OXFORD ECONOMICS

THE IMPACT OF BAE SYSTEMS ON THE UK ECONOMY

Eurofighter Typoon undergoing anechoic chamber testing.

CONTENTS:

FOREWORD

The UK is home to one of the most advanced defence industries in the world. It has a rich heritage in the design, production, modification and maintenance of military combat aircraft and training platforms; complex naval vessels, the radar and combat systems they carry and nuclear powered submarines. In this sector, BAE Systems leads the field and is one of the world's largest defence, aerospace and security companies.

Our business and the many thousands of companies we work with across our UK supply chain are helping drive the UK's economic fortunes by creating valuable jobs, investing in research and development, improving the UK skills base and generating significant export revenues.

We commissioned Oxford Economics to undertake a comprehensive analysis to quantify BAE Systems' economic impact in the UK. This report reveals that our activities directly contribute £3.2 billion to the UK economy, generating £3.8 billion in exports, and as we spend £3.9 billion annually with UK suppliers, helping to sustain 122,700 UK jobs. I'm particularly proud that BAE Systems is one of the most productive companies in the UK, with labour productivity of £95,000 per worker, more than twice the national average.

Our employees are incredibly proud to engineer the equipment and services to protect and serve those who protect and serve us. The UK's role in an increasingly fragmented world is underpinned by its defence capabilities – and the industrial base that provides those capabilities. In an evolving geopolitical environment, with ongoing pressure on defence budgets, we are continuously evaluating and changing the way we work to improve efficiency. Our job is to keep delivering on our programmes and to maintain affordability for our customer and the taxpayer.

We are also developing new technologies to meet future threats, including a significant capability in cyber defence. This report showcases some of the world-leading projects that are currently in development. We also reveal details of the significant multi-million pound investment we are making to progress our research and development activities and the work we are doing to build and foster important relationships with universities all over the UK.

I am proud to be Chairman of a company that makes such a material contribution to the economic health of the country and the safety of the nation.

Sir Roger Carr
Chairman, BAE Systems plc

EXECUTIVE SUMMARY

BAE Systems is the UK's largest defence, aerospace and security company. As such, it makes a substantial contribution to the UK economy. In this report, Oxford Economics measures BAE Systems' economic impact in the UK with primary reference to 2013. The study quantifies BAE Systems' impact in two stages: the Company's immediate contribution to the economy measured in terms of gross domestic product (GDP), employment and tax receipts, and the wider economic impact it generates, in particular through exports, capital investment and R&D. The Company's impact is explored at a national and regional level.

In 2013 BAE Systems' operations made a £7.9 billion contribution to the UK economy and sustained 122,700 full-time equivalent (FTE) jobs. This impact is the sum of three channels of economic impact: the direct contribution of BAE Systems' activities; indirect activities within its UK supply chain; and the induced effect that results as employees of the Company, and within its supply chain, spend their wages in the wider consumer economy. With a GDP multiplier of 2.5, for every £10 in GDP created directly by BAE Systems, £25 is created across the economy as a whole[1], while for every 10 FTE jobs at BAE Systems, 37 are supported across the economy. Labour productivity is high at over £95,000 per FTE. The contribution of BAE Systems' employees is more than double the UK industry average.

BAE Systems' economic impact goes well beyond its immediate economic footprint. Wide-ranging benefits are created for the UK economy as its goods and services boost economic activity elsewhere in the economy. For example, BAE Systems' UK operation is a highly export-oriented business. In 2013, BAE Systems' exports at £3.8 billion comprised one per cent of all UK exports, and made a net positive contribution to the UK balance of payments of around £2.5 billion.

The economic impact of BAE Systems is widely distributed throughout the UK. This reflects the Company's wide geographical footprint with sites in regions all around the UK, from Scotstoun near Glasgow to Portsmouth on the south coast. The wide distribution of its sites means that both supply chain and consumer spend-related benefits and jobs are broadly felt across the country. For example, in South Cumbria, where its Barrow shipyard builds some of the world's most advanced submarines, BAE Systems' operations supported 7,800 FTE jobs in 2013.

[1] Including the £10 directly created at BAE Systems.

The workforce of BAE Systems is highly skilled, and so makes an important contribution to national productivity and economic growth. Some 74 per cent of its direct workforce is employed in professional, managerial and engineering roles. The importance of this skills base to the Company is also reflected in its talent identification and training programmes. BAE Systems spends almost £80 million on training employees each year. In 2013 it recruited 772 apprentices and 251 graduates. In 2015 the Company will recruit 808 apprentices and 293 graduates. By 2018 it has committed to having over 2,000 apprentices working for the Company. BAE Systems also trains apprentices on behalf of small and medium enterprises (SMEs) and suppliers in its supply chain; an approach rarely seen in the sector that underlines its commitment to developing a pipeline of future talent that reaches beyond its own doors.

BAE Systems invests heavily in research and development (R&D), advancing the nation's technological frontier and helping to deliver greater economic output. In 2013, the Company managed £695 million in R&D investment, including £84 million of its own funds and in 2014, the overall R&D investment increased to £902 million, including £63 million of its own funds. BAE Systems' R&D spans a wide range of technologies and applications, and includes innovation in products and processes ranging from visualisation suites that advance the design and build of UK warships to 'smartskin' technology to give aircraft human-like skin, enabling the early detection of injury or damage. BAE Systems' R&D contribution is also reflected in the significant investments it makes in university partnerships and in the number of patent applications it makes. The European Patent Office recognises BAE Systems as one of the largest filers of patent applications in the UK high-tech sector. BAE Systems' businesses in the UK hold around 1,200 granted patents in various territories, with a further 2,100 pending patent applications.

BAE Systems' impact on the economy is substantial. From the contribution to UK GDP and employment of its operational spending, to the impact its exports have on the trade balance, through to the innovation generated by its R&D investment and the partnerships it has developed with some of the nation's top universities, the impact that BAE Systems has on the UK economy is considerable, making an important difference to prosperity and growth across the length and breadth of the country.

£7.9 bn

GDP contribution in 2013

BAE Systems' operations contributed £7.9 billion to the UK economy in 2013, and sustained 122,700 full-time equivalent jobs.

122,700

FTE jobs in 2013

Computer generated image of the successor to the Vanguard Class submarine.

INTRODUCING ECONOMIC IMPACT ANALYSIS

The economic impact of a company or industry is measured using a standard means of analysis called an economic impact assessment. The report quantifies the three 'core' channels of impact that comprise the organisation's 'economic footprint', comprising:

- **Direct impact** - the economic benefit of BAE Systems' operations and activities in the UK;
- **Indirect impact** - the economic benefit and employment supported in BAE Systems' supply chain as a result of the procurement of goods and services; and
- **Induced impact** - the wider economic benefits that arise when employees of BAE Systems and its supply chain spend their earnings, for example in local retail establishments.

From these channels, BAE Systems' total economic footprint in the UK economy is presented, using three key metrics:

- **GDP**, or more specifically, BAE Systems' gross value added (GVA) contribution to GDP; and
- **Employment**, as the number of people employed, measured on a full-time equivalent (FTE) basis; and
- **Tax**, representing the tax receipts paid to the Treasury.

In addition to the core economic impacts, this report examines the **wider effects** of the Company's services or products in boosting economic activity elsewhere in the economy. These impacts represent the wider benefits that governments, consumers, society and other industries derive from the services BAE Systems provides. For BAE Systems these are primarily captured in the contribution that the Company makes to UK exports, capital investment and research and development (R&D). In the context of R&D investment, the report explores the Company's impact in terms of its expenditure through research councils, in university partnerships and in the number of patents that it registers.

The modelling on which this report is based computes the economic footprint of BAE Systems in the UK in 2013, the latest year for which full economic data are available at the time of publication (July 2015). Where available, 2014 and 2015 data have been incorporated. Economic contributions are shown for the whole UK economy and employment contributions are shown for four key business hubs: Glasgow (Naval Ships), South Cumbria (Submarines), North West England (Military Air and Information) and Southern England (Maritime Services). Further detail about the economic impact methodology is included in the **technical appendix**.

An engineer prepares a Eurofighter Typhoon for flight trials involving a Storm Shadow missile.

1. CORE GDP CONTRIBUTION

1.1 TOTAL CONTRIBUTION

In total, BAE Systems contributed £7.9 billion to the UK's gross domestic product in 2013. As explored in figure 1, this total contribution represents the sum of three types of impact–direct, indirect, and induced.

With a GDP multiplier of 2.5, for every £10 in GDP created directly by BAE Systems, £25 is created across the economy as a whole.[2] The Company's direct GDP contribution of £3.2 billion increases to an economy-wide contribution of £7.9 billion.

1.2 LABOUR PRODUCTIVITY

Calculating the direct contribution of BAE Systems to UK GDP (£3.2 billion in 2013) allows the measurement of labour productivity–that is, value added to the UK economy on a per FTE employment basis. At over £95,000 per full-time equivalent, BAE Systems' labour productivity was more than double the UK average of £46,000. It was also 35 per cent higher than the average for the manufacturing sector at £62,000.[3]

To put this in context, this means that if BAE Systems was a separate sector of the UK economy, it would have the sixth highest value added per employee of all sectors. The five sectors with higher value added per employee are all capital-intensive industries requiring relatively small amounts of labour (i.e. real estate; mining and quarrying and water supply).

£95,000

Value added per employee

In 2013, at over £95,000 per FTE employee, BAE Systems' labour productivity was more than double the UK average of £46,000.

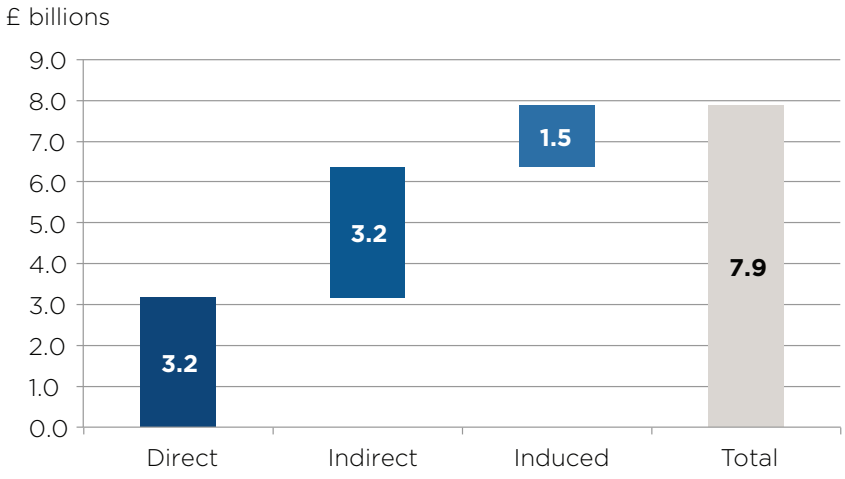
>2x

National average productivity

[2] Including the £10 directly created at BAE Systems.

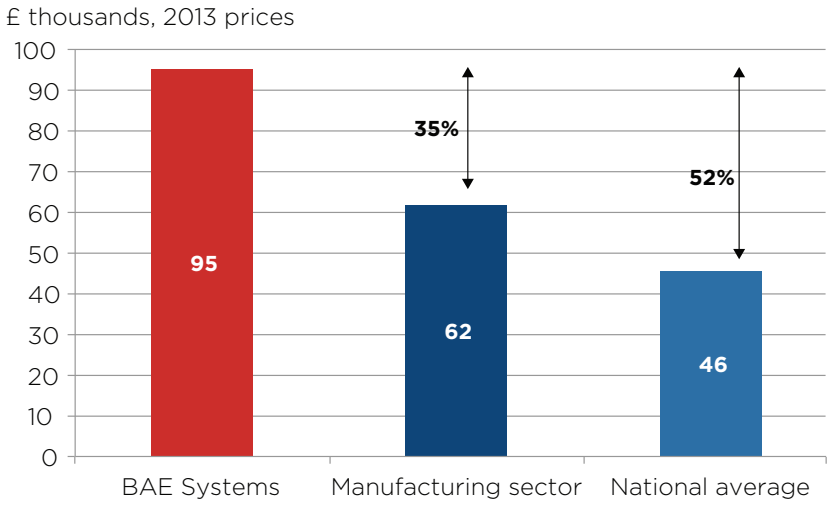
[3] Agglomeration of industries engaged in chemical, mechanical, or physical transformation of materials, substances, or components into consumer or industrial goods.

