVA and employment to the Solent LEP region in 2011, with employment distributed across the following identified activities:

- Portsmouth Naval Base armed service and civilian staff;
- Shipbuilding;
- Maritime services;
- Ships' crew;
- BAE Systems Subcontract staff and Other permanent contract staff;
- Heritage (those employed running and maintaining attractions).

It was previously estimated that Portsmouth Naval Base directly contributed £959 million in GVA and 11,900 jobs in 2011;²³ the wider contribution was £1,682 million in GVA and just under 19,800 jobs. These estimates feature as part of the economic impact analysis featured in this report. In order to capture the GVA generated and employment supported by Portsmouth Naval Base in the years following 2011, Cebr has projected the 2011 estimates by augmenting these with the following two key sources:

- For MOD service and civilian staff, employment estimates for 2010 and 2012-2019 have been estimated by using the MOD Quarterly Location Statistics;²⁴
- For non-MOD staff, statistics for employment have been projected for the years 2010 and 2012-19 using BRES statistics.

23 Ibid.

24 <https://www.gov.uk/government/collections/location-of-all-uk-regular-service-and-civilian-personnel-quarterly-statistics-index>

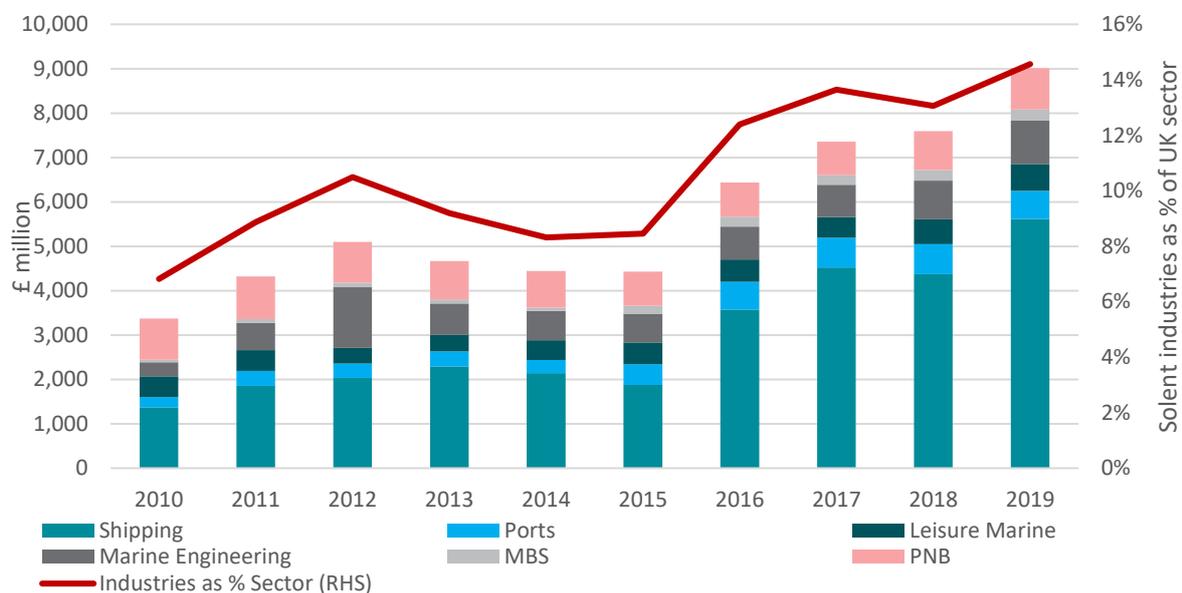
5. The direct impact of the Solent-based Maritime Sector and Portsmouth Naval Base

In this section we set out estimates for the direct contribution of the Solent-based Maritime Sector to five key macroeconomic indicators: turnover, GVA, employment, the compensation of employees²⁵, and the Exchequer contribution through tax revenues raised. After quantifying the direct contributions made through these activities, the contribution that the Solent-based Maritime sector makes to the wider UK sector is then examined. Direct economic impacts are separated by Maritime industry (shipping, ports, leisure marine, marine engineering and maritime business services) and from those associated with Portsmouth Naval Base (PNB).

5.1 The direct impact through turnover

This subsection outlines the direct turnover impact from the Solent-based Maritime Sector and Portsmouth Naval Base. Figure 13 below shows the estimated direct turnover impact from the Solent-based shipping, ports, leisure marine, marine engineering and maritime business services industries, as well as the Portsmouth Naval Base, in the years 2010 to 2019.

Figure 13: The direct contribution of the Solent-based Maritime industries and Portsmouth Naval Base to turnover, and the Solent share of the total direct Maritime Sector contribution to UK Turnover, 2010 to 2019



Source: ONS, FAME, Cebr analysis

²⁵ Compensation of employees is the total remuneration, in cash or in kind, payable by an employer to an employee in return for employers' social contributions, mainly consisting of employers' actual social contributions (excluding apprentices), employers' imputed social contributions (excluding apprentices) and employers' social contributions for apprentices.

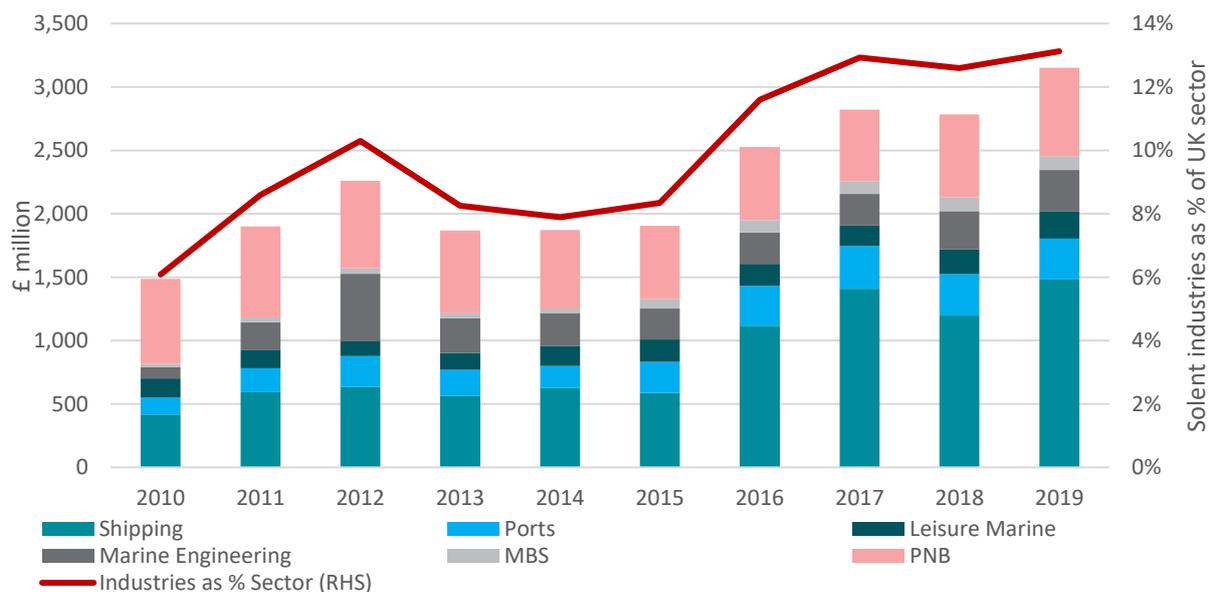
The Solent-based Maritime Sector and Portsmouth Naval Base directly contributed £9 billion to turnover in 2019. The direct impact reached its highest level in 2019, increasing by more than 103% from 2015. Most of this increase was driven by the turnover generated in the Shipping industry, which increased by 200% in the period 2015-19.

The Shipping industry contributed 62% of the total turnover in 2019, contributing £5.6 billion to the direct impacts. Marine engineering and the Portsmouth Naval Base represented the second and third highest contributions to turnover, contributing 11% and 10% respectively. The Ports industry contributed £635 million to turnover, equivalent to 7% of the direct impact. The Leisure Marine industry contributed 6.7% whereas Solent's maritime business services contributed 3% to the direct impact in 2019.

5.2 The direct impact through GVA

This subsection firstly illustrates the contributions in terms of the GVA from the Maritime Sector to the Solent LEP region and UK GDP. Figure 14 below shows this direct impact, disaggregated by the five Solent-based Maritime industries and the Portsmouth Naval Base in the years 2010 to 2019.