Fig. 1: BAE Systems' contribution to UK GDP, 2013



Source: Oxford Economics/BAE Systems

Fig. 2: Labour productivity at BAE Systems, 2013



Source: Oxford Economics

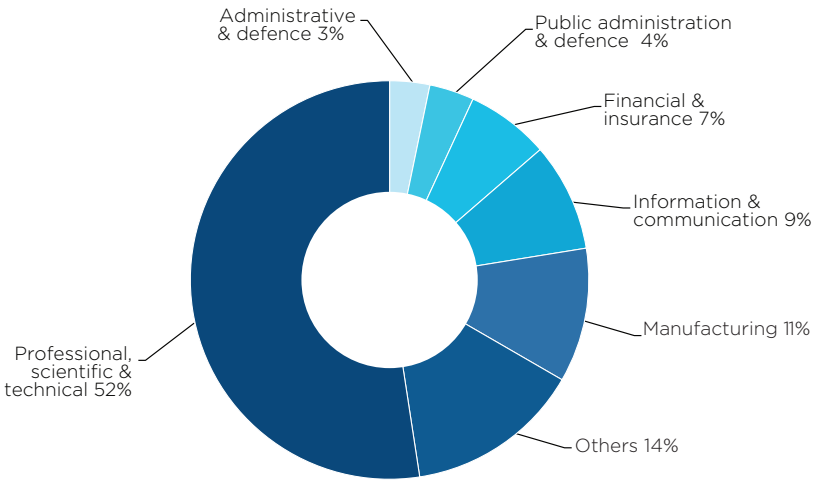
1.3 SUPPLY CHAIN CONTRIBUTION

BAE Systems' direct economic activity feeds through to numerous other related business activities in its supply chain, fuelling economic growth by creating and sustaining jobs in the wider economy, for example in transportation, storage, communications services, professional, financial services and insurance. Procurement data show that in 2013 the Company bought £3.9 billion worth of goods and services from UK suppliers, representing 76 per cent of the total £5.1 billion spend. The procurement from its UK-based supply chain generated an additional value added GDP contribution of £3.2 billion on top of the £3.2 billion directly created by BAE Systems (see figure 1).

The supply chain activity benefits companies located throughout the UK. As figure 3 shows, for BAE Systems most of the indirect GDP contribution is generated by the professional and technical activities sector.

The supply chain impact is also spread throughout the UK reflecting BAE Systems' widely-distributed sites. As figure 4 shows there are seven local authority regions in which the total procurement expenditure with BAE Systems' top 300 suppliers exceeded £100 million in 2013.

Fig. 3: Indirect GDP contribution of BAE Systems by sector, 2013



Source: Oxford Economics

£3.9 bn

UK procurement in 2013

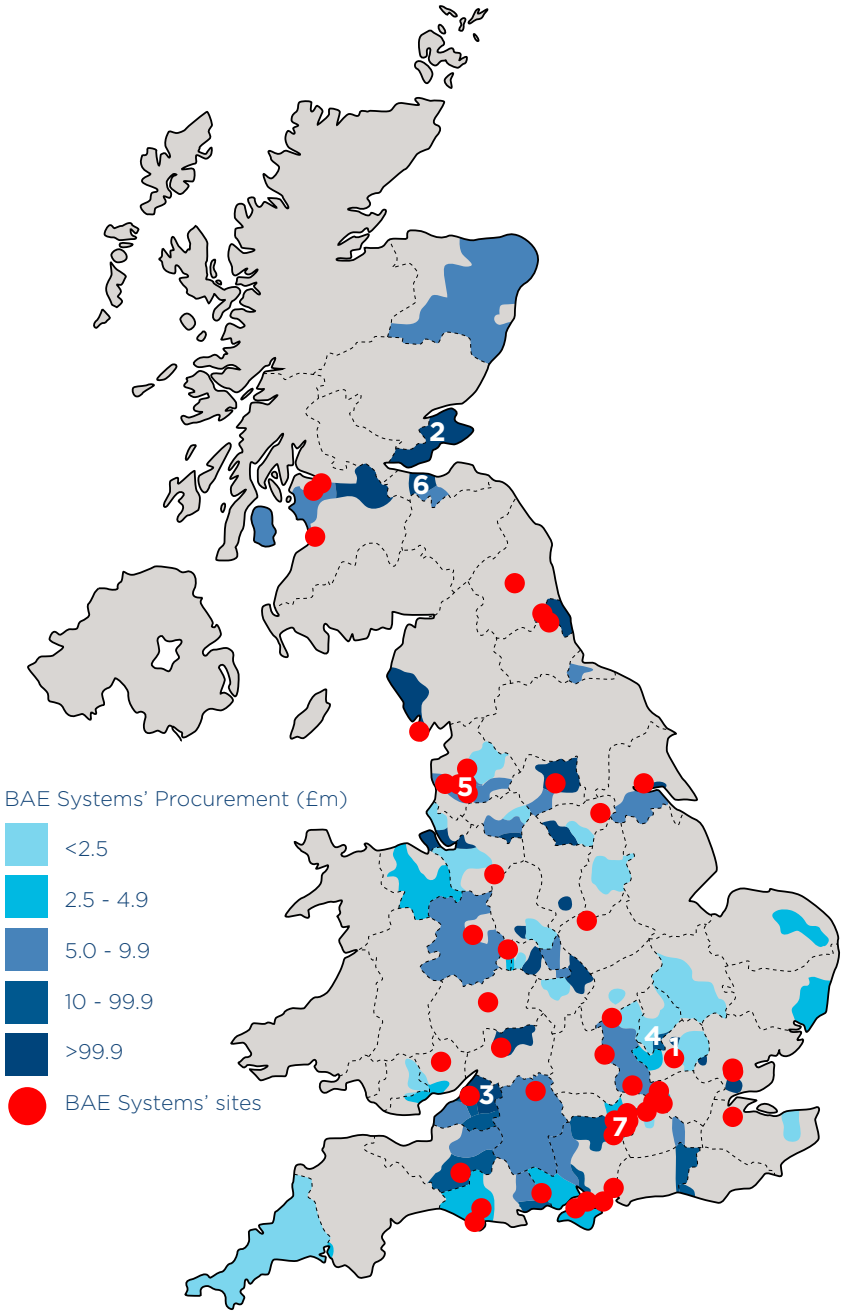
In 2013, BAE Systems bought £3.9 billion worth of goods and services from UK suppliers, representing 76 per cent of the total £5.1 billion procurement spend for the UK businesses.

Innovation to deliver customer value: Advanced Masking Tape:

BAE Systems' highly skilled workforce delivers a significantly higher gross value added than the national average. The Company's priority is to deliver the best quality at the best price to the customer. A graduate at the Company has developed an advanced masking tape which will significantly reduce time and deliver cost savings of an estimated £45 million over the next two decades. This clever solution addresses a common problem of adhesive residue being left on airframe parts when traditional heavy aluminium tape is peeled away.

Removing adhesive residue can be time-consuming, damaging and costly. The tape has been so successful that it has already been put to use in the production of the new F-35 Lightning II, with projected savings of around £15,000 per aircraft, and the Company is now implementing it into the Hawk and Typhoon aircraft production processes.

Fig. 4: Procurement spend with top 300 suppliers and BAE Systems' UK sites



Local authorities where BAE Systems spent over £100 million in 2013

1. Stevenage: £208 million of goods and services procured by MA&I.

2. Fife: £207 million in product support procured by a variety of business units.

3. South Gloucestershire: £196 million of goods and services procured by MA&I, Maritime Naval Ships, Electronic Systems, and Munitions UK divisions.

4. Luton: £170 million of goods and services, mainly procured by MA&I from two suppliers.

5. Preston: £165 million procured from 18 different suppliers for a wide range of business units.

6. Edinburgh: £133 million procured by the Shared Services division, with small amounts procured by MA&I for Typhoon production.

7. Rushmoor: £115 million, with just over half ordered by MA&I for its Hawk aircraft.

1.4 CONSUMER SPEND CONTRIBUTION

In addition to the direct and indirect (supply chain) GDP contribution, employees of both BAE Systems and of companies in its supply chain support economic activity by spending their wages on consumer goods and services. This induced GDP contribution from BAE Systems' activities was worth an additional £1.5 billion to the UK economy in 2013.

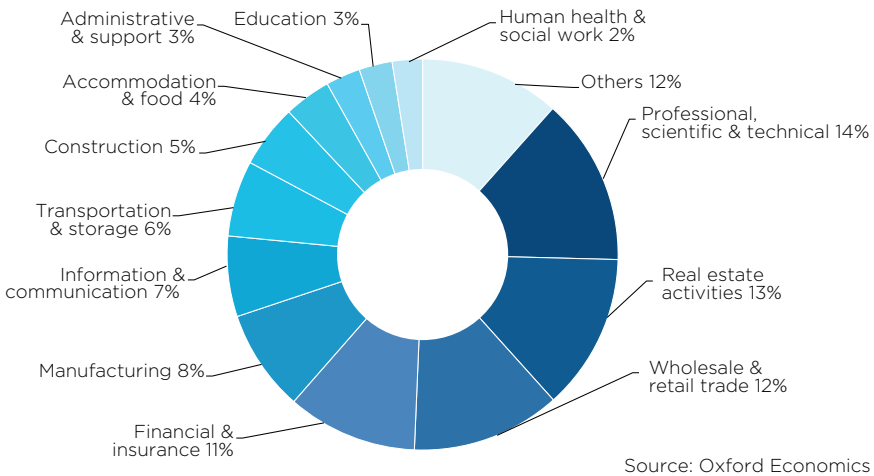
This contribution is felt across a wide range of industries as employees spend their salaries, as shown in figure 5.

£100 m+

Procurement spend in seven local authorities

In 2013, in seven local authority regions BAE Systems' total procurement expenditure with its top 300 suppliers exceeded £100 million.

Fig. 5: Induced contribution of BAE Systems to GDP, by sector, 2013



Source: Oxford Economics

Partnership approach: adi Group

Birmingham-headquartered adi Group was established 25 years ago to provide a one-stop-shop for engineering companies. The company has enjoyed excellent year-on-year growth thanks to its business strategy of adding competencies to its variety of core services over a number of years. Today, the company employs around 450 people and had a turnover of £60m in 2014. adi Group started working with BAE Systems in 2008, when it won a small maintenance contract in Radway Green. During the project, adi Group started talking to the site engineering team and shortly afterwards won an electrical installation and data cabling project.

Since then, thanks to its partnership approach with BAE Systems, adi Group's work for the Company has grown significantly: adi Group now works with five different BAE Systems' businesses on a wide-ranging variety of projects. Today, approximately 10 per cent of its workforce is working for BAE Systems on an FTE basis.

SUPPLY CHAIN

1. Eurofighter Typhoon supply chain

BAE Systems works in partnership along with Airbus Defence and Space (in Germany), Alenia Aermacchi (in Italy) and Airbus Defence and Space (in Spain) to develop and produce the Eurofighter Typhoon.

The supply chain is supported by BAE Systems' involvement in the partnership to build the Typhoon, comprising more than 300 UK suppliers. On average, BAE Systems has spent more than £690 million annually with suppliers on the Typhoon programme over the 2011 to 2013 period, supporting 16,600 UK jobs within supply chain companies, companies that in turn purchase from other suppliers, and through jobs created by the direct and indirect workforce spending their wages.

Supplying the Eurofighter Typhoon programme: Denroy Plastics

Plastics manufacturer Denroy Plastics makes around 180 parts for the Eurofighter Typhoon. The company, based in Bangor, Northern Ireland, produces everything from parts for the exhausts and escape ladders through to equipment for the ventilation system to the cockpit and glare shields on the main body of the aircraft. Its work on Typhoon generates a turnover of around £200,000, almost a third of the company's overall aerospace and defence work. Denroy Plastics has plans for growth in the aerospace industry with ambitions to create a centre of excellence for creating polymers for the industry. Since starting to supply the Eurofighter Typhoon programme, Denroy Plastics has won several contracts for other aerospace sector projects.

Fig. 5: BAE Systems' Typhoon procurement spend and employment contribution by region, 2011-2013 annual average

1. Scotland
£147.83m / 1,378

2. North East
£1.46m / 101

3. Yorkshire & the Humber
£12.57m / 175

4. North West
£23.95m / 5,234

5. West Midlands
£9.47m / 368

6. East Midlands
£223.70m / 2,728

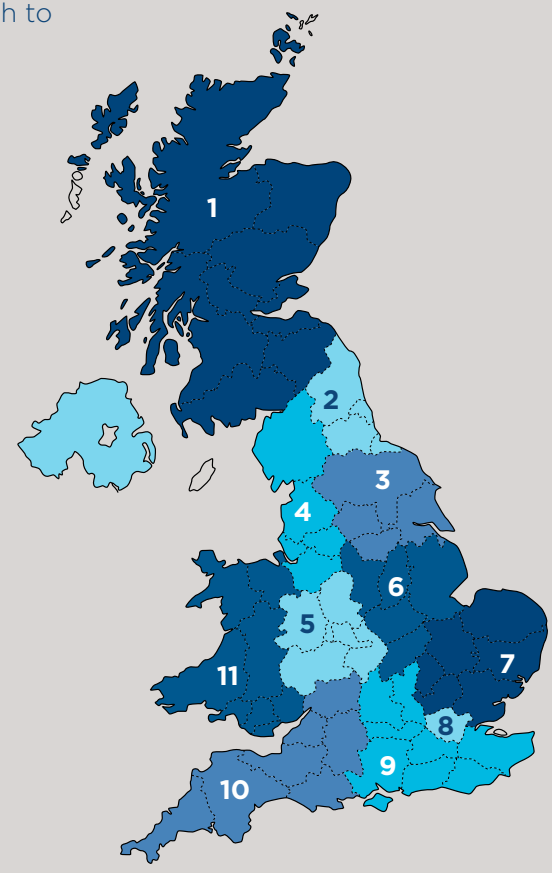
7. East of England
£15.11m / 523

8. London
£14.26m / 256

9. South East
£90.01m / 1,966

10. South West
£147.83m / 3,764

11. Wales
£4.70m / 135



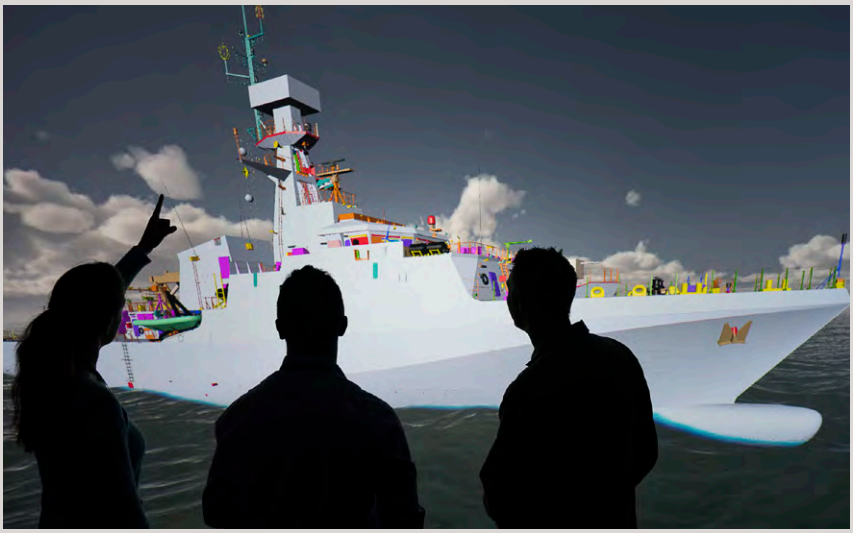
The Eurofighter Typhoon which is in service with the UK RAF and five other air forces across the globe.

2. Type 26 Global Combat Ship supply chain

In 2015, BAE Systems was awarded an £860 million contract by the Royal Navy to deliver a demonstrator for the Type 26 Global Combat Ship to replace the UK's Type 23 frigate.

With operations ranging from high-intensity conflict to humanitarian assistance, the ship will be a versatile multi-mission warship designed to support anti-submarine warfare, air defence and general purpose operations.

Over £660 million of the £860 million contract value will be spent by BAE Systems in its supply chain, with 42 per cent to be contracted to 17 UK suppliers.



Supporting the Type 26 design: David Brown Gear Systems

David Brown Gear Systems is a gearbox manufacturing company based in Huddersfield. First started in 1860, the company now employs 240 people at its UK site and 700 worldwide–with operations in France, Canada and South Africa–and generates annual turnover of £110m.

The company has worked with BAE Systems for more than two decades, supplying gear and transmission systems to land and sea vehicles including the Challenger II main battle tank, and Astute Class attack submarine. In addition, the company is undertaking the design work for the main reduction gearbox and associated systems on the Type 26 warships. Orders from BAE Systems currently account for approximately 20 per cent of David Brown's business.

3. Successor submarine supply chain

BAE Systems is designing a new generation of submarines to carry the UK's independent nuclear deterrent. These submarines are due to replace the Vanguard Class of submarines (also designed and constructed at BAE Systems' site in Barrow-in-Furness, Cumbria). The first submarine under the 'Successor' programme is scheduled to enter service in 2028.

Around 240 suppliers are involved in the Assessment Phase on Successor, with 90 per cent UK-based. These suppliers are distributed widely throughout the UK.

Supporting the Successor submarine design: McGeoch Technology Ltd

Founded in 1832, McGeoch Technology Ltd specialises in the design and manufacture of electrical light fittings for the defence marine industry. The company employs around 115 people, with a turnover of more than £10 million in 2014. It has plans to increase this by 50 per cent over the next three to five years.

Beginning its relationship with BAE Systems over 25 years ago, McGeoch has worked across a number of projects and is currently working to deliver fittings for BAE Systems' Astute Class submarines, Type 45 Destroyers and Queen Elizabeth Class aircraft carriers (a contract worth £6 million alone).

McGeoch currently has 14 Design, Development & Qualification contracts with BAE Systems for the Successor submarine programme – with the company set to fit a mix of lighting and electrical panels to the future Royal Navy vessels. The value of these contracts is estimated at around £2.5 million.

This ongoing relationship has given McGeoch long-term security through contracts that span several years, as well as additional contracts to support the delivery of spares and repairs.

2. EMPLOYMENT CONTRIBUTION

122,700

FTE jobs in 2013

Comprising 33,000 direct jobs, 62,400 supply chain jobs and 27,000 jobs supported by workforce consumer spend.

3.7

Employment multiplier

For every 10 FTE jobs at BAE Systems, a further 37 jobs are supported across the broader economy.

2.1 TOTAL EMPLOYMENT

As well as contribution to GDP, Oxford Economics' modelling can translate BAE Systems' overall economic impact into the number of jobs that are supported.

In 2013, BAE Systems supported 122,700 full-time equivalent workers in the UK economy, split between direct, indirect (supply chain), and induced (consumer spend) employment contributions.

BAE Systems has an employment multiplier of 3.7–its direct employment contribution of 33,300 jobs increases to an economy-wide contribution of 122,700 jobs. This means that for every 10 FTE jobs at BAE Systems, 37 FTE jobs are supported across the economy as a whole (including those directly employed at BAE Systems).

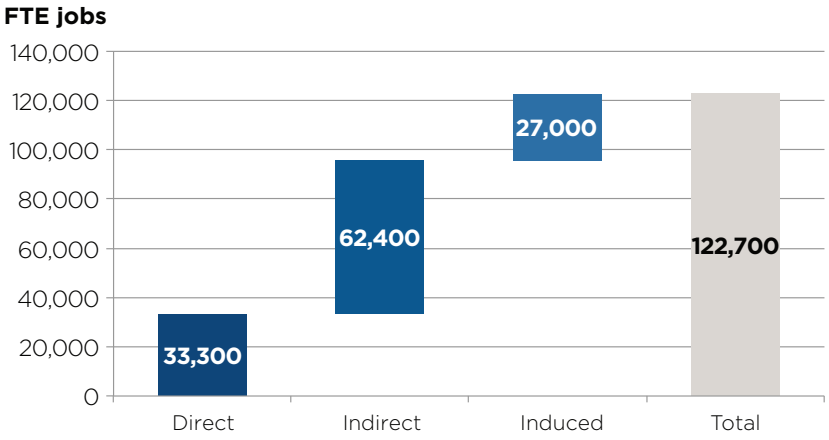
2.2 SKILLS BASE

It is not just the number of jobs provided by BAE Systems that matters for the UK economy. A skilled workforce is important to national productivity and therefore national economic growth. The workforce of BAE Systems is highly skilled, and so makes an important contribution to national productivity.

Some 74 per cent of BAE Systems roles are classified as professional or engineering roles. This includes 11 per cent in senior executive and managerial roles, 29 per cent working as engineers, seven per cent in engineering-related roles, and 27 per cent in other professional roles.

BAE Systems' highly-skilled workforce is reflected in its talent identification and training programmes,

Fig. 6: Total employment contribution, FTEs, 2013



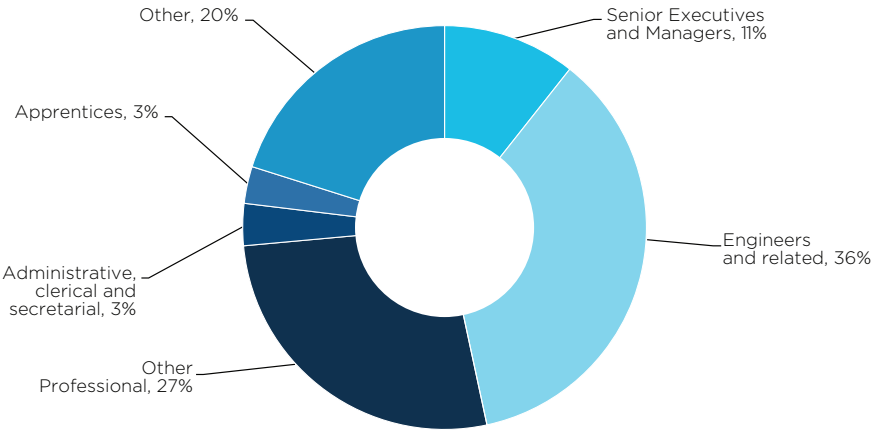
Source: BAE Systems, Oxford Economics

providing training opportunities to a younger and emergent workforce throughout the UK; some of this workforce will go on to work in its supply chain, having been trained at BAE Systems, spreading the benefits of this investment in the future workforce beyond its own doors.

In 2013, the Company recruited 772 apprentices and 251 graduates through three dedicated graduate schemes, as well as additional direct entry routes. In 2015, BAE Systems will recruit 808 apprentices and 293 graduates, its biggest ever annual intake. The Company has committed to significantly grow the number of UK apprentices in training to 2,000 by 2018.

In 2013 BAE Systems invested almost £80 million in the training and development of its UK workforce. This included over £20 million on its apprenticeship programmes, around £9 million on its graduate programmes and over £30 million on a broad range of programmes designed to ensure the wider workforce has the right capabilities and skills to meet future requirements and changing customer needs. For example, in 2013 £2.4 million was spent on the Company's 'Developing You' programmes, a range of tailored courses available for employees in each business function (i.e. Engineering, Finance, Procurement etc.).

Fig. 7: Types of employment at BAE Systems, 2013



Source: BAE Systems

APPRENTICESHIPS

BAE Systems' apprenticeship programme continues to grow and in 2015 it will recruit a record number of apprentices: including 513 funded apprentices across the Company and an additional 295 recruited as part of its Skills Development Scotland (SDS) contract. By 2018, BAE Systems has formally committed to having 2,000 apprentices working for the Company.

The commitment of BAE Systems to its apprenticeship programme as a mechanism for talent development is clear. In 2013, 97 per cent of apprentices completed their framework and gained full–time employment within the business. In 2013, around three per cent of the BAE Systems workforce comprised of apprentices: in that year it recruited 471 craft apprentices and 301 technical apprentices. In 2013, BAE Systems spent over £20 million on salaries and training for its apprentices.

An apprenticeship at BAE Systems provides the opportunity for young people to experience different areas within the business to help them decide which route they would like to take as a career path.

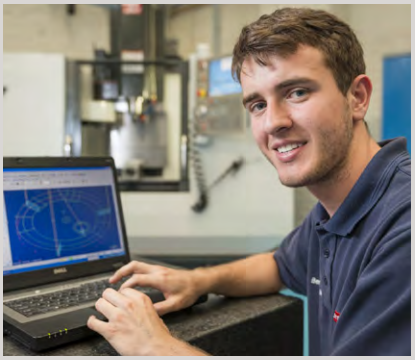
BAE Systems' commitment to providing a pipeline of future talent is reflected in the quality of its apprenticeship provision, and in the awards and recognition that BAE Systems' apprentices gain both regionally and nationally. BAE Systems is involved in and leads many 'trailblazers', developing apprenticeship standards for different roles and across different sectors, for example, in aerospace and aviation fitting, aircraft maintenance and safety, and maritime engineering and inspection, as well as in the development of degree-level apprenticeships for both aerospace and nuclear trainees.

The Company also trains apprentices on behalf of SMEs and suppliers in its supply chain; an approach rarely seen elsewhere in the sector. For example, through the Employer Ownership Programme (EOP), BAE Systems is working directly with 12 local SMEs to provide Level 3 Engineering Apprenticeships for 21 trainees at Preston Training Centre. All these apprentices have successfully completed their first year of training with one trainee (Ben Farnsworth) winning the Engineering Employers' Federation (EEF) regional competition and another trainee (Oliver Cowley-Topping) winning an award at the North West Aerospace Alliance Awards.

Fig.8: BAE Systems' apprentices by site and business division, 2015

Business Unit:	Site:	Apprentices:
Military Air & Information	Brough, Yorkshire	25
Military Air & Information	Preston, Samlesbury, Warton, Lancashire	219
Military Air & Information	Doncaster, South Yorkshire	76
Electronic Systems	Rochester, Kent	31
Maritime Submarines	Barrow-in-Furness, Cumbria	509
Maritime Naval Ships	Portsmouth, Hampshire	8
Maritime Services	Portsmouth, Hampshire	30
Maritime Naval Ships	Glasgow, Scotland	142
Military Air & Information- Regional Aircraft	Prestwick, Scotland	6
Total		**1,046**

Source is BAE Systems Self Assessment Report 2014, Jan 2015 version.