Figure 14: The direct contribution of the Solent-based Maritime industries and Portsmouth Naval Base to GVA, and the Solent share of the total direct Maritime Sector contribution to UK GVA, 2010 to 2019



Source: ONS, FAME, Cebr analysis

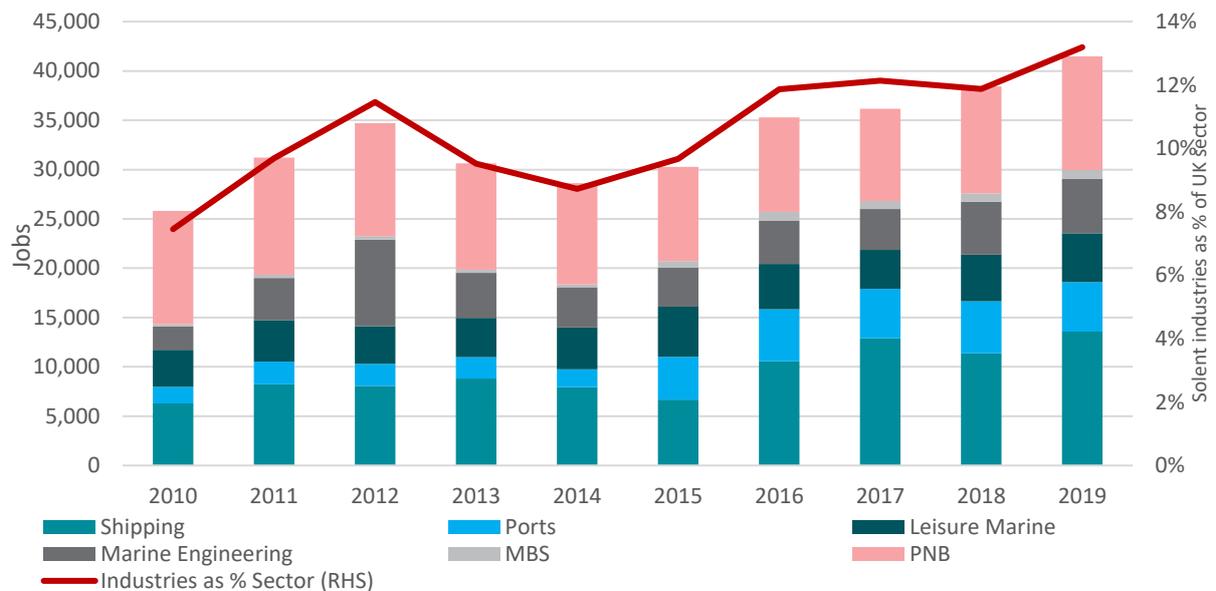
It is estimated that Solent-based Maritime sector and Portsmouth Naval Base directly contributed nearly £3.2 billion to GVA in 2019. The Shipping industry and Portsmouth Naval Base contributed the largest share of GVA in almost all of the years considered, on average around 37% and 30%, respectively. Around £324 million of GVA was directly contributed by the Marine Engineering industry in 2019, representing 10.3% of the total.

After combining the shipping, ports, leisure marine, marine engineering and maritime business services industries, it is estimated that the direct GVA impact of the Solent-based Maritime Sector represented 13.1% of the direct GVA impact of the entire UK Maritime sector in 2019.

5.3 The direct impact through employment

This subsection outlines the direct employment impact from the Solent-based Maritime Sector and Portsmouth Naval Base. Figure 15 below shows the estimated direct employment impact from the Solent-based shipping, ports, leisure marine, marine engineering and maritime business services industries, as well as the Portsmouth Naval Base, in the years 2010 to 2019.

Figure 15: The direct contribution of the Solent-based Maritime industries and Portsmouth Naval Base to employment, and the share of the total direct industry contribution to UK employment, 2010 to 2017



Source: ONS, FAME, Cebr analysis

It is estimated that the Solent-based Maritime sector and Portsmouth Naval Base directly employed 41,482 people in 2019, an increase from 25,811 people in 2010. The largest contributions to the direct employment impact in 2019 came from the Shipping industry (13,561 jobs) and Portsmouth Naval Base (around 11,520 jobs). The overall level of employment directly supported by the Marine Engineering industry in the Solent LEP region more than doubled during the period 2010 to 2019.

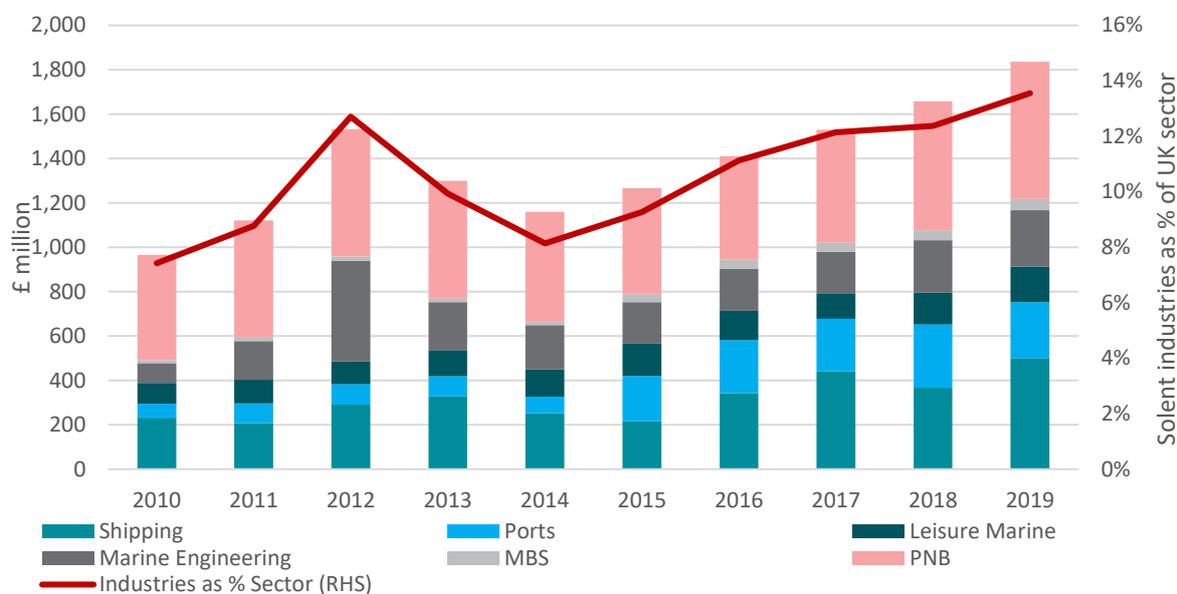
The estimated employment figures at Portsmouth Naval Base have seen a somewhat volatile trend. Its peak of 11,900 in 2011 was followed by years of decreasing numbers, but then saw an increase in the last two years of the decade (to 11,520 in 2019). The decline (and later increase) in employment directly supported by Portsmouth Naval Base can be attributed to the trend in Shipbuilding activity in the region since 2012, as identified through BRES statistics.

5.4 The direct impact through the compensation of employees

This section considers the compensation of employees which is directly supported by the Solent-based Maritime Sector and Portsmouth Naval Base. As noted in Footnote 1 earlier in this report, GVA is commonly known as income from production and that the principal recipients of this income are labour (through employee compensation), capital (shareholders, financiers, depreciation etc.) and government (through taxes on production, chiefly Business Rates). The principal beneficiary in most businesses and in most sectors of the economy are typically employees.

Figure 16 below shows the direct impact through the compensation of employees in the years 2010 to 2019, disaggregated by each Solent-based Maritime industry and Portsmouth Naval Base.

Figure 16: The direct contribution of the Solent-based Maritime industries and Portsmouth Naval Base to the compensation of employees, and the combined industries' share of the total contribution from the UK Maritime sector, 2010 to 2019



Source: ONS, FAME, Cebr analysis

The Solent-based Maritime Sector and Portsmouth Naval Base directly contributed £1.8 billion to the compensation of employees in 2019. The direct impact reached its highest level in 2019, increasing by 10.8% from the previous year.

The direct contribution of Portsmouth Naval Base increased from £581 million in 2018 to £619 million in 2019 and contributed 34% to the overall direct impact in 2019. The Ports industry contributed 14% of the direct impact in 2019, an increase from 7% in 2010. Indeed, the compensation of employees within the Solent's Ports industry grew by 297% over this period. The Leisure Marine industry contributed £160 million to the compensation of employees, equivalent to 8.7% of the direct impact. The Shipping industry and marine engineering contributed 27.3% and 13.9%, respectively. Finally, Solent's maritime business services contributed 2.7% to the direct impact in 2019, an increase from 1.3% in 2010.

Overall, the Solent-based Maritime Sector (excluding Portsmouth Naval Base) is estimated to have contributed 13.6% of the compensation of employees directly supported by the UK Maritime Sector in 2019; as with GVA, this proportion has increased, rising from around 7.4% in 2010.