Ben Farnsworth,
Apprentice, Techni-Grind (Machining)

Ben Farnsworth, a technical apprentice at Techni-Grind, received formal training as part of the BAE Systems' apprenticeship scheme at the Preston Training Centre in 2013. In April 2015, Ben's work was recognised when he was awarded an 'Outstanding Achievement Award by a First Year Apprentice' at the regional finals of the Engineering Employers' Federation Future Manufacturing Awards.

At the end of his 12-month apprenticeship, Ben commented that he has benefited hugely from being able to work at Techni-Grind one day a week, whilst spending the rest of the time at training school. He said: "I have had the opportunity to work on a range of machines, putting the skills I have been learning into practice straight away. Now that I am going into the workforce full-time, I will be able to hit the ground running which is great for me and great for the business I am going into."

Thomas Hornsby,
Military Air & Information Apprentice, Warton

Thomas Hornsby, joined BAE Systems' Military Air and Information business at Warton in September 2013, spending his first year learning manufacturing techniques before moving on to a second year position at Systems Integration for the Eurofighter Typhoon where he tests on-board data systems. In addition to the technical training, Thomas developed some vital soft skills in communication and team work in his first year as an apprentice. After finishing his apprenticeship, Thomas hopes to take on a permanent role at BAE Systems with the Military Aircraft Performance Testing & Diagnosis team.

GRADUATES

BAE Systems, a Times Top 100 graduate employer, recruited 251 graduates in 2013. In that year, 134 graduates were recruited to one of the Company's three core graduate schemes. In addition, BAE Systems Applied Intelligence recruited 117, mostly STEM graduates, into either consultancy or technical delivery roles. In 2015, the Company will recruit 293 graduates to its graduate training schemes. One third of these graduates will join BAE Systems' cyber security and intelligence division.

The **Graduate Development Framework** (GDF) is BAE Systems' core graduate programme and operates across the UK business and across all functions. It is two years in duration typically comprising of four six-month business or engineering placements.

The **Finance Leader Development Programme** (FLDP) is a smaller, five-year programme. In the first three years, graduates complete three 12-month placements at various UK sites, gaining experience of financial, management and project accounting whilst completing a CIMA certificate in business accounting. Graduates then move to a two-year role with management experience, helping to develop the skills they require to move into more senior roles.

The **Sigma Scheme** is a programme designed to help develop the Company's future leaders. It has an engineering stream and a separate business stream, with graduates spending three years on each stream. Graduates arrange their own roles with support from the Sigma Steering Group. These roles typically last 6-12 months. On completion, graduates are expected to take on substantive roles at a management level.

Adam Gaunt, Electronic Design Engineer, GDF graduate

After completing a Master's degree in Electronic Engineering, Adam Gaunt joined BAE Systems' graduate scheme in 2011. In his first placement in Maritime Services in Portsmouth, working with warships, he found a career path he wished to pursue and where he later accepted a full-time role. Speaking of his decision to join BAE Systems, Adam said: "Though I understood the theoretical side of engineering, the thing that I enjoyed most was actually creating things, working with my hands, and BAE Systems is well known for its work in very diverse fields and being at the forefront of many technical innovations. After delving further, I was very impressed with its approach to graduates and providing them with not only a great start to their career, but a means through which they can continually expand on their knowledge and experience."

As part of the scheme, Adam was also given the opportunity to be a part of BAE Systems' partnership with UK Sport. He worked on the development of a system to help the GB Taekwondo team to evaluate the electronic scoring vests used in major international competitions. The ultimate goal for the project was to provide insights into how the vests work and how the GB team should adjust their training style to maximise points.

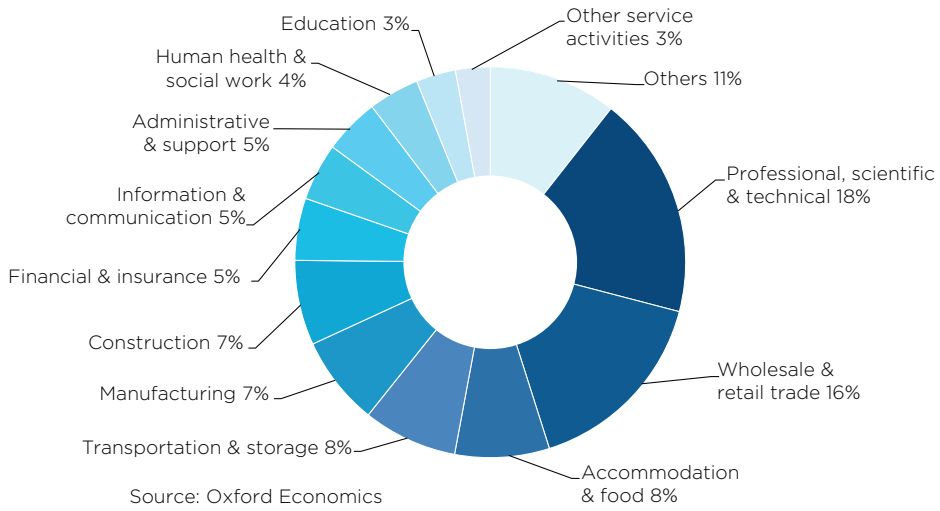

BAE SYSTEMS
ANALYSIS OF AIR TRAFFIC
OVER 3-DAY PERIOD
= DEPARTURE
= ARRIVAL
UNCLASSIFIED

2.3 SUPPLY CHAIN AND CONSUMER SPEND CONTRIBUTION

As well as direct jobs supported by the Company at its sites across the UK, this report quantifies the economic impact of jobs supported in BAE Systems' supply chain, and the jobs that are supported by these sets of employees spending their wages in the consumer economy. The 62,400 FTE jobs that are supported by BAE Systems' supply chain are mostly in professional, scientific and technical activities.

The 27,000 FTE 'induced' jobs supported by the consumer expenditure of employees at BAE Systems and its supply chain are spread widely across the UK economy.

Fig. 9: Induced employment contribution by industry, FTE, 2013



Source: Oxford Economics

QUEEN ELIZABETH CLASS AIRCRAFT CARRIER

BAE Systems is the lead member of the Aircraft Carrier Alliance working to deliver two Queen Elizabeth Class aircraft carriers (QE Class), the biggest warships ever to be constructed in the UK. BAE Systems' procurement spending on the carrier will be £1.9 billion throughout the course of the construction, with a further £600 million spent by other alliance partners. At least 120 suppliers will contribute to BAE Systems' portion of the construction programme, 100 of which are based in the UK.

Work on the QE Class aircraft carriers has contributed between 7,000 and 8,000 highly-skilled jobs across the alliance partners and their shipyards in Glasgow, Rosyth, Portsmouth and Devon. Throughout the supply chain, it is estimated that a further 2,000 to 3,000 jobs have been created, helping to boost local economies across the UK. The programme has also reinvigorated investment in early career programmes–with almost 900 apprentices and 250 graduates recruited by alliance partners since the contract was awarded in 2009.

Type 26 Global Combat Ship

3. TAX CONTRIBUTION

In 2013, BAE Systems made a total tax contribution of £1.3 billion to the Treasury. Its tax multiplier is 2.5: for every £10 paid directly by BAE Systems in taxes, a total of £25 is generated for the Treasury across the UK economy.[4]

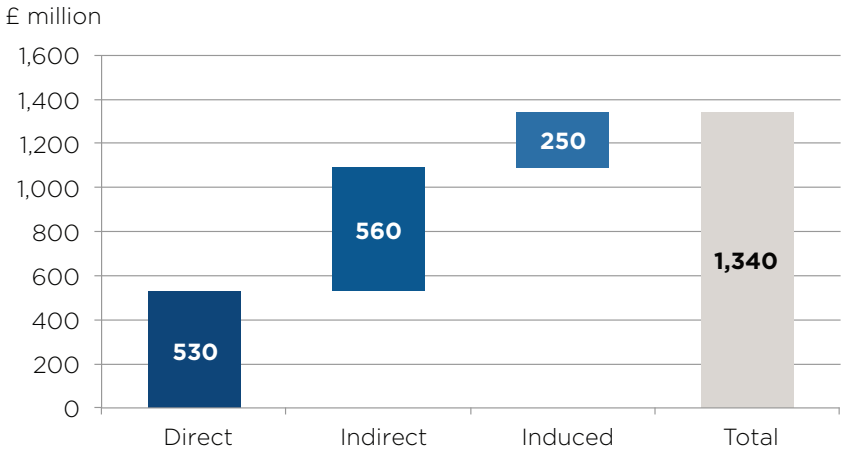
The direct tax contribution (£530 million) includes income tax paid by employees, national insurance tax (employee and employer), and various other small taxes levied on BAE Systems. The indirect contribution (£560 million) is made up of corporate tax, income taxes and NIC payments made by companies and employees in BAE Systems' supply chain. Finally, the induced figure (£250 million) includes the corporate tax, income taxes and NIC payments made by companies and employees of those companies in the wider consumer economy as BAE Systems' workforce and its supply chain workforce spends their wages.

£1.3 bn

Tax contribution in 2013

In 2013, for every £10 paid directly by BAE Systems in taxes, a total of £25 is generated for the Treasury across the UK economy.

Fig. 10: Total tax contribution in 2013



Source: BAE Systems, Oxford Economics

[4] Including the tax paid by BAE Systems.

4. WIDER ECONOMIC IMPACTS

£3.8 bn

Exports in 2013

In 2013, BAE Systems' exports at £3.8 billion comprised one per cent of all UK exports.

1%

Of UK exports in 2013

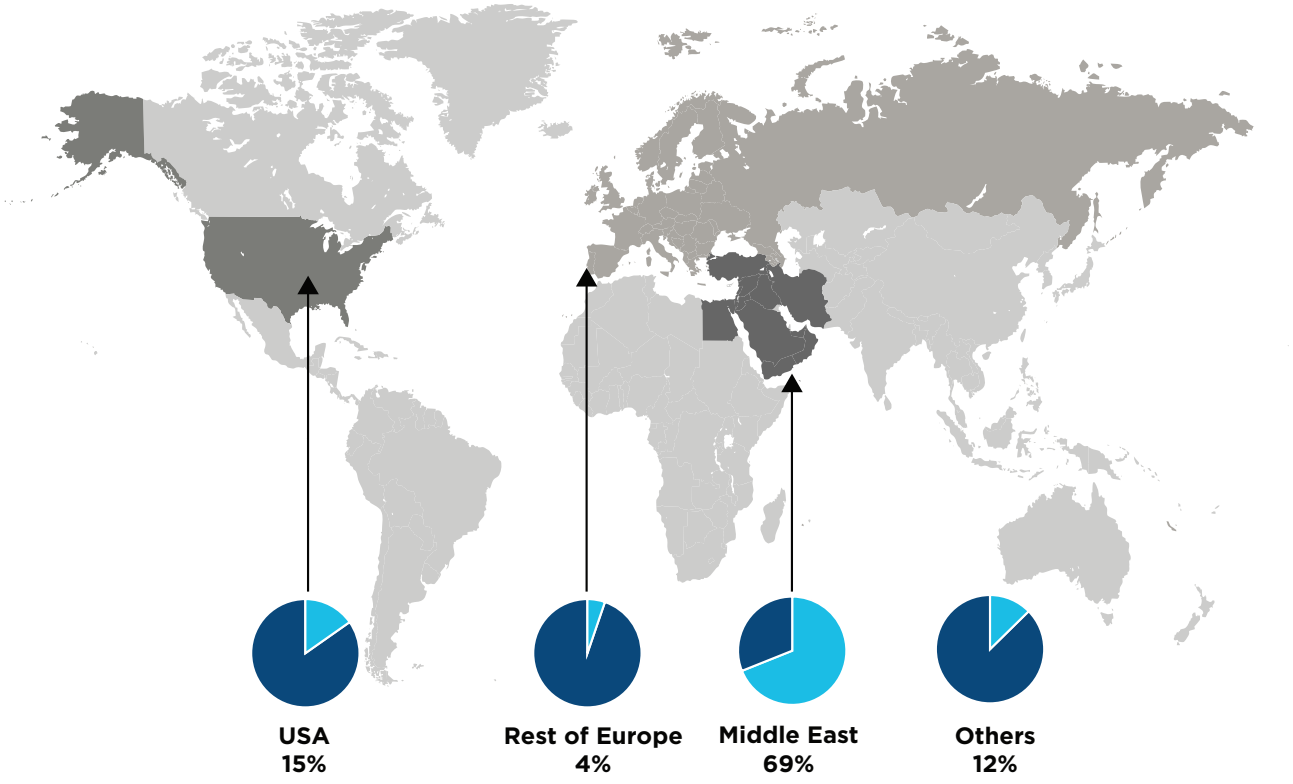
In addition to the core economic impacts that BAE Systems generates for the UK economy, the report also examines the wider effects that the Company's services or products have in boosting economic activity elsewhere in the economy. For BAE Systems these are primarily captured in the contribution that the Company makes to UK exports and the trade balance, and in the capital and research and development (R&D) investment that it supports.