5.5 The direct Exchequer contribution

Here we examine the contribution of the Solent-based Maritime sector and Portsmouth Naval Base to the UK Exchequer, through tax revenues raised from Maritime-related activities. In order to capture the incidence of taxation on the direct activities, (rather than indirect), Cebr has measured the direct contribution through revenues raised from the tax heads listed below:

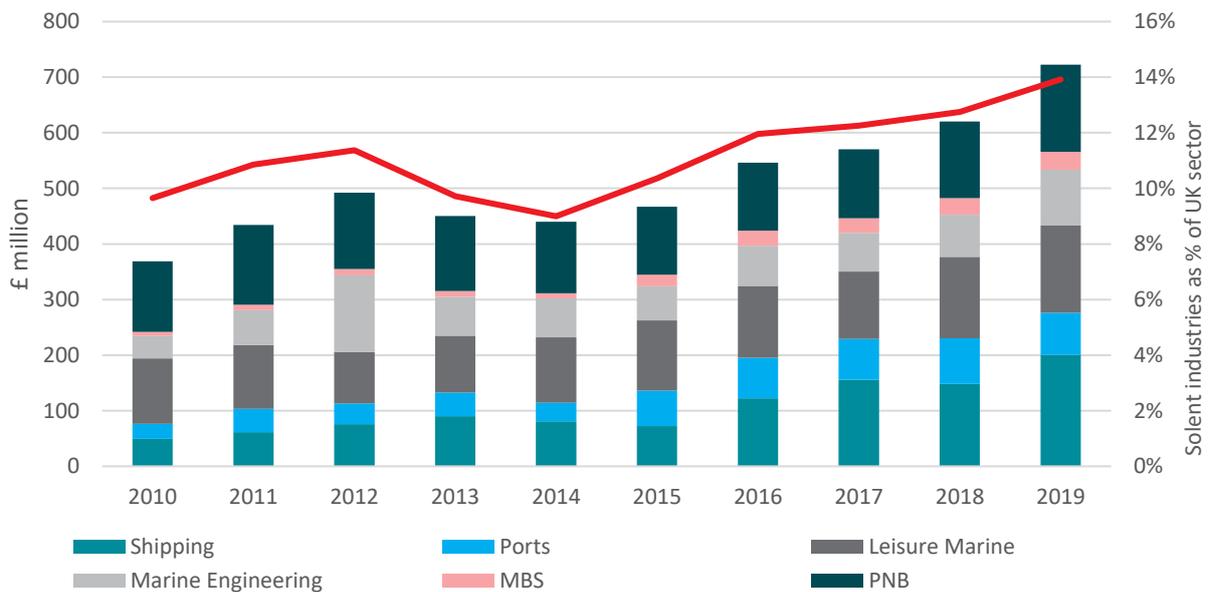
- Income Tax;
- National Insurance Contributions (NICs) – from both Employer and Employee contributions;
- Value-Added Tax (VAT) as paid by businesses operating in the Maritime sector;
- Corporation Tax;
- National Non-Domestic Rates (Business Rates).

For the personal taxes listed above, Income Tax and NICs revenues have been calculated by applying tax rates to the estimated wages and salaries paid to employees operating in the Solent-based maritime sector and Portsmouth Naval Base; rates and thresholds have been sourced from HMRC for the years 2010 to 2019. Wages and salaries for employees have been sourced from the Annual Survey for Hours and Earnings (ASHE)²⁶ and adjusted for wage differentials in the Solent region. For the business taxes listed above, Corporation Tax revenues have been estimated by applying HMRC estimates for Average Effective Tax Rates (AETRs) to the estimated Gross Profit of each Maritime industry and the shipbuilding activities taking place at Portsmouth Naval Base. Business Rates have been estimated using the average level of Business Rates paid as a proportion of Maritime sector GVA, drawing upon the ONS Annual Business Survey (ABS).

Figure 17 below shows the direct contribution of the Solent-based Maritime Sector and Portsmouth Naval Base to the UK Exchequer in the years 2010 to 2019 and expressed as a share of the total Exchequer contribution from the UK-wide Maritime Sector.

26 The Annual Survey of Hours and Earnings (ASHE) provides data on the levels, distribution and make-up of earnings and hours worked for UK employees by sex and full-time or part-time status in all industries and occupations.

Figure 17: The direct UK Exchequer contribution of the Solent-based Maritime industries and Portsmouth Naval Base, 2010 to 2019



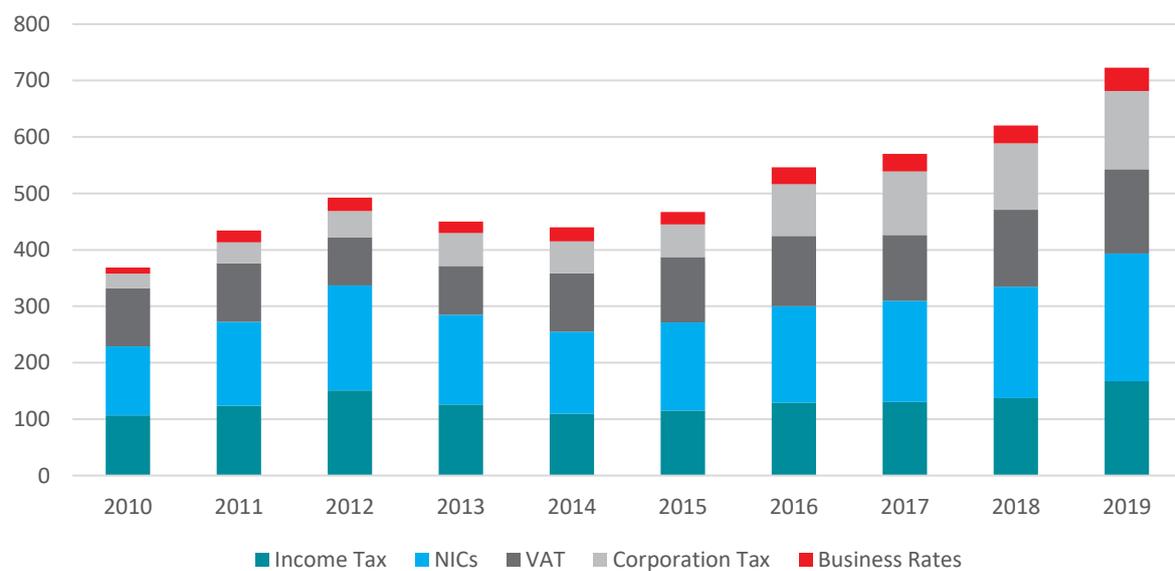
Source: ONS, FAME, Cebr analysis

The total Exchequer contribution of the Solent-based Maritime sector and Portsmouth Naval Base is estimated to have been £723 million in 2019.

The Exchequer contribution from the Solent-based Maritime Sector (excluding Portsmouth Naval Base) accounted for 11% of the direct Exchequer contribution from the UK Maritime sector as a whole.

Figure 18 below disaggregates the direct contribution by tax head across the years 2010 to 2019.

Figure 18: The direct contribution of the Solent-based Maritime sector and PNB to the UK Exchequer by tax head, 2010 to 2019



Source: ONS, FAME, Cebr analysis

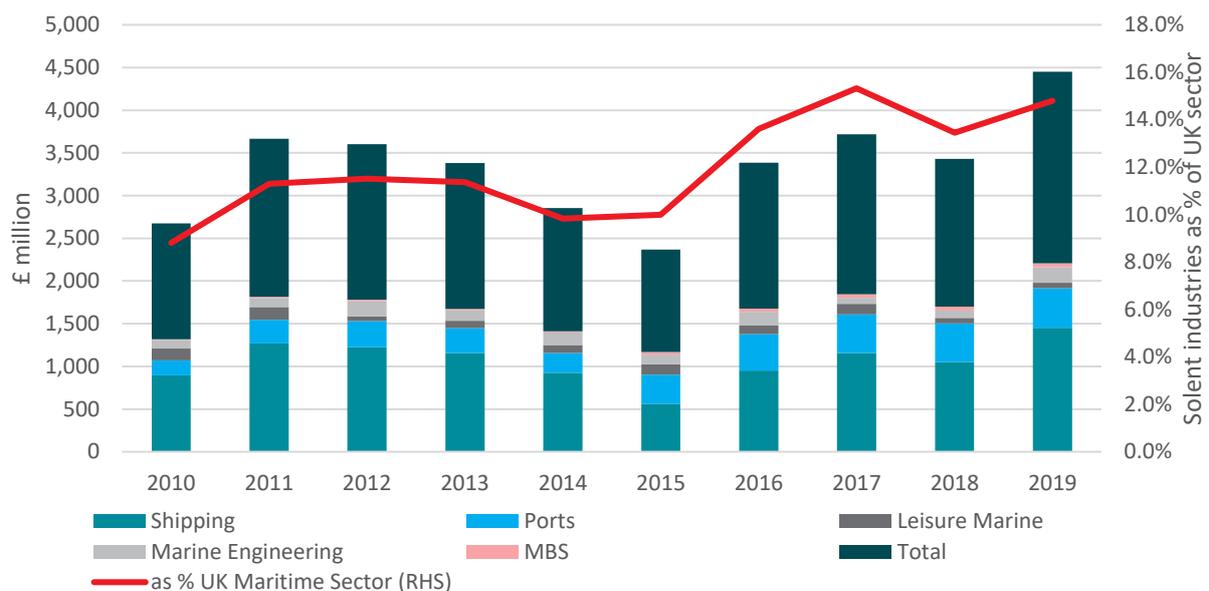
For each of the years 2010 to 2019, the majority of the direct Exchequer contribution was derived from the Personal Taxes: Income Taxes and NICs. However, the percentage share of tax revenue from these sources fell from 62% (£229 million) in 2010 to 54% (£393 million) in 2019. Contrastingly, the share of exchequer revenue from business taxes, albeit lower, increased from 38% in 2010 (£140 million) to 46% in 2019 (£329 million).