4.1 EXPORTS

BAE Systems' UK operation is a highly export-oriented business, with exports equivalent to 46 per cent of total UK sales revenues in 2013. Exports provide additional employment in the economy and enhance the productivity of companies. These effects lead to even more economic growth.

In 2013, BAE Systems earned export revenues of £3.8 billion, representing about one per cent of all UK exports. Figure 12 shows the destinations of BAE Systems' UK exports.[5] The UK trade balance has also benefited from BAE Systems' activities. BAE Systems imported £1.2 billion worth of goods and services in 2013, meaning that it made a net positive contribution to the UK balance of payments of around £2.5 billion.

Fig. 11: BAE Systems' exports by destination, 2013



[5] Typhoon sales to Eurofighter are excluded from export figures, as they are ultimately UK by destination. The rationale for not including Typhoon sales to Eurofighter as exports is that Eurofighter then 'sell-on' an amount (that approximates to BAE Systems' workshare) to UK MoD. Whilst these sales are shown as sales to Europe in BAE Systems accounts, in the accompanying customer analysis they are included as sales to MoD and therefore they have been excluded from the exports reported here.

4.2 CAPITAL AND R&D INVESTMENT

BAE Systems invested £124 million, or nearly £4,000 per employee, in fixed capital over the course of 2013. Higher levels of fixed capital invested per worker lead to more productive workers. As a result, fixed capital investment is considered to be an indicator for longer-term economic growth.

In addition to fixed capital investments, BAE Systems also invests heavily in research and development (R&D). In 2013, the Company managed £695 million in R&D investment, including £84 million of its own funds and in 2014, the overall R&D investment increased to £902 million, including £63 million of its own funds. BAE Systems' R&D spans a wide range of technologies and applications, and includes innovation in products and processes.

R&D makes a difference to economic productivity in a number of ways: by improving the quality of goods, by reducing the costs of producing existing goods, and by increasing the range of goods or intermediate inputs available.[6] Furthermore, R&D carried out in one company can have positive spill-overs to other firms or industries as the benefits accrue to competitors, other firms, suppliers and customers. In this way, R&D advances a nation's technological frontier, helping it to deliver greater economic output.

Previous work by Oxford Economics has identified empirical evidence of a positive relationship between whole economy total factor productivity growth and defence and non-defence R&D.[7] This work indicated that a one percentage point increase in defence R&D as a proportion of GDP would, on average, boost total factor productivity (and therefore GDP) by 15.9 per cent in the next 15 years.[8] This means that the 2013 investment alone will have the effect of boosting the UK's GDP by a cumulative total of one per cent over a period of 23 years.

BAE Systems also makes significant investments in university partnerships, working with universities through various research councils. Between 2012 and 2013, funding with UK universities rose by 52 per cent. The top ten recipients of funding from BAE Systems in 2013 together received £7.4 million in research funding of a total of £9.6 million spent with UK universities.

£124 m

Fixed capital investment

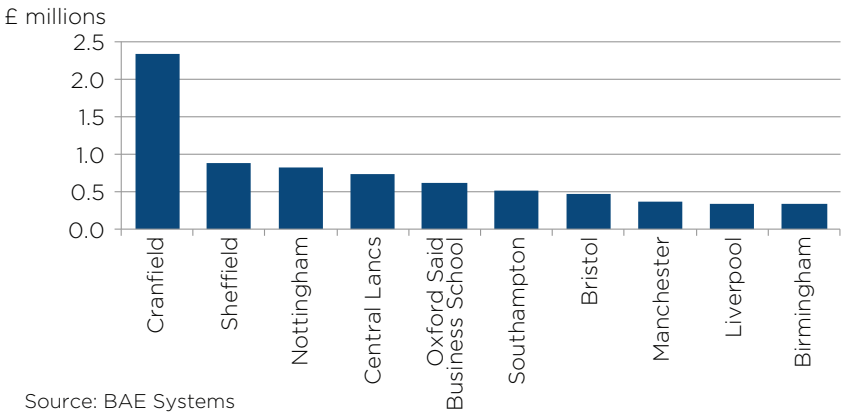
In 2013, BAE Systems invested £124 million, or nearly £4,000 per employee, in fixed capital.

£695 m

R&D investment in 2013

In 2013, BAE Systems invested £695 million in R&D investment, including £84 million of its own funds.

Fig. 12: Research spending at UK universities, top ten, 2013



Source: BAE Systems

[6] Bronwyn H Hall and Jacques and Mohnen, Pierre Mairesse, "Measuring the returns to R&D", National Bureau of Economic Research Working Paper Series (15622), 2009.

[7] Total Factor Productivity can be defined as output/GDP per unit of "input" in the economy, where "input" captures the total level of labour and capital inputs.

[8] Oxford Economics (2005) The Economic Contribution of BAE Systems to the UK

6th

Biggest patent applicant in the UK under the Patent Cooperation Treaty.

1,200

Active patents

2,100

Pending patent applications

The granting of patents represents another way in which BAE Systems' R&D activities have a wider economic impact and serve to highlight the innovative nature of the Company's work.[9] By providing protection to inventors, patents and other intellectual property protections act to incentivise innovation, allowing those who invest in R&D to recoup the costs of their investments. By positively impacting on the rate of innovation, patents work to bring about an increase in GDP growth.

BAE Systems' businesses in the UK have around 1,200 active patents in various territories, with a further 2,100 pending patent applications. In 2013, BAE Systems was the sixth biggest patent applicant in the UK under the Patent Cooperation Treaty system.[10] The Company typically files between 120 and 140 priority patent applications each year for new inventions from its UK business. Each application can result in a number of further international filings, boosting the total number of new patent applications per year to approximately 800-900.[11]

The European Patent Office recognises BAE Systems as one of the largest filers of patent applications in the UK high-technology sector.[12] The UK Intellectual Property Office highlighted BAE Systems' contribution in four of eight key technology areas.[13] In 'big data and efficient computing' BAE Systems is one of the top three patent filers in the UK, along with IBM and BT, while in 'satellites and commercial applications of space' BAE Systems is the third highest patent applicant in the UK. It is also the top UK-based patent applicant in 'robotics and autonomous systems' and amongst the top global patent applicants in the area of 'advanced materials and nanotechnology'.

[9] Corinne and Moschini, GianCarlo Langinier, "The Economics of Patents: An Overview", Working Paper 02-WP 293, February 2002.

[10] WIPO, "Statistical Country Profiles: United Kingdom," accessed on 22/04/2015.

[11] This compares to 51,296 UK-wide patent filings and 469,941 patents in force in 2013. WIPO, "Statistical Country Profiles: United Kingdom," accessed on 22/04/2015.

UNIVERSITY PARTNERSHIPS

Cranfield: Transforming data to support operational decisions

Cranfield University is the largest recipient of BAE Systems' university funding, receiving grants of £2.3 million in 2013. Research supported includes an Integrated Vehicle Health Management (IVHM) Centre of Excellence which works to transform data from complex vehicles such as luxury cars or commercial airplanes into information that can be used to support operational decisions and optimise maintenance–ultimately benefiting both industry and consumers.

Birmingham: Augmented reality systems set to revolutionise battlefield operations

Engineers from BAE Systems have worked in partnership with the University of Birmingham to develop ground-breaking technology concepts to allow operators to take control of real-time battlefield situations. The Company contributes funding to the University's technology departments, as well as supporting PhD students and others in further education.

BAE Systems is developing augmented reality systems with Birmingham University.

[12] European Patent Office, "Top EPO applicants from the UK – 2013": http://www.prnewswire.co.uk/news-releases/uk-companies-granted-more-european-patents-in-2013-248705821.html and "UK Companies Granted More European Patents in 2013", 6 March 2014,

[13] Intellectual Property Research: Patents: https://www.gov.uk/government/collections/intellectual-property-research-patents

R&D INVESTMENT DRIVING INNOVATION

Unmanned combat air vehicle Taranis

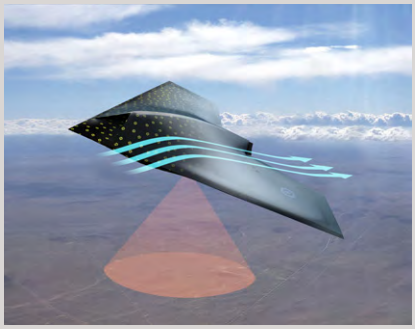
The Taranis is the most advanced aircraft ever built by British engineers. It has successfully completed a second phase of flight testing in a full 'stealth' configuration, making it virtually invisible to radar. BAE Systems is the prime contractor on this project and leads on many elements of the demonstrator, including the low observability, systems integration, and control infrastructure.

NetReveal

NetReveal provides a suite of highly-specialised data ingestion, analytics and simulation tools which have revolutionised the detection of fraud and organised crime. It is used by major global banks and insurers, governments and law enforcement agencies around the world to provide intelligence and combat a range of criminal threats.

Head-Up Display (HUD)

Originally designed for use within military jets, the head-up display (HUD) is a semi-transparent display that presents flight data overlaid on the pilot's view of the outside world through their windshield. The name stems from a pilot being able to view information with the head positioned "up" and looking forward, instead of angled down looking at lower instruments. Today, the technology has evolved significantly, to head/helmet-mounted displays–forms of HUD where the display moves with the orientation of the user's head–such as BAE Systems' Striker II Helmet.



Aircraft 'smart skin'

Engineers at BAE Systems are developing a 'smart skin' concept to give aircraft human-like skin, enabling the detection of injury or damage and the ability to 'feel' the world around them. The 'skin' could be embedded with tens of thousands of micro-sensors which, when applied to an aircraft, will enable it to sense wind speed, temperature, physical strain and movement far more accurately than current sensor technology allows. The ability to continually monitor the health of an aircraft, reporting back on potential problems before they become significant, hugely increases the efficiency of aircraft maintenance.

Virtual 'visualisation suites' for UK warships

BAE Systems has created a network of visualisation suites at its sites in Glasgow, Portsmouth and Bristol, which create full-scale 3D virtual prototypes of ships, enabling engineering teams to use virtual reality capabilities to test the design of vessels, and transform the way that complex warships, such as the Royal Navy's new Offshore Patrol Vessels and the Type 26 Global Combat Ship, are designed and built. The suites enable potential engineering issues to be identified and addressed in advance of the first steel being cut and allow suppliers and customers to be brought into the design process at an earlier stage.

Wildcat driverless car

BAE Systems' engineers transformed a Bowler Wildcat vehicle, using a cutting-edge autonomous piloting system, to develop one of the world's most advanced driverless cars. Capable of not only traversing public roads, the Wildcat can also navigate off-road terrain and is able to avoid obstacles at speeds of up to 40 mph.

5. REGIONAL CONTRIBUTION

As well as quantifying the impact of BAE Systems on the UK economy as a whole, this report examines its impact at a regional level, focusing on four key regional hubs and the overall footprint of individual businesses within each geographical area. As at the national level, a BAE Systems site within a given region will generate multiplier effects on jobs within the regional economy. Accordingly, the direct, indirect, induced and total employment contributions of BAE Systems to the four regional economies are reported for each region.

Figure 13 identifies the four regions and the BAE Systems' sites[14] within those regions as well as the local authorities and administrative units within which they are located.