5.6 The direct contribution through exports

Finally, the Solent-based Maritime Sector and Portsmouth Naval Base are also estimated to make a substantive contribution to UK economic activity through the exports of goods and services. These figures are conceptually different to the downstream export figures derived as part of Section 3. While the downstream impacts considered the total value of the goods traded, the figures below estimate the turnover generated by the Maritime Sector by export activities.

Figure 19 below shows the total estimated value of exports between 2010 and 2019; a total value of almost £2.2 billion of goods and services were exported in 2019. This represents an increase of 66% relative to the 2010 level of £1.4 billion.

Figure 19: The direct contribution of the Solent-based Maritime sector and PNB through exports of goods and services



Source: ONS, FAME, Cebr analysis

The exports of the Solent-based Maritime Sector (i.e. excluding Portsmouth Naval Base) accounted for 14.6% of the exports from the UK Maritime sector as a whole in 2019. This compares favourably with the 8.6% estimated share in 2010.

6. The aggregate economic impact of the Solent-based Maritime sector and Portsmouth Naval Base

This final section of the report sets out the wider economic impacts of the Maritime sector and Portsmouth Naval Base within the Solent LEP region, by taking into account the indirect (or supply chain) and induced (employee spending) impacts that arise from the activities of firms operating within the sector. Note that the methodology used to generate these multipliers is consistent to that employed in our 2019 study.

Within this report, we also present estimates for the aggregate impact of the Maritime Sector, incorporating methodological refinements made to the modelling framework which have been developed since 2019. These figures based on Cebr's updated methodology can be found in **Error! Reference source not found.**

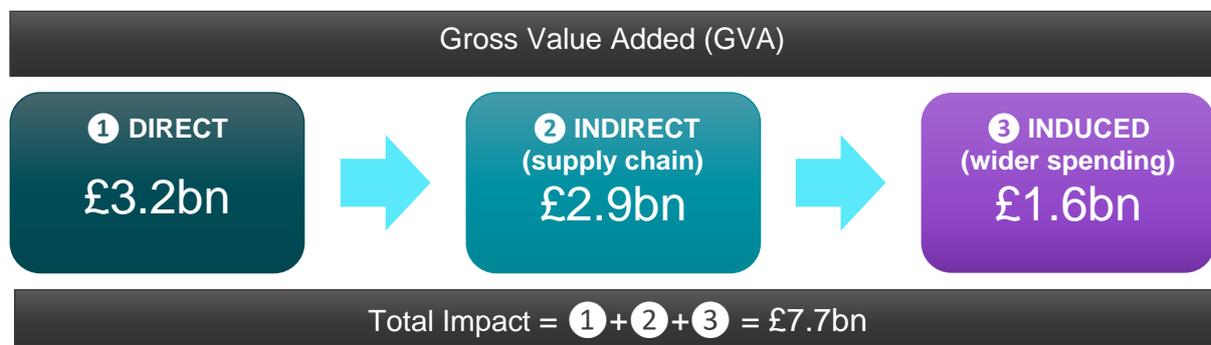
6.1 The wider economic impacts through GVA

Figure 20 below illustrates the GVA multipliers for the Solent-based Maritime Sector, disaggregated by industry, and Portsmouth Naval Base. These estimates have been generated from Cebr's regional economic impact model for the Solent LEP region.

Collectively, the five Solent-based Maritime industries and Portsmouth Naval Base directly contributed £3.2 billion towards the Solent's GDP in 2019; whereas £2.9 billion worth of GVA is supported in the supply chains and £1.6 billion worth of GVA in the wider economy when direct and indirect (supply chain) employees spend their earnings. Once the indirect and induced economic channels are taken into consideration the industries supported approximately £7.7 billion of the local economy.

Alternatively, this can be interpreted as for every £1 of GVA initially generated by these entities in 2019, a further £1.43 in GVA is supported across the Solent LEP as a whole.

Figure 20: GVA multiplier impacts of the Solent-based Maritime sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table 15 shows the estimated aggregate GVA impacts from the Solent-based maritime industries and Portsmouth Naval Base, taken in isolation. The largest total GVA impact came

from the Shipping industry, at £3.7 billion. This is followed by Portsmouth Naval Base, with a total GVA impact of approximately £1.6 billion.

Table 15: GVA impacts in 2019 disaggregated by industry and Portsmouth Naval Base, £ million

GVA in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	3,150	2,936	1,584	7,670
Shipping	1,482	1,563	617	3,662
Ports	322	267	177	765
Leisure Marine	217	180	128	525
Marine Engineering	324	328	222	874
Maritime Business Services	110	96	46	252
Portsmouth Naval Base	696	502	394	1,592

Source: ONS, FAME, Cebr analysis

Table 16 below shows the estimated direct and total economic impacts of the Solent-based Maritime Sector and Portsmouth Naval Base across the years 2010 to 2019.

Table 16: Direct and Total GVA impact of the Solent-based Maritime Sector and Portsmouth Naval Base, 2010 to 2019, £ million

Year	Direct Impact	Composite GVA multiplier	Aggregate Impact
2010	1,487	2.43	3,547
2011	1,900		4,581
2012	2,261		5,543
2013	1,867		4,522
2014	1,872		4,540
2015	1,906		4,613
2016	2,527		6,139
2017	2,821		6,867
2018	2,784		6,768
2019	3,150		7,670

Source: ONS, FAME, Cebr analysis

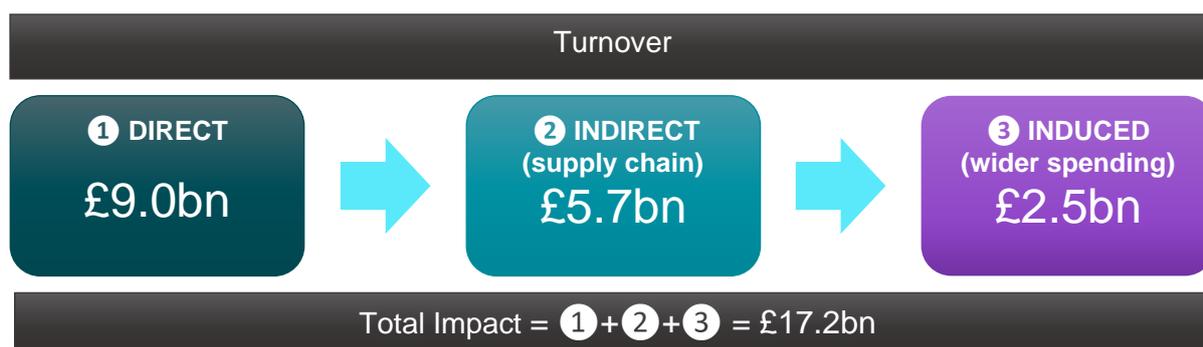
6.2 The wider economic impacts through turnover

This section sets out the economic impact of the Solent-based Maritime sector and Portsmouth Naval Base through turnover.

Figure 21 below illustrates the direct, indirect and induced turnover impacts associated with the Solent-based Maritime sector. Collectively, the five Solent-based Maritime industries and Portsmouth Naval Base directly contributed £9.0 billion in turnover in 2019; once the indirect and induced economic channels are taken into consideration the industries supported approximately £17.2 billion in turnover to the local economy.

Alternatively, for every £1 of turnover initially generated by these entities in 2019, an additional £0.91 in turnover is supported across the Solent LEP as a whole.

Figure 21: Turnover multiplier impacts of the Solent-based Maritime sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table 17 below shows the estimated aggregate turnover impacts from the Solent-based maritime industries and Portsmouth Naval Base, taken in isolation. Of this overall total, the largest total turnover footprint came from the Shipping industry, at £9.7 billion. This is followed by Portsmouth Naval Base, with a total footprint impact of approximately £2.0 billion.

Table 17: Turnover impacts in 2019 disaggregated by industry and Portsmouth Naval Base, £ million.

Turnover in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	9,009	5,704	2,457	17,169
Shipping	5,615	3,116	914	9,645
Ports	635	502	281	1,418
Leisure Marine	602	470	286	1,358
Marine Engineering	984	822	467	2,273
Maritime Business Services	245	174	70	489
Portsmouth Naval Base	928	619	439	1,986

Source: ONS, FAME, Cebr analysis

Table 18 below shows the estimated direct and total economic impacts of the Solent-based Maritime sector and Portsmouth Naval Base across the years 2010 to 2019.

Table 18: Direct and Total turnover impact of the Solent-based Maritime sector and Portsmouth Naval Base, 2010 to 2019, £ million

Year	Direct Impact	Composite Turnover multiplier	Aggregate Impact
2010	3,373	1.91	6,759
2011	4,318		8,633
2012	5,098		10,340
2013	4,669		9,206
2014	4,442		8,783
2015	4,429		8,867
2016	6,436		12,475
2017	7,355		14,036
2018	7,592		14,641
2019	9,009		17,169

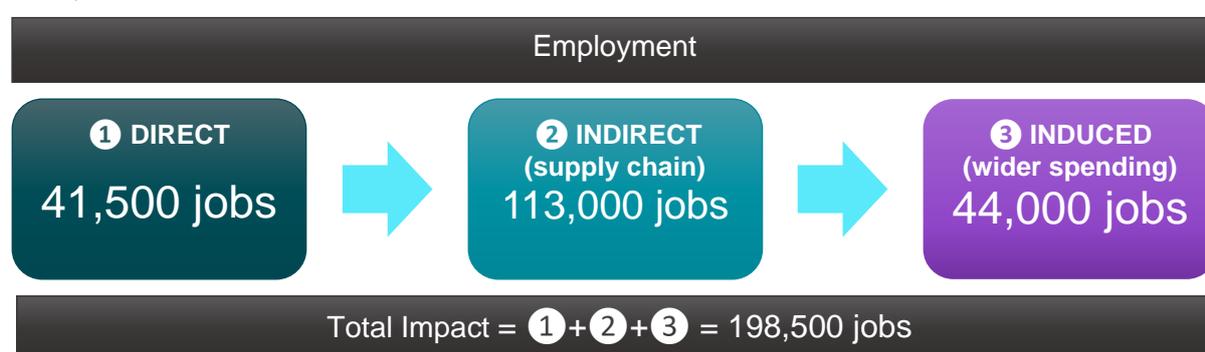
Source: ONS, FAME, Cebr analysis

6.3 The wider economic impacts through employment

In this section, we consider the wider economic impact that the Solent-based Maritime sector and Portsmouth Naval Base make through employment. Figure 18 below illustrates the direct, indirect and induced employment impacts associated with the Solent-based Maritime sector. Collectively, the Solent-based maritime industries and Portsmouth Naval Base directly contributed 41,500 jobs in 2019. Once the indirect and induced economic channels are taken into consideration the industries directly and indirectly supported approximately 198,500 jobs.

Alternatively, for every 1 job initially created by these entities in 2019, a further 3.79 jobs were supported in the wider Solent LEP region.

Figure 18: Employment multiplier impacts of the Solent-based Maritime sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table 19 below shows the estimated aggregate employment impacts from the Solent-based maritime industries and Portsmouth Naval Base, taken in isolation. The Shipping industry contributes the largest total impact with 136,157 jobs.

Table 19: Employment impacts in 2019 disaggregated by industry and Portsmouth Naval Base, thousands of jobs

Employment in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	41,482	113,056	43,956	198,494
Shipping	13,561	90,534	32,062	136,157
Ports	5,043	2,965	1,403	9,411
Leisure Marine	4,930	2,798	1,369	9,097
Marine Engineering	5,559	5,382	3,035	13,976
Maritime Business Services	868	2,341	772	3,980
Portsmouth Naval Base	11,520	9,036	5,315	25,872

Source: ONS, FAME, Cebr analysis

Table 20 below shows how the total employment impact of the industries and Portsmouth Naval Base is estimated to have evolved since 2010. The direct impact through employment increased from around 25,811 jobs to 41,482 jobs between 2010 and 2019. The total footprint of employment in the Solent LEP increased from 106,001 jobs in 2010 to 198,500 jobs in 2019.

Table 20: Direct and Total Employment impact of the Solent-based Maritime Sector and Portsmouth Naval Base, 2010 to 2019, number of jobs

Year	Direct Impact	Composite Employment multiplier	Aggregate Impact
2010	25,811	4.79	106,001
2011	31,223		133,685
2012	34,707		141,733
2013	30,643		137,215
2014	28,615		125,540
2015	30,282		119,061
2016	35,279		160,887
2017	36,170		181,146
2018	38,430		174,595
2019	41,482		198,494

Source: ONS, FAME, Cebr analysis

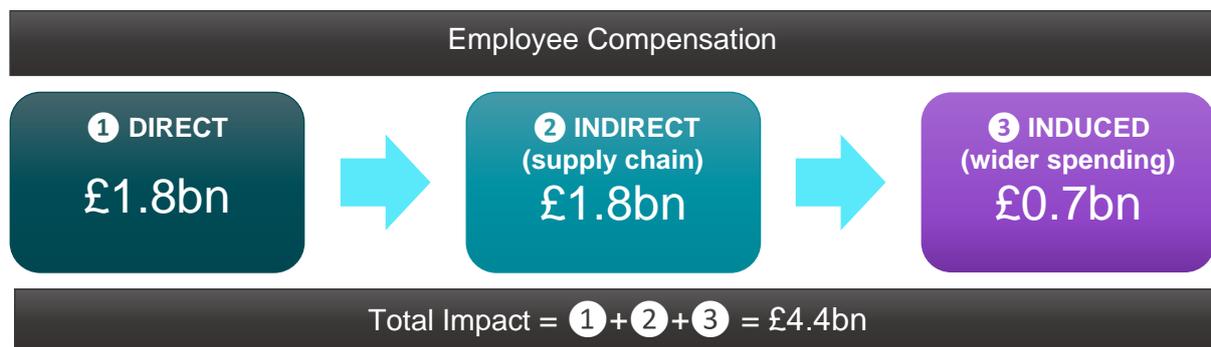
6.4 The wider economic impacts through the compensation of employees

This final subsection sets out the economic impact of the Solent-based Maritime sector and Portsmouth Naval Base through the compensation of employees.

Figure 22 below illustrates the direct, indirect and induced compensation of employee impacts associated with the Solent-based Maritime Sector. Collectively, the Solent-based maritime industries and Portsmouth Naval Base directly contributed £1.8 billion in employee compensation in 2019; once the indirect and induced economic channels are taken into consideration the industries supported £4.4 billion in employee compensation.

Combining each Maritime industry and Portsmouth Naval Base, for every £1 of employee compensation initially generated by these entities in 2019, a total of £1.39 in employee compensation was contributed in the Solent LEP region.

Figure 22: Employee compensation multiplier impacts of the Solent-based Maritime Sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table 21 below disaggregates the direct, indirect, induced and total impacts on the compensation of employees by Maritime industry and Portsmouth Naval Base.

Table 21: Employee compensation impact in 2019, £ million

Compensation of Employees in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	1,836	1,836	721	4,392
Shipping	501	924	269	1,695
Ports	251	169	79	499
Leisure Marine	160	105	54	319
Marine Engineering	255	202	94	550
Maritime Business Services	50	71	23	145
Portsmouth Naval Base	619	364	201	1,185

Source: ONS, FAME, Cebr analysis

We estimate that the Maritime sector and Portsmouth Naval Base directly and indirectly supported a total of £4.4 billion in employee compensation in 2019, with the majority of this total contribution sourced from Portsmouth Naval Base (27%) and the Shipping industry (38.6%).

Table 22 illustrates the trajectory of total impacts through the compensation of employees over time, from 2010 to 2019. The total impact of the compensation of employees has increased each year with the exception of 2013 and 2014, reaching its highest level of £4.4 billion in 2019.

Table 22: Employee compensation impact of the Solent-based Maritime Sector and Portsmouth Naval Base, £ million

Year	Direct Impact	Composite Employee Compensation multiplier	Aggregate Impact
2010	966	2.39	2,235
2011	1,122		2,526
2012	1,532		3,505
2013	1,299		3,055
2014	1,159		2,667
2015	1,266		2,849
2016	1,411		3,319
2017	1,530		3,687
2018	1,658		3,846
2019	1,836		4,392

Source: ONS, FAME, Cebr analysis

7. The Solent-based Maritime Sector: A Forward Look

In this final section of the report we present projections of the Maritime Sector and Portsmouth Naval Base within the Solent LEP region for the period 2021-2025. The section starts off by describing the conceptual approach that we have developed to produce projections of the direct economic impacts after 2020 and then present our forecasts of Solent-based Maritime turnover and GVA over the period 2021-2025.

7.1 The Solent-based Maritime Sector Forecast (2021-2025)

Modelling approach

We investigate the relationship between the maritime economy in the Solent LEP and a number of economic variables through an econometric approach. Our findings show that the maritime economy is primarily linked to overall Solent GVA. After having established the Solent-based Maritime economy's elasticities to the total Solent GVA, we project these historical relationships forward to produce a forecast of Solent-based Maritime turnover and GVA. The output of this model constitutes our baseline forecast.

Forecast models rely on macroeconomic variables, such as GDP, which are generally more suitable for long term horizon while the focus of our analysis is in the short-medium term (5 years). For this reason, we build on the baseline forecast, introducing more sector-specific assumptions which are used to flex the relation to the drivers previously identified. This approach also enables us to address deterministic expectations about the sector.

To identify the sector-specific assumptions, we drew on our knowledge of the sector composition and on UK-wide maritime trends and themes. Assumptions are assigned a specific weight reflecting its relevance to the Solent-based Maritime Sector and a set of adjustment factors have been produced.

Applying the adjustments to the baseline forecast, we obtain our central forecast of the Solent-based Maritime Sector turnover and GVA over the period 2021-2025. It is also important to note also that our historical analysis of the Maritime Sector in the Solent LEP ends in 2019. In order to link the historic figures to the forecast, we produced a "now-cast" for the first year (2020) for which we know the actual value of the drivers (such as regional GVA) but not of Solent-based Maritime Turnover and GVA and a forecast for the following period.