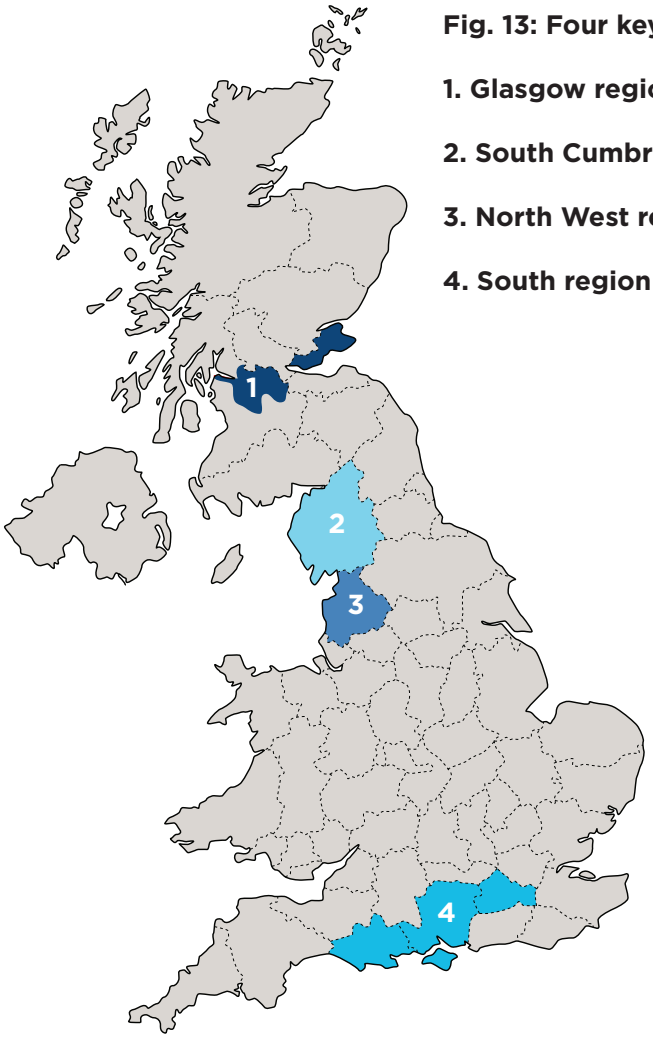


Fig. 13: Four key regions

1. Glasgow region

2. South Cumbria region

3. North West region

4. South region

Region Name:	Business type:	Sites within:	Counties / local authorities within:
Glasgow	Naval Ships	Scotstoun, Govan, Queen Elizabeth carrier activity at Rosyth[14]	West Dunbartonshire, East Dunbartonshire, Glasgow City, Inverclyde, Renfrewshire, East Renfrewshire, North Lanarkshire, Fife
South Cumbria	Submarines	Barrow	Cumbria
North West	Military Air and Information	Warton, Samlesbury, Preston (Channel Way)	Lancashire
South	Maritime Services	Portsmouth Naval Base, Cowes, Broadoak, Weymouth/Dorchester, Ash Vale, Frimley, New Malden, Christchurch	Surrey, Hampshire, Isle of Wight and Dorset

[14] With the exception of Rosyth, which is not a BAE Systems' site but houses BAE Systems' employees working on the QEC carrier programme.

5.1 GLASGOW - NAVAL SHIPS

The Glasgow region is home to two BAE Systems Naval Ships' sites–Scotstoun and Govan and covers a wide area comprising of eight local authorities. The Company also has a number of employees based in Rosyth working on the Queen Elizabeth Class carrier programme. In addition to BAE Systems' involvement in the design and manufacture of the two Queen Elizabeth Class aircraft carriers, the Company is manufacturing three Offshore Patrol Vessels. It is also in a demonstration phase for the Type 26 Global Combat Ship, a programme expected to enter service for the first time in the 2020s.

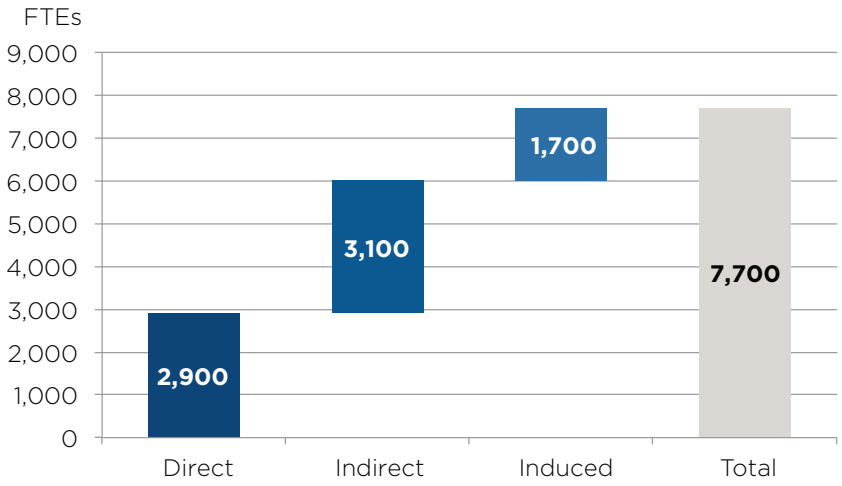
Across the region, BAE Systems Naval Ships directly employs 2,900 full-time equivalent workers, with a further 3,100 jobs supported in the indirect supply chain, and an additional 1,700 jobs supported through the consumer spend of these employees. The employment multiplier is 2.7 for the Glasgow region, meaning that for every 10 FTE jobs at BAE Systems, 27 FTE jobs are supported across the local area as a whole, including those directly employed at BAE Systems.

7,700

FTE jobs in 2013

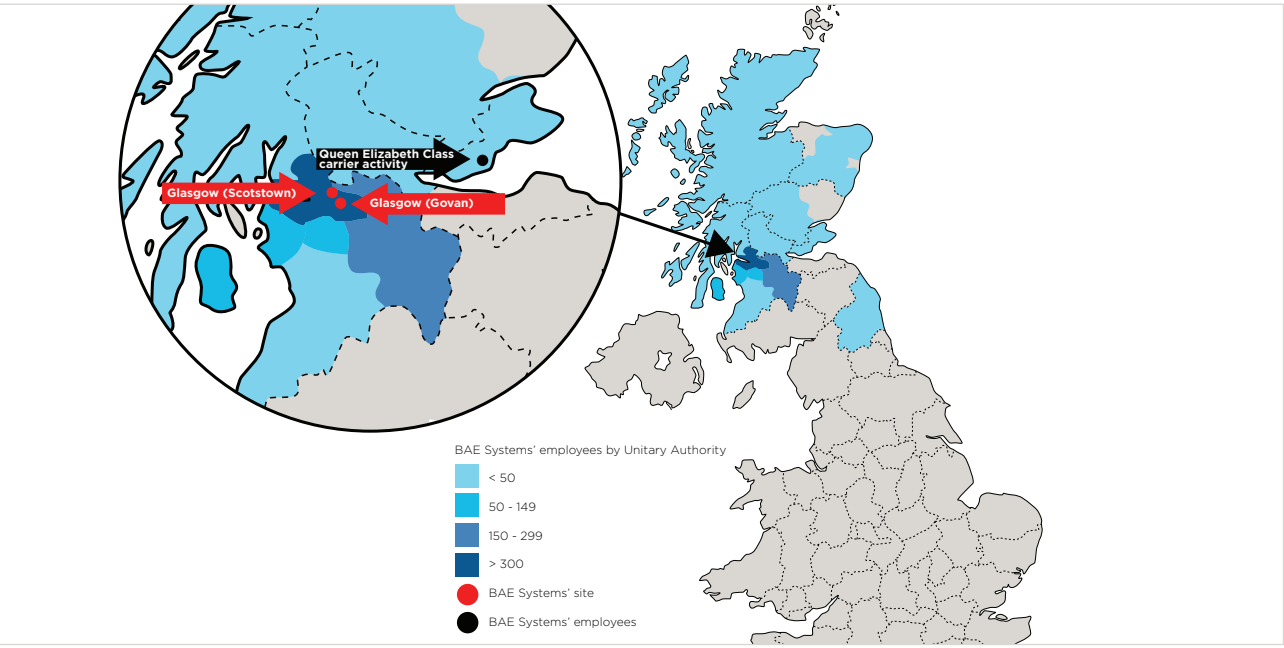
In 2013, in the Glasgow region, BAE Systems supported 27 FTE jobs across the area as a whole for every 10 directly employed.

Fig. 14: Employment contribution of BAE Systems Naval Ships in the Glasgow region



Source: BAE Systems, Oxford Economics

Fig. 15: Sites and employees of BAE Systems Naval Ships in the Glasgow region[15]



Innovative approach to logistics: Wincanton

Wincanton is a leading provider of supply chain solutions in the UK and Ireland and currently employs nearly 1200 people across 32 operations in its Defence Logistics business.

As the Queen Elizabeth Class carrier programme is one of the largest engineering projects currently being undertaken in the UK, an innovative approach to logistical support was required. A central warehouse concept provides a single point of storage for equipment and materials for use within the build programme; this helps to strengthen the ability to deliver materials to operations in line with build plan requirements. Wincanton provided a solution based on logistics 'Best Practice': to deliver an efficient and affordable storage and distribution service. By locating the central warehouse in Scotland, Wincanton identified the opportunity to deliver environmental benefits by integrating the solution into their UK network of 3,900 vehicles.

The multi-million per annum contract has not only provided long-term employment for 33 people but has been a key enabler to help Wincanton win business with other defence customers and double the workforce over the last six years. Following the success of the company's involvement in the QEC programme, in January 2015, a long-term agreement was signed, which started with the outsourcing of all logistics and warehousing at BAE Systems' sites in Glasgow to Wincanton, operating a central warehousing facility, inbound scheduling and collections and provision of modular re-useable crates.

The benefits of this unique approach within the defence industry were recognised externally when the Company won the European Supply Chain Excellence award in 2013.

[15] Rosyth, is not a BAE Systems' site but houses BAE Systems' employees working on the QEC carrier programme.

5.2 SOUTH CUMBRIA - SUBMARINES

The South Cumbria region is home to BAE Systems Submarines. The primary focus of the Barrow site is the design and build of complex submarine programmes for the Royal Navy. The site is benefiting from a £300 million redevelopment investment that will ensure that Barrow's world-class submarine building capabilities are retained for the long term.

The Barrow site in the South Cumbria region directly employs 5,400 full-time equivalent workers with a further 400 jobs supported in the indirect supply chain, and an additional 2,000 jobs supported through the consumer spend of these employees. The employment multiplier is 1.4 for the South Cumbria region, meaning that for every 10 FTE jobs at BAE Systems, 14 FTE jobs are supported across the local area as a whole, including those directly employed at BAE Systems.

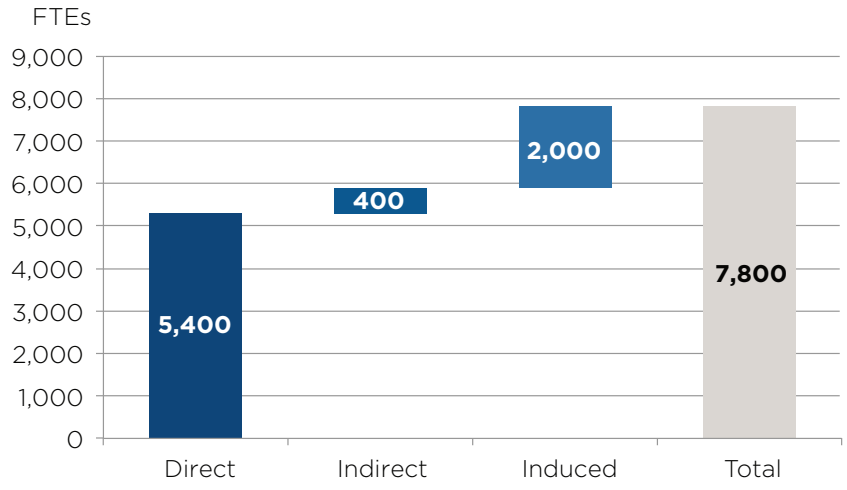
The number of direct FTE workers at Barrow increased to 7,200 in 2015, and thus the indirect and induced contribution would also rise for the region, increasing the total employment contribution.

7,800

FTE jobs in 2013

In the South Cumbria region in 2013 BAE Systems supported 14 FTE jobs across the area as a whole for every 10 directly employed in the region.

Fig. 16: Employment contribution in the South Cumbria region



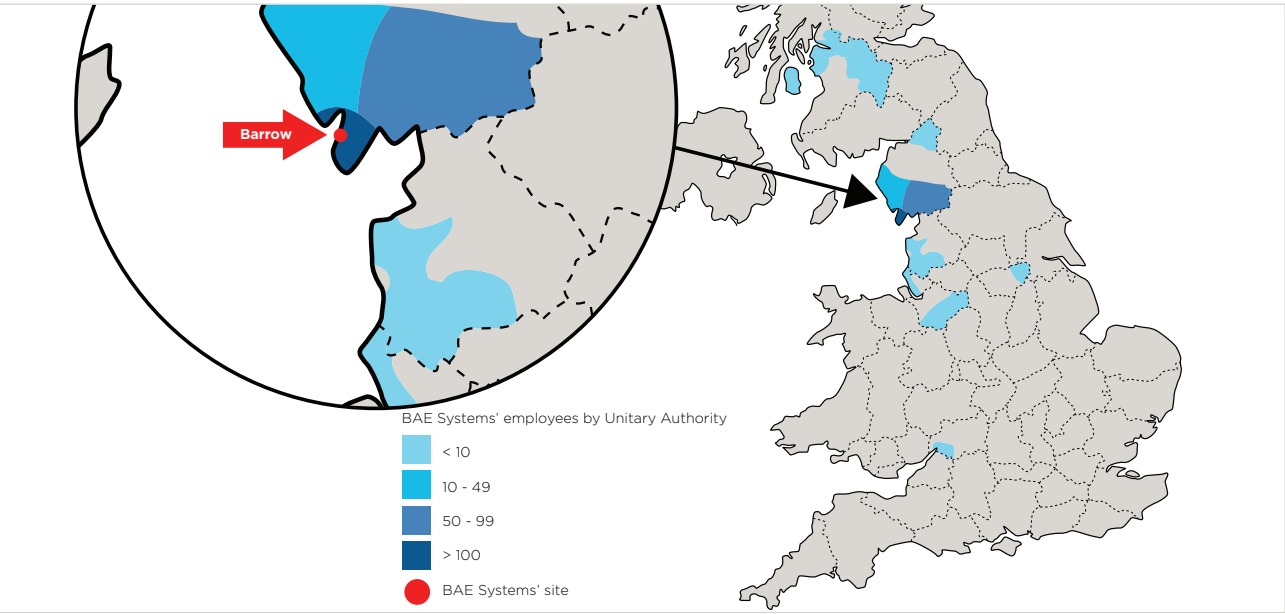
Source: BAE Systems, Oxford Economics

Astute Class submarines

Described as more complex to design and construct than a space shuttle, seven cutting-edge stealth submarines are being built for the Royal Navy at BAE Systems' Barrow shipyard in South Cumbria. The submarines are powered by a nuclear reactor that can run for the full 25-year lifespan without refuelling.