Modelling assumptions

Solent LEP region GVA

Cebr's Forecasting and Thought Leadership team produces regular forecasts of key economic indicators for the UK national, regional and local economies, which directly inform our analysis. Combining the local authorities forming the Solent LEP, we can obtain historical and projected figures for the regional economy.

Cebr expects the Solent's GVA to grow at a Compounded Annual Growth rate (CAGR) of 2.1% over 2021-2025 in nominal terms. Cebr expects the Solent to reach output levels similar

to those from 2019 by 2022. Despite the so far successful vaccine rollouts across most of the developed world, and the weakened link between vaccination rates and economic disruption as a result of the Omicron variant – which was previously thought to risk global supply chains being halted due to the low vaccination rates in much of the developing world – there is still a certain level of uncertainty which characterises the forecast.

Seaborne trade

As highlighted in the downstream impacts section, Solent LEP performs as an international gateway for the UK trade with the rest of the world.

Seaborne trade represents the main opportunity for the UK Maritime Sector over the near future. We consider both worldwide and UK-specific trade projections within our modelling framework, which naturally includes the effects of the pandemic on global maritime trade.

The Covid-19 pandemic has disrupted global maritime transport. However, it has in large part performed better than expected and the full extent of this impact has been less damaging than for other sectors of the global economy. Following the economic downturn suffered during 2020, UNCTAD projects shipping volumes increased by 4.3% in 2021, to exceed their 2019 levels.²⁷ After this initial recovery, worldwide trends indicate a period of moderate growth in trade. Per UNCTAD projections, over the 2022-2026 period, total maritime trade is expected to have a compound annual growth rate (CAGR) of 2.4% – which is below the 2.9% observed over the previous two decades.

The IMF expects global sea trade to grow along with GDP,²⁸ which aligns with the rest of the literature; according to the OECD, a 1% increase in GDP is expected to correspond to a 1.1% growth in seaborne trade.²⁹

Cruise & International Sea passengers

Solent LEP plays a central role in tourism and leisure with Southampton acting as a cruise hub for the UK and Portsmouth as a main UK port for ferry passengers. The Solent share of international passengers at UK ports has increased remarkably over the past. In 2019, 1.8 million cruise passengers passed through Southampton and 1.7 million international passengers on short sea routes passed through Portsmouth.³⁰ These figures are estimated to have decreased by 95.6% and 72.6%, respectively.

This decline was very similar to that seen across the UK. In 2019 over 2.1 million cruise passengers passed through UK ports, but this figure is estimated to have decreased to 107,000 (a decrease of 95%) in 2020. However, this massive downturn was not felt as strongly in the more general sea transportation of passengers. In 2019, over 18.4 million international

27 United Nations Conference on Trade and Development. (2021). ['Review of Marine Transport 2021'](#).

28 IMF (2021). ['World Economic Outlook: Managing Divergent Recoveries'](#).

29 OECD. (2018). ['Growth prospects, challenges and uncertainties for selected ocean industries'](#).

30 Department for Transport (2021). Sea Passenger Statistics.

ferry passengers and almost 42 million domestic sea passengers travelled on UK short sea routes. In 2020 it is estimated that these decreased by 63% and 51%, respectively (to 6.9 and 20.6 million passengers).

In the decade leading up to the 2020 pandemic, cruise passengers in the UK almost doubled and Southampton share of international cruise passengers in the UK also increased.

Defence budget

In order to reflect the inclusion of Portsmouth Naval Base in our analysis, we consider national defence budget as a driver of future economic performance. The UK has the largest defence budget in the EU and the second largest in NATO. In 2020, the government announced the largest military investment since the end of the Cold War. This is in addition to the pledge to increase the defence budget by 0.5% above inflation.³¹

The 2021-2025 forecast

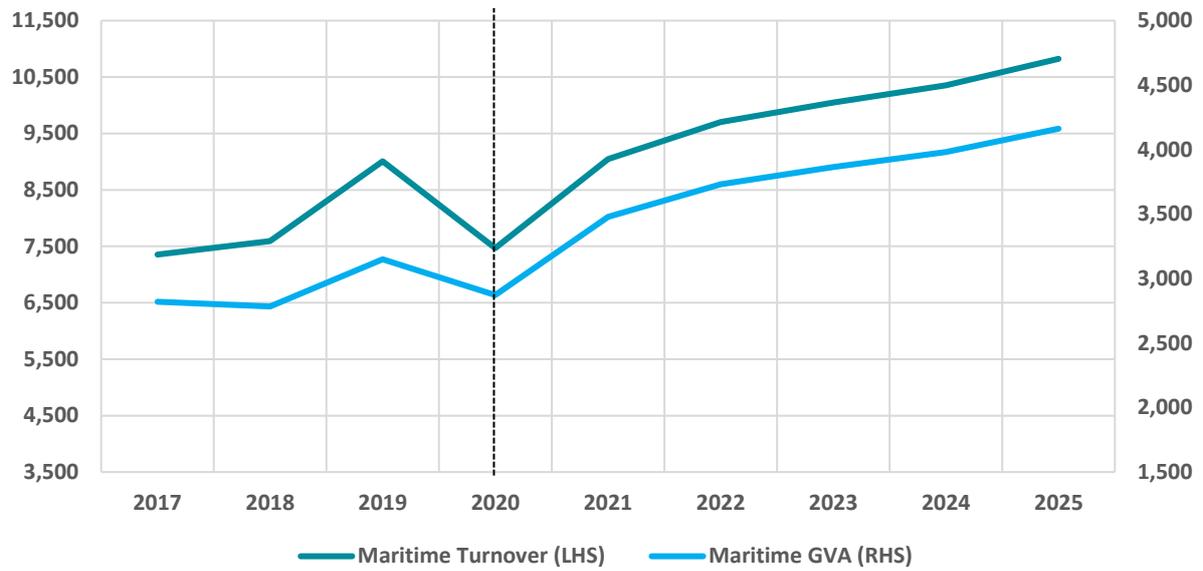
Figure 23 shows the Solent-based Maritime sector experiencing steady growth over the five-year horizon, followed by a lower but steady growth over the five-year horizon. Using macroeconomic indicators,³² such as the Solent GVA, we were able to produce a nowcast for the Scottish-based Maritime Sector in 2020. Cebr estimates that the industry suffered a contraction in the range of 9% in 2020 as a result of the pandemic, as measured by GVA.

Our forecast indicates that Solent-based maritime turnover and GVA are set to grow at a Compounded Annual Growth rate (CAGR) of 4.6% over the considered period. This translates into a cumulative nominal growth of 19.6% for 2021-2025, which translates to about 7.2% growth in real terms, when considered alongside projected inflation. Note that this significant growth is partly driven by a recovery post 2020 pandemic levels.

³¹ <https://www.gov.uk/government/news/pm-to-announce-largest-military-investment-in-30-years>

³² These are published with more frequency than most of the other data sources used within our study, which for the most part operate on a two-year data lag.

Figure 23: Solent-based maritime sector turnover and GVA trends and projections, £ million, 2017 to 2025



Annex A: Full set of direct economic impacts by region

Table A.1: Direct economic impact of the Maritime Sector through turnover, £ million, 2010 to 2019

TURNOVER	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
England	26,222	27,392	29,392	29,576	31,430	31,015	34,357	37,119	39,510	43,386
Scotland	7,690	8,164	8,476	9,661	10,421	9,640	8,575	8,688	9,330	9,359
Wales	1,016	1,336	1,073	1,164	719	1,376	949	775	849	546
Northern Ireland	929	979	858	925	931	1,221	1,831	1,774	1,767	2,184
East of England	2,212	2,692	2,593	2,577	2,563	2,341	3,292	2,852	3,275	2,995
East Midlands	442	387	457	450	1,490	529	557	535	593	634
London	6,643	10,070	10,300	9,864	10,361	12,888	11,584	12,186	12,490	15,166
North East	724	813	747	943	1,116	887	769	827	787	728
North West	1,870	2,459	2,484	2,755	2,977	2,797	3,386	5,150	6,281	5,369
South East	5,569	6,128	7,961	7,460	7,893	6,426	9,288	10,473	10,208	12,695
South West	6,979	2,748	3,155	3,921	3,373	3,556	3,629	3,402	3,730	4,002
West Midlands	443	380	373	464	658	495	623	453	887	708
Yorkshire and the Humber	1,342	1,715	1,321	1,141	1,000	1,096	1,229	1,241	1,258	1,089

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table A.2: Direct economic impact of the Maritime Sector through GVA, £ million, 2010 to 2019

GVA	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
England	9,490	10,054	11,086	10,660	11,757	11,501	12,529	13,080	12,713	14,199
Scotland	3,346	2,962	3,509	3,444	3,515	3,734	3,435	3,718	3,543	3,892
Wales	341	432	377	364	364	406	439	281	295	207
Northern Ireland	234	291	265	240	239	297	406	376	353	400
East of England	913	897	984	930	991	879	1,191	1,050	1,069	1,033
East Midlands	198	147	183	193	373	195	169	178	169	191
London	3,663	3,964	3,887	3,768	4,464	4,608	4,432	4,418	4,186	5,284
North East	304	319	327	361	431	330	281	304	284	265
North West	748	844	877	1,016	1,107	1,170	1,287	1,263	1,301	1,566
South East	1,868	2,106	2,849	2,378	2,507	2,276	3,062	3,619	3,535	3,771
South West	922	935	1,235	1,362	1,215	1,326	1,281	1,537	1,431	1,417
West Midlands	214	138	166	159	232	202	229	165	234	244
Yorkshire and the Humber	661	704	577	493	437	515	597	545	504	427

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table A.3: Direct economic impact of the Maritime Sector through employment, jobs, 2010 to 2019

EMPLOYEES	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
England	143,792	149,003	154,435	158,146	155,823	162,119	166,398	171,774	181,666	180,829
Scotland	36,913	37,378	38,170	39,315	44,991	41,124	38,496	39,761	40,394	37,403
Wales	7,255	8,401	6,163	6,985	6,049	6,704	6,451	4,308	4,857	3,610
Northern Ireland	4,017	4,695	4,170	4,165	3,713	4,453	5,410	5,128	5,413	5,287
East of England	16,788	16,142	15,708	15,917	15,825	14,584	17,846	16,033	18,103	15,992
East Midlands	3,854	3,169	3,766	3,764	6,182	3,985	3,455	3,880	4,136	3,928
London	32,905	37,376	36,959	36,631	38,357	44,475	39,524	39,629	41,052	45,207
North East	6,424	6,668	6,148	7,691	8,257	6,509	5,781	4,939	4,976	4,276
North West	14,176	15,059	15,078	17,825	17,492	19,226	20,351	19,977	22,225	23,800
South East	30,743	33,258	39,720	35,432	34,500	33,847	39,546	44,033	46,786	46,887
South West	23,147	21,842	24,174	28,507	24,268	26,200	26,024	29,880	30,298	29,024
West Midlands	4,395	3,214	3,425	3,489	4,011	4,320	4,110	3,297	4,895	4,466
Yorkshire and the Humber	11,360	12,274	9,457	8,890	6,930	8,973	9,761	10,106	9,197	7,250

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Table A.4: Direct economic impact of the Maritime Sector through the compensation of employees, £ million, 2010 to 2019

COMPENSATION OF EMPLOYEES	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
England	5,208	5,245	5,975	6,015	6,250	6,245	6,335	6,630	6,853	7,165
Scotland	1,017	987	1,207	1,344	1,617	1,874	1,705	1,446	1,511	1,507
Wales	190	346	192	226	152	208	206	132	143	111
Northern Ireland	200	191	168	151	137	186	250	198	194	195
East of England	504	535	580	586	568	507	666	562	622	567
East Midlands	91	76	98	123	218	126	108	106	110	114
London	1,460	1,661	1,691	1,697	1,786	2,045	1,830	1,866	1,855	2,149
North East	191	193	142	232	272	218	178	194	158	140
North West	533	544	570	597	695	726	706	769	915	968
South East	1,355	1,122	1,676	1,379	1,373	1,220	1,500	1,714	1,714	1,876
South West	622	636	786	1,008	944	970	901	1,005	1,034	965
West Midlands	105	86	111	111	158	149	145	114	157	140
Yorkshire and the Humber	348	392	321	281	237	283	302	301	288	245

Source: UKCoS, British Marine, PwC, FAME, ONS, Cebr analysis

Annex B: Supplementary results of aggregate economic impact analysis

This section sets out the Maritime Sector's aggregate economic impact, calculated utilising an updated methodology. The difference with the figures presented in Section 6 relates to the multipliers and the underlying input-output modelling.

Since our 2019 study, we have adjusted our modelling for the Shipping industry specifically. Due to the methodology underpinning the calculation of the direct impact of the Shipping industry, the ONS' input-output analytical tables provide data for SIC 50 (Water Transport, which constitutes the Shipping industry), which did not align with our own findings on the industry. We have further refined how this is reflected within the input-output models, adjusting our modelling accordingly and we believe it now represents a more robust and precise picture of the aggregate impact of the Shipping industry. Given that the modelling for the Shipping industry is based on the associated structure of the industry, this has led to a change in the multipliers for the sector and the industry. More specifically, it has led to a decrease in the type I and type II employment multipliers and an increase in the type I and type II compensation of employees multipliers for the Shipping industry and, by extension, for the maritime sector.

While the new methodology makes these bespoke adjustments to the Shipping industry specifically such that its operational structure – as indicated by the findings of our direct impact analysis – is a better representation of the actual industry, Cebr understands the benefits of having comparable figures using a similar methodology across different years and reports. As such, in consultation with Maritime UK, we provide both sets of aggregate impact figures within the report, one using the previously utilised methodology and here the other, utilising the updated methodology.

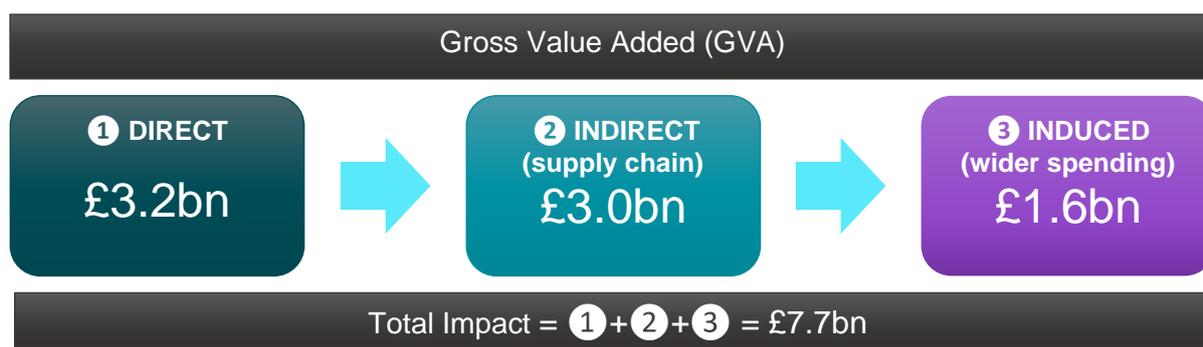
The wider economic impacts through GVA

Figure A.1 below illustrates the GVA multipliers for the Solent-based Maritime Sector, disaggregated by industry, and Portsmouth Naval Base. These estimates have been generated from Cebr's regional economic impact model for the Solent LEP region.

Collectively, the five Solent-based Maritime industries and Portsmouth Naval Base directly contributed £3.2 billion towards the Solent's GDP in 2019; whereas nearly £3.0 billion worth of GVA is supported in the supply chains and £1.6 billion worth of GVA in the wider economy when direct and indirect (supply chain) employees spend their earnings. Once the indirect and induced economic channels are taken into consideration the industries supported approximately £7.7 billion of the local economy.

Alternatively, this can be interpreted as for every £1 of GVA initially generated by these entities in 2019, a further £1.45 in GVA is supported across the Solent LEP as a whole.

Figure A.1: GVA multiplier impacts of the Solent-based Maritime sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table A.5 shows the estimated aggregate GVA impacts from the Solent-based maritime industries and Portsmouth Naval Base, taken in isolation. The largest total GVA impact came from the Shipping industry, at £3.7 billion. This is followed by Portsmouth Naval Base, with a total GVA impact of approximately £1.6 billion.

Table A.5: GVA impacts in 2019 disaggregated by industry and Portsmouth Naval Base, £ million

GVA in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	3,150	2,982	1,601	7,733
Shipping	1,482	1,597	627	3,706
Ports	322	273	179	774
Leisure Marine	217	181	129	527
Marine Engineering	324	330	223	877
Maritime Business Services	110	97	46	253
Portsmouth Naval Base	696	504	396	1,596

Source: ONS, FAME, Cebr analysis

Table A.6 below shows the estimated direct and total economic impacts of the Solent-based Maritime Sector and Portsmouth Naval Base across the years 2010 and 2019.

Table A.6: Direct and Total GVA impact of the Solent-based Maritime Sector and Portsmouth Naval Base, 2010 to 2019, £ million

Year	Direct Impact	Composite GVA multiplier	Aggregate Impact
2010	1,309	2.45	3,498
2011	1,546		4,126
2012	1,752		4,676
2013	1,556		4,139
2014	1,570		4,198
2015	1,637		4,386
2016	1,971		5,335
2017	2,130		5,779
2018	2,784		6,822
2019	3,150		7,733

Source: ONS, FAME, Cebr analysis

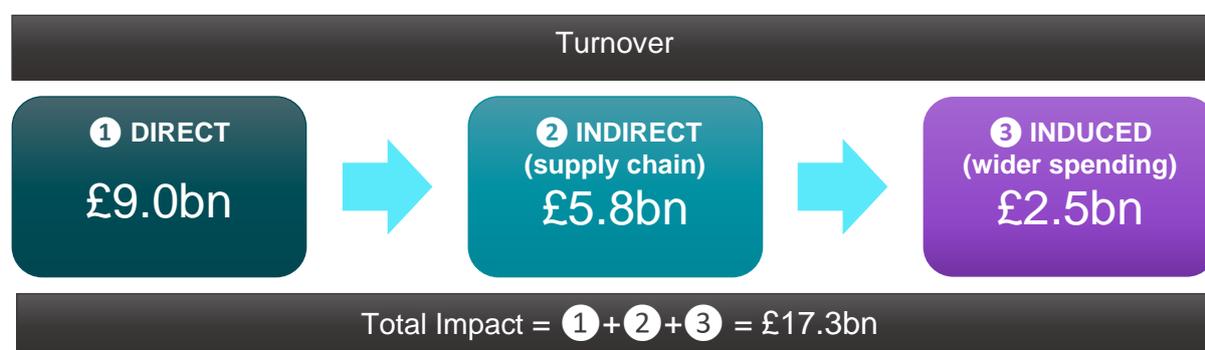
The wider economic impacts through turnover

This section sets out the economic impact of the Solent-based Maritime sector and Portsmouth Naval Base through turnover.