Astute Class submarines are able to circumnavigate the globe without surfacing, limited only by their food storage capacity. In 2013, the value of the Astute Class supply chain totalled £323 million, with supplies procured from 430 UK companies (out of a total of 461 suppliers). More than a quarter of these suppliers (114) are based in the Cumbria and North West England region.

Fig. 17: BAE Systems Submarines' sites and employees in the South Cumbria region



Accelerating Success: BAE Systems' apprenticeship programme:

Employment at BAE Systems Submarines' business in Barrow is expected to rise significantly as the Successor build programme gets underway. Many of those being brought into the business are high-potential apprentices at the start of their careers, such as 21-year old Francesca McKenna. Francesca joined BAE Systems in 2011 to take up a three-year apprenticeship position. She has since extended her apprenticeship to five years, allowing her to work towards a full degree as a risk engineer. In 2015, she was awarded the BAE Systems' Apprentice of the Year award for her work on the Astute Class submarine programme. Self-management, teamwork and communication are the main things Francesca has learnt through her apprenticeship where she liaises with different stakeholders across the business to ensure projects are completed on time and on budget. She believes that her apprenticeship has helped her focus on progressing an exciting and challenging career.

5.3 NORTH WEST – MILITARY AIR AND INFORMATION

16,200

FTE jobs in 2013

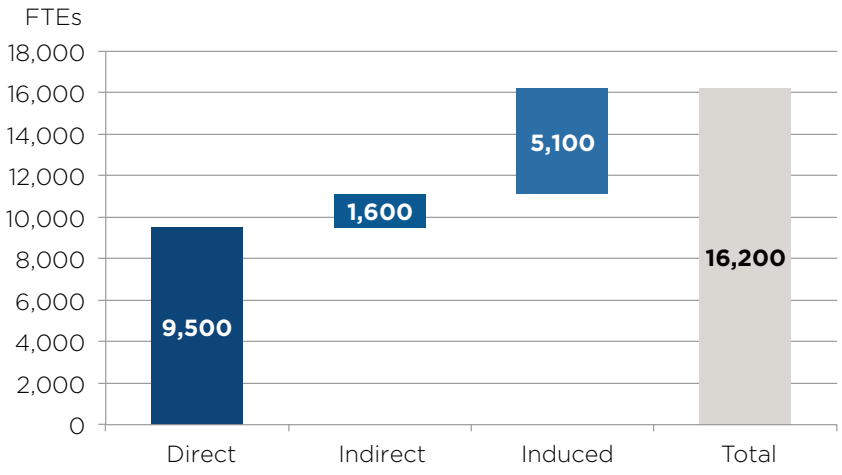
In 2013, in the North West region BAE Systems supported 17 FTE jobs across the area as a whole for every 10 directly employed in the region.

The North West[16] region is home to four BAE Systems Military Air and Information (MA&I) sites and covers the area primarily comprising Lancashire. At these sites, the Company manufactures and completes the final assembly of the Eurofighter Typhoon and Hawk jet trainer, together with work on the rear section of the F-35 Lightning II.

Lancashire is also home to the future of flight with engineering teams behind the Company's Future Combat Air Systems business based at Warton.

The Warton, Samlesbury, and Preston (Channel Way) sites in the North West region directly employ 9,500 full-time equivalent workers, with a further 1,600 jobs supported in the indirect supply chain, and an additional 5,100 jobs supported through the consumer spend of these employees. The employment multiplier is 1.7 for the North West region, meaning that for every 10 FTE jobs at BAE Systems, 17 FTE jobs are supported across the local area as a whole, including those directly employed at BAE Systems.

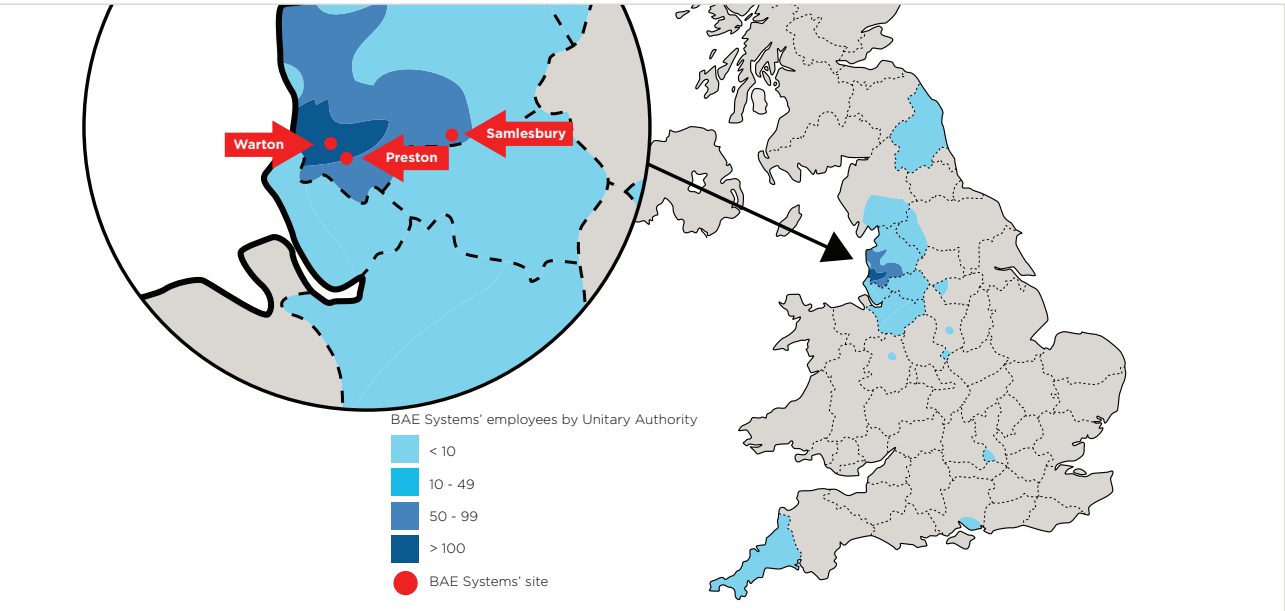
Fig. 18: Employment contribution by BAE Systems MA&I in the North West region



Source: BAE Systems, Oxford Economics

[16] To note, this is not the same geographic area as the North West regional designation, which also comprises what is called 'South Cumbria', nor is it the equivalent of the North West UK Government Office region.

Fig. 19: MA&I sites and employees in the North West region



Innovating for growth: Hurst Green Plastics

Hurst Green Plastics used to be a small plastic fabrication factory based in the heart of the Ribble Valley. Since starting work with BAE Systems' MA&I business in Samlesbury in 1997, the company has tripled its workforce – opening operations in Hurst Green and Whalley. It now exports products from its home in Lancashire to more than 50 countries all over the world.

The company designs and manufactures fabricated storage equipment, used on industry production lines. Working closely with BAE Systems, Hurst Green Plastics developed the TwinBin Kanban storage system for use in production of the Eurofighter Typhoon. The rivet and fastener storage has proved so effective that today more than 7,000 units are now in use across the Eurofighter Typhoon production line.

Hurst Green Plastics has significantly upgraded its manufacturing capability, investing in Injection Moulding tooling to meet demand and produce dispensers quickly and economically across two production lines. Today, the units are widely used across BAE Systems, including in Brough, Chadderton, Woodford and Warton, as well as by a large number of RAF and MoD bases in the UK. The system has also been used by BAE Systems Submarines' business in Barrow-in-Furness, and BAE Systems Electronics in Nashua, USA.

In 2012, the company won the Queen's Award for Innovation presented where the company's success story began, in the Typhoon manufacturing facility at BAE Systems.

5.4 SOUTH – MARITIME SERVICES

9,200

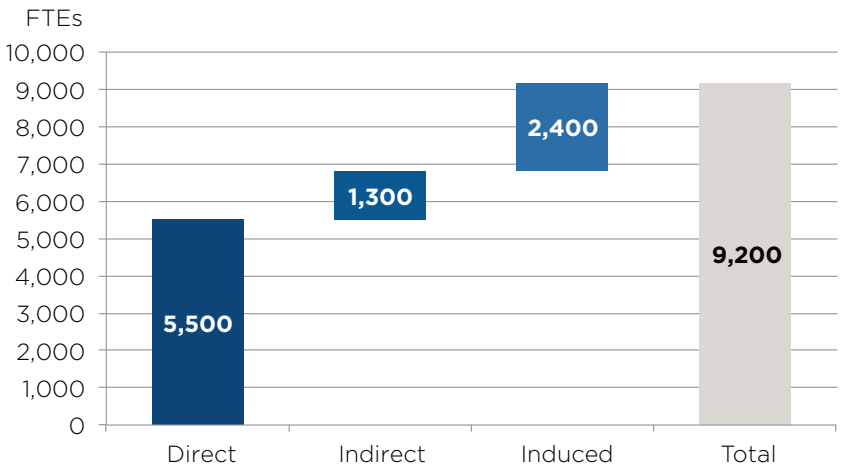
FTE jobs in 2013

In 2013, in the South region BAE Systems supported 17 FTE jobs across the area as a whole for every 10 directly employed in the region.

The South region is home to eight BAE Systems Maritime Services sites and covers an area including parts of Surrey, Hampshire, Dorset and the Isle of Wight. The primary focus of these sites is to deliver everything the UK Royal Navy needs to live and work at the Portsmouth Naval base, as well as support global operations, and provide training systems. In the Isle of Wight, the Company specialises in radar development and manufacturing.

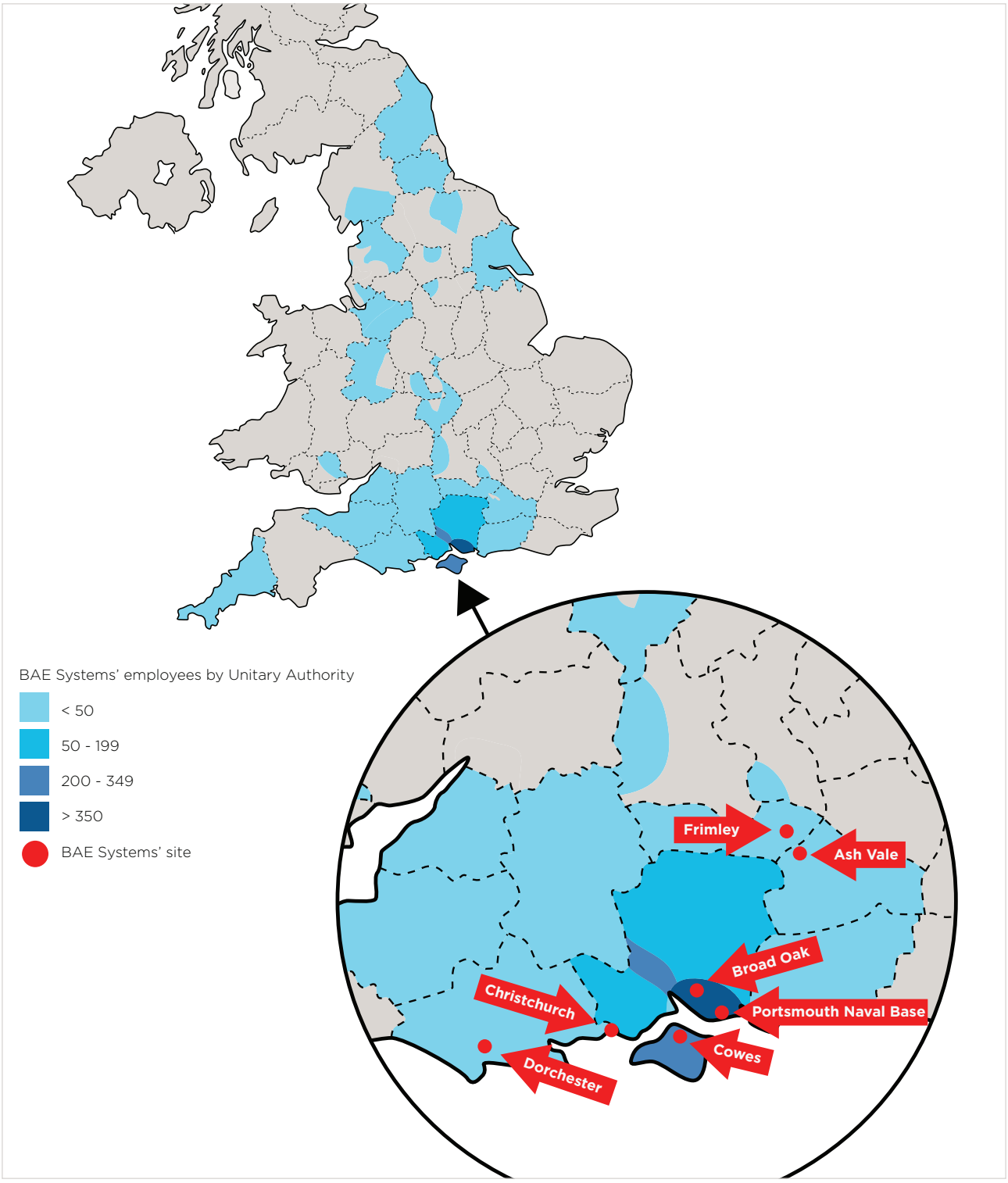
The Portsmouth Naval Base, Cowes, Broadoak, Dorchester, Ash Vale, Frimley, New Malden, and Christchurch sites in the South region directly employ 5,500 full-time equivalent workers, with a further 1,300 jobs supported in the indirect supply chain, and an additional 2,400 jobs supported through the consumer spend of these employees. The employment multiplier is 1.7 for the South region, meaning that for every 10 FTE jobs at BAE Systems, 17 FTE jobs are supported across the local area as a whole, including those directly employed at BAE Systems.

Fig. 20: BAE Systems Maritime Services employment contribution in the South region



Source: BAE Systems, Oxford Economics

Fig. 21: BAE Systems Maritime Services sites and employees in the South region



Success through continual improvement: Jack Tighe

Jack Tighe Ltd is an industrial and decorative painting contractor employed by BAE Systems to grit blast and add protective coating to Royal Navy ships, including Type 45 Destroyers such as HMS Defender and HMS Duncan. Founded in 1954, the Company currently employs 35 staff and has an annual turnover of approximately £13 million.

Jack Tighe Ltd started working with BAE Systems 13 years ago and over the years has benefited from a steady stream of work in both Portsmouth and Govan shipyards. This long-term relationship and the security it provides has allowed Jack Tighe Ltd to make vast improvements to its operating systems, helping it to become not only more efficient but also improve health and safety and work conditions. Working with BAE Systems has allowed Jack Tighe Ltd to successfully breed a culture of continual improvement.

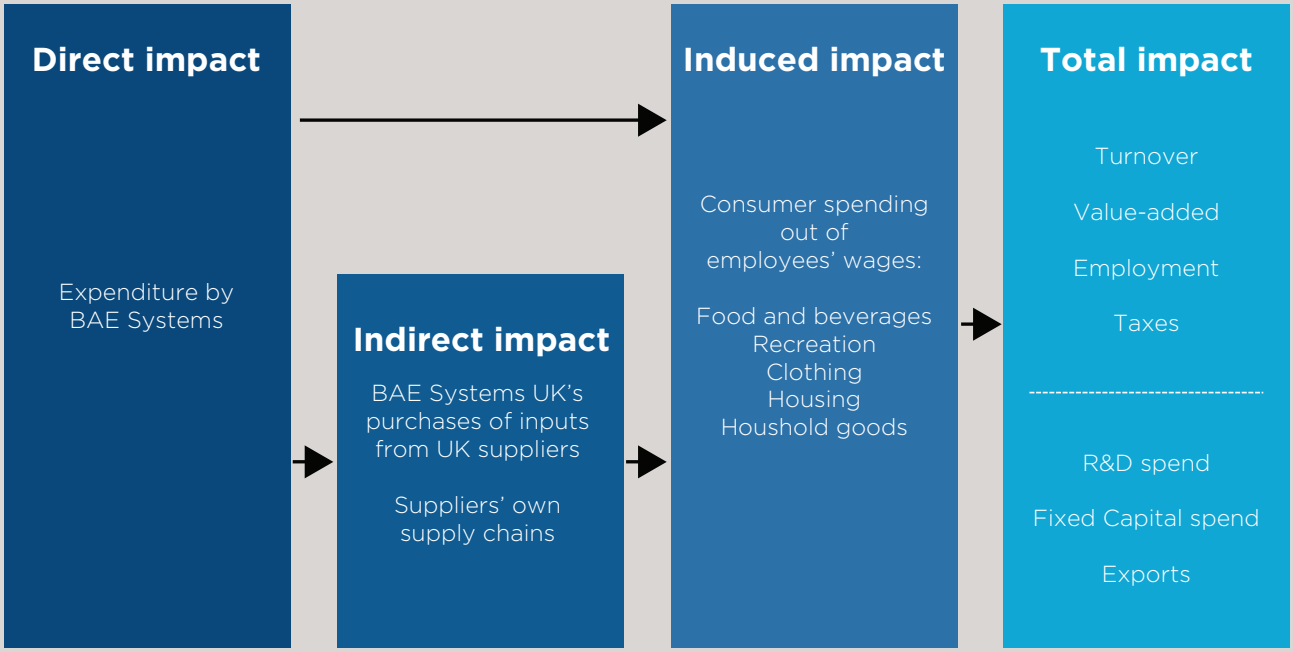
6. TECHNICAL APPENDIX

Economic impact modelling

Economic impact modelling is a standard tool used to quantify the economic contribution of an investment or company. Impact analysis traces the economic contribution of an investment through three separate channels:

- Direct impact–refers to activity conducted directly by BAE Systems in the UK.
- Indirect impact–consists of activity that is supported as a result of the procurement of goods and services by BAE Systems in the UK, purchases by those companies in turn and so on.
- Induced impact–reflects activity supported by the spending of wage income by direct and indirect employees.

Fig. 22: Direct, Indirect, Induced, and Total Economic Impacts



Direct Impacts

The direct value added of BAE Systems is calculated as revenues minus the cost of goods brought in. Value added per employee, a measure of productivity, is a figure derived from dividing direct value added by the number of FTE employees.

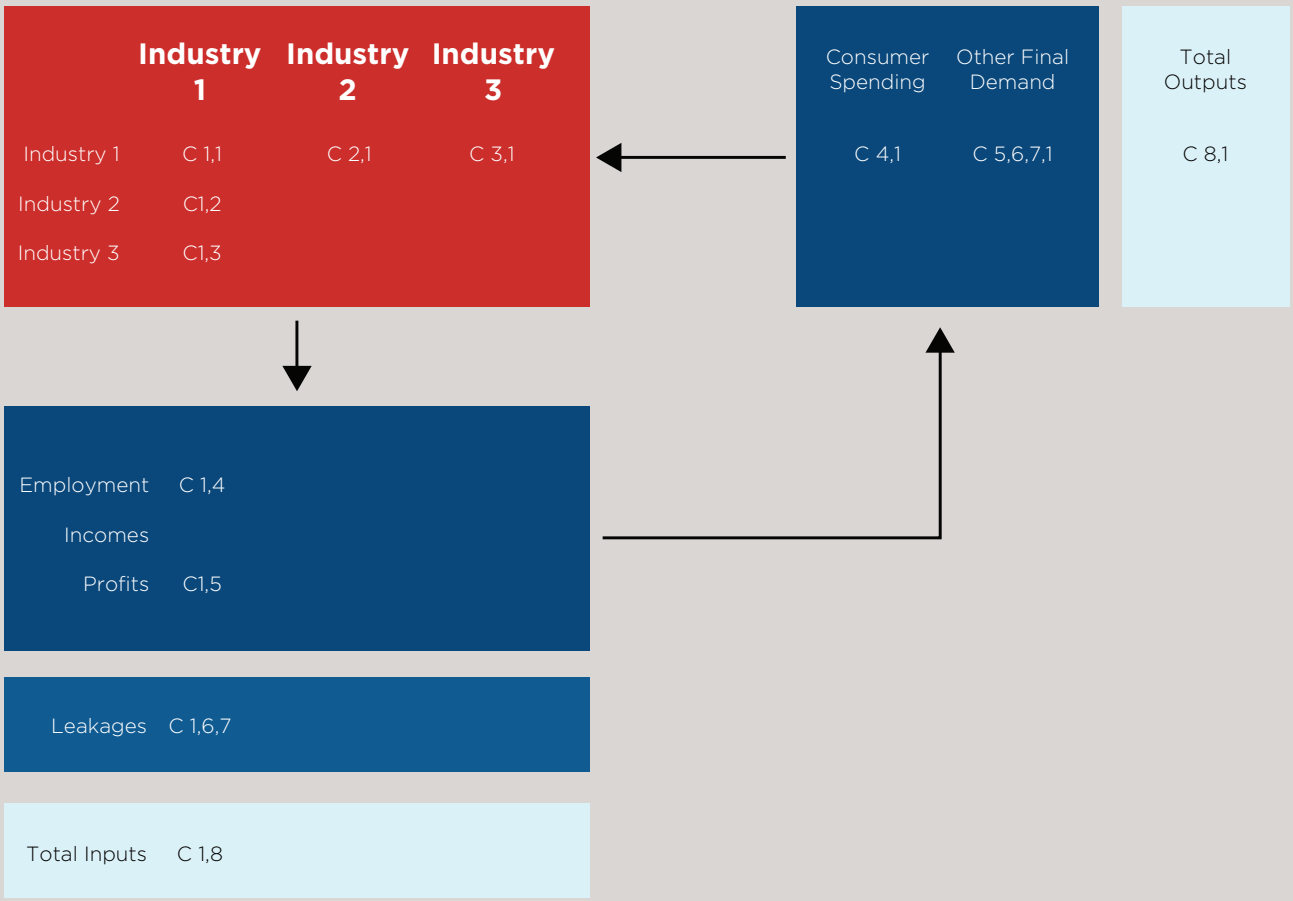
Indirect and Induced Impacts

Indirect and induced impacts are estimated using an input-output model. An input-output model gives a snapshot of an economy at any point in time. The model shows the major spending flows from "final demand" (i.e. consumer spending, government spending investment and exports to the rest of the world); intermediate spending patterns (i.e. what each sector buys from every other sector – the supply chain in other words); how much of that spending stays within the economy; and the distribution of income between employment and other forms such as corporate profits.

As these models measure activity within an economy, the direct impact figures will often not match company annual accounts, which follow accounting standards and rules.

An input-output model uses a matrix representation of a nation's interconnected economy to calculate the effect of changes by consumers, by an industry, or by others, on other industries and therefore on the economy as a whole. The input-output models are created using matrix

Fig. 23: A stylized Input-Output model



representation of an economy and these input-output tables ultimately measure "multiplier effects" of an industry by tracing the effects of its inter-industry transactions– that is the number value of goods and services that are needed (inputs) to produce each dollar of output for the individual sector being studied. These models can be used to measure the relationship between an economic change or "shock," and the final outcome across the whole of the economy.

In essence an input-output model is a table which shows who buys what from whom in the economy. Figure 23 provides an illustrative guide to a stylized input-output model.

Oxford Economics used the input-output table for the United Kingdom for 2010, provided by the ONS, for this analysis. This is the most recent input-output table for the United Kingdom.

Direct, indirect and induced employment figures in this report have been rounded to the nearest 100 FTE jobs. The multipliers quoted in the report represent the multiple of direct impacts that account for total impacts. For instance, if 20 FTE jobs were direct impacts and the total impact multiplier was 2, then the total impact would be 40 FTE jobs. These multipliers are calculated from the input-output model results.

Industry breakdowns

The UK 2010 input-output table is divided into 96 different industry sectors, and the table shows how each sector interacts with the 95 other sectors. For purposes of illustration to show value added and employment supported across different sectors, the 96 different industries have been pooled into 19 broad industry categories. For example, the professional, scientific and technical activity industry amalgamates the following 12 sectors:

- Legal services
- Accounting, bookkeeping and auditing services; tax consulting services
- Services of head offices; management consulting services
- Architectural and engineering services; technical testing and analysis services
- Scientific research and development services
- Advertising and market research services
- Other professional, scientific and technical services
- Veterinary services
- Rental and leasing services
- ravel agency, tour operator and other reservation services and related services
- Security and investigation services
- Services to buildings and landscape

Regional models

Input-Output models can also be made to measure regional impacts. In this case, ratios of local economic activity to national economic activity known as "location quotients" are calculated in order to calibrate the national I-O model to describe each region in terms of the employment impact and to calculate employment multipliers per region.

This process was adopted in order to develop employment contributions for Glasgow, South Cumbria, the North West and the South regions.

7. FURTHER INFORMATION

All data shown in tables and charts are the result of modelling by Oxford Economics based on input data from BAE Systems and a variety of sources, as stated in charts or otherwise cited in footnotes.

All modelling and calculation results presented here are based on data and information provided by third parties. Any subsequent revision or update of those data will affect the assessments and projections shown.

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