Figure A.2 below illustrates the direct, indirect and induced turnover impacts associated with the Solent-based Maritime sector. Collectively, the five Solent-based Maritime industries and Portsmouth Naval Base directly contributed £9 billion in turnover in 2019; once the indirect and induced economic channels are taken into consideration the industries supported approximately £17.3 billion in turnover to the local economy.

Alternatively, for every £1 of turnover initially generated by these entities in 2019, an additional £0.92 in turnover is supported across the Solent LEP as a whole.

Figure A.2: Turnover multiplier impacts of the Solent-based Maritime sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table A.7 below shows the estimated aggregate turnover impacts from the Solent-based maritime industries and Portsmouth Naval Base, taken in isolation. Of this overall total, the largest total turnover footprint came from the Shipping industry, at £9.8 billion. This is followed by Portsmouth Naval Base, with a total footprint impact of approximately £2.0 billion.

Table A.7: Turnover impacts in 2019 disaggregated by industry and Portsmouth Naval Base, £ million.

Turnover in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	9,009	5,830	2,488	17,326
Shipping	5,615	3,222	931	9,768
Ports	635	516	285	1,436
Leisure Marine	602	471	288	1,361
Marine Engineering	984	824	470	2,279
Maritime Business Services	245	175	71	491
Portsmouth Naval Base	928	621	442	1,991

Source: ONS, FAME, Cebr analysis

Table A.8 below shows the estimated direct and total economic impacts of the Solent-based Maritime sector and Portsmouth Naval Base across the years 2010 and 2019.

Table A.8: Direct and Total turnover impact of the Solent-based Maritime sector and Portsmouth Naval Base, 2010 to 2019, £ million

Year	Direct Impact	Composite Turnover multiplier	Aggregate Impact
2010	3,373	1.92	6,805
2011	4,318		8,695
2012	5,098		10,409
2013	4,669		9,278
2014	4,442		8,850
2015	4,429		8,934
2016	6,436		12,584
2017	7,355		14,167
2018	7,592		14,771
2019	9,009		17,326

Source: ONS, FAME, Cebr analysis

The wider economic impacts through employment

In this section, we consider the wider economic impact that the Solent-based Maritime sector and Portsmouth Naval Base make through employment. Figure A.3 below illustrates the direct, indirect and induced employment impacts associated with the Solent-based Maritime sector. Collectively, the Solent-based maritime industries and Portsmouth Naval Base directly contributed 41,500 jobs in 2019. Once the indirect and induced economic channels are taken into consideration the industries directly and indirectly supported approximately 112,600 jobs.

Alternatively, for every 1 job initially created by these entities in 2019, a further 1.72 jobs were supported in the wider Solent LEP region.

Figure A.3: Employment multiplier impacts of the Solent-based Maritime sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table A.9 below shows the estimated aggregate GVA impacts from the Solent-based maritime industries and Portsmouth Naval Base, taken in isolation. The Shipping industry contributes the largest total impact with 50,122 jobs.

Table A.9: Employment impacts in 2019 disaggregated by industry and Portsmouth Naval Base, thousands of jobs

Employment in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	41,482	49,788	21,357	112,627
Shipping	13,561	27,183	9,378	50,122
Ports	5,043	3,021	1,427	9,491
Leisure Marine	4,930	2,803	1,379	9,112
Marine Engineering	5,559	5,393	3,051	14,003
Maritime Business Services	868	2,345	777	3,990
Portsmouth Naval Base	11,520	9,044	5,345	25,910

Source: ONS, FAME, Cebr analysis

Table A.10 below shows how the total employment impact of the industries and Portsmouth Naval Base is estimated to have evolved since 2010. The direct impact through employment increased from around 25,811 jobs to 41,482 jobs between 2010 and 2019. The total footprint of employment in the Solent LEP increased from 66,192 jobs in 2010 to 112,627 jobs in 2019.

Table A.10: Direct and Total Employment impact of the Solent-based Maritime Sector and Portsmouth Naval Base, 2010 to 2019, number of jobs

Year	Direct Impact	Composite Employment multiplier	Aggregate Impact
2010	25,811	2.72	66,192
2011	31,223		81,516
2012	34,707		90,629
2013	30,643		81,312
2014	28,615		75,259
2015	30,282		76,845
2016	35,279		94,076
2017	36,170		99,585
2018	38,430		102,515
2019	41,482		112,627

Source: ONS, FAME, Cebr analysis

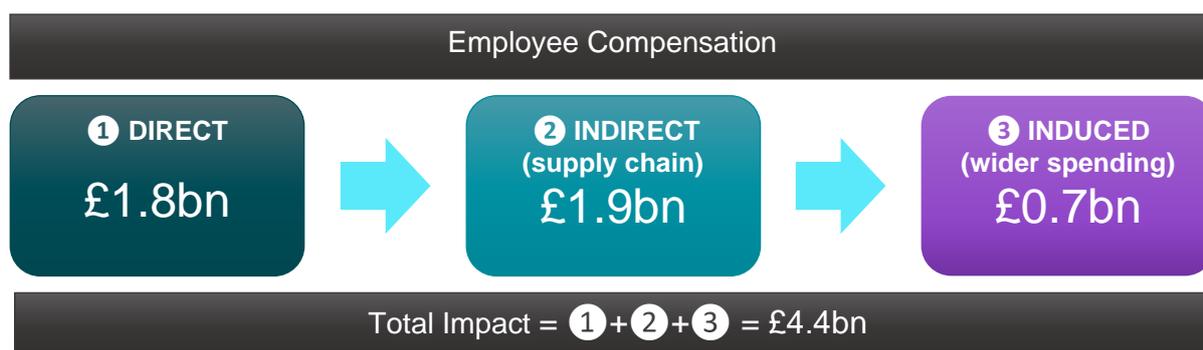
The wider economic impacts through the compensation of employees

This final subsection sets out the economic impact of the Solent-based Maritime sector and Portsmouth Naval Base through the compensation of employees.

Figure A.4 below illustrates the direct, indirect and induced compensation of employee impacts associated with the Solent-based Maritime Sector. Collectively, the Solent-based maritime industries and Portsmouth Naval Base directly contributed £1.8 billion in employee compensation in 2019; once the indirect and induced economic channels are taken into consideration the industries supported £4.4 billion in employee compensation.

Combining each Maritime industry and Portsmouth Naval Base, for every £1 of employee compensation initially generated by these entities in 2019, a total of £1.40 in employee compensation was contributed in the Solent LEP region.

Figure A.4: Employee compensation multiplier impacts of the Solent-based Maritime Sector and Portsmouth Naval Base, 2019



Source: ONS, FAME, Cebr analysis

Table A.11 below disaggregates the direct, indirect, induced and total impacts on the compensation of employees by Maritime industry and Portsmouth Naval Base.

Table A.11: Employee compensation impact in 2019, £ million

Compensation of Employees in 2019	Direct Impact	Indirect Impact	Induced Impact	Aggregate Impact
TOTAL	1,836	1,853	718	4,406
Shipping	501	936	266	1,704
Ports	251	172	79	502
Leisure Marine	160	105	54	319
Marine Engineering	255	202	94	551
Maritime Business Services	50	72	23	145
Portsmouth Naval Base	619	365	201	1,185

Source: ONS, FAME, Cebr analysis

We estimate that the Maritime sector and Portsmouth Naval Base directly and indirectly supported a total of £4.4 billion in employee compensation in 2019, with the majority of this total contribution sourced from Portsmouth Naval Base (26.9%) and the Shipping industry (38.7%). Table A.12 below illustrates the trajectory of total impacts through the compensation of employees over time, from 2010 to 2019. The total impact on the compensation of employees has increased each year with exceptions in 2013 and 2014 reaching its highest level in 2019 of £4.4 billion.

Table A.12: Employee compensation impact of the Solent-based Maritime Sector and Portsmouth Naval Base, £ million

Year	Direct Impact	Composite Employee Compensation multiplier	Aggregate Impact
2010	966	2.40	2,241
2011	1,122		2,532
2012	1,532		3,513
2013	1,299		3,064
2014	1,159		2,674
2015	1,266		2,857
2016	1,411		3,329
2017	1,530		3,699
2018	1,658		3,857
2019	1,836		4,406

Source: ONS, FAME, Cebr analysis

