BiGGAR Economics

Economic Impact of the University of Southampton

A report to the

UNIVERSITY OF Southampton

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CONTENTS **Page**

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1 EXECUTIVE SUMMARY

The University of Southampton directly employs nearly 6,000 full time equivalent (fte) staff, has a full-time student population of around 27,000 and a turnover of over £555 million.

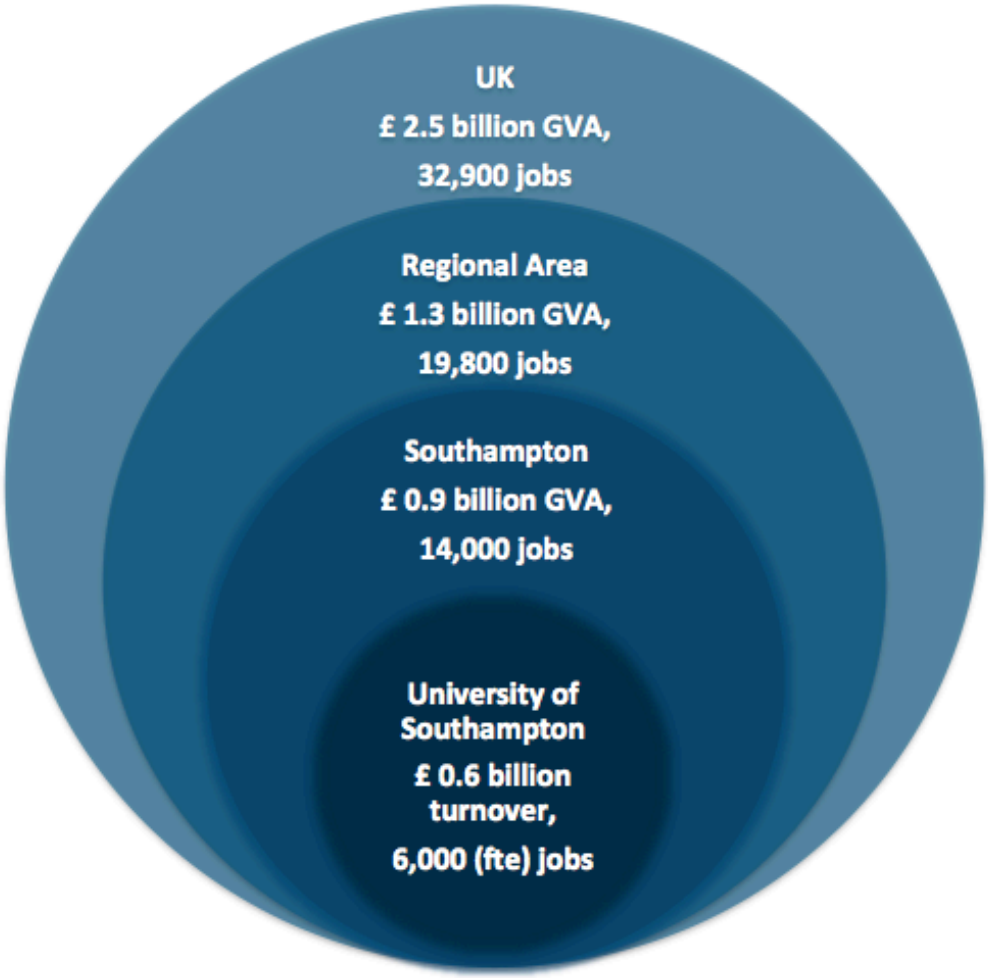
As a founding member of the prestigious Russell Group of universities, the University of Southampton is a key source of innovation and provides a vital anchor for knowledge intensive activity and employment in the region. This means that the University is not only a major economic player in its own right but also plays a fundamental role in driving long-term economic growth across the region and attracting significant companies and investments (e.g. Lloyd's Register).

The University's reputation, educational strength and attraction are based heavily on its accumulation of core research and innovation strengths that have been built over many years.

In March 2017, BiGGAR Economics was commissioned to assess the quantifiable economic contribution that the University makes to the regional area (defined as the Solent and Enterprise M3 (EM3) LEP areas) and the UK a whole. This report presents the headline findings from the first phase of the analysis, which considered the quantifiable economic contribution of the University. The key findings of the analysis are summarised in Figure 1-1.

1.1 Quantifiable Findings: Total Impact

Figure 1-1 – Total Impact of the University of Southampton



Source: BiGGAR Economics

In 2015/16 the University of Southampton:

- generated £2.5 billion GVA[1] and supported around 32,900 jobs across the UK
- including £1.3 billion GVA and around 19,800 jobs in the regional area, of which
- £0.9 billion GVA and around 14,000 jobs were in Southampton.

This implies that:

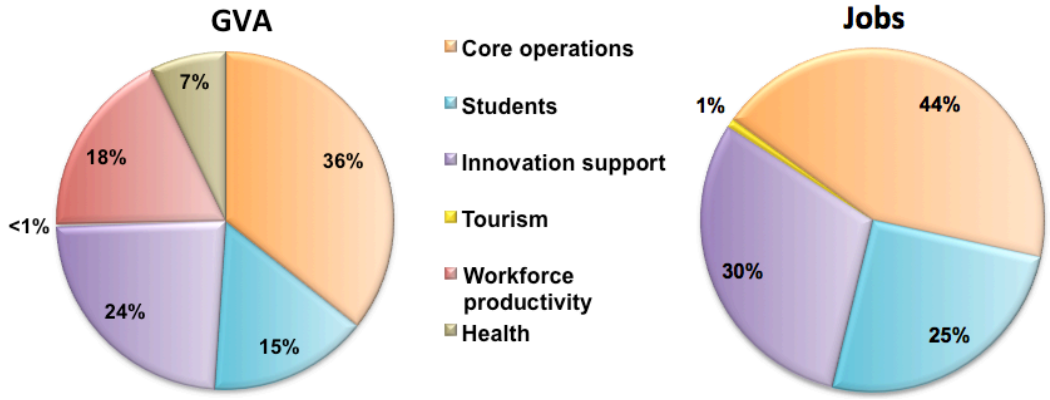
- for each £1 that the University generated as a direct result of their operations (£0.4 billion GVA), they supported £5.54 in total benefits throughout the UK economy of which £2.87 was retained within the regional area; and
- for each person directly employed, the University supported more than five jobs in total throughout the UK, including around three in the regional area.

[1] Gross Value Added (GVA) is a measure of the value that an organisation, company or industry adds to the economy through its operations. In the case of Universities this is estimated by subtracting the non-staff operational expenditure (mainly represented by expenditure on goods and services) from the total income of the Universities.

1.2 Quantifiable Findings: Impact by Source

A breakdown of this contribution by source is provided in Figure 1-2.

Figure 1-2 – Impact of the University of Southampton by Source (UK)



Total UK Impact: £2.5 billion GVA and around 33k jobs

Source: BiGGAR Economics

1.2.1 Summary Quantifiable Findings

A breakdown of the quantifiable economic contribution that the University of Southampton makes to the economy of Southampton, the regional area (defined as the Solent and EM3 LEP areas) and the UK economy as a whole is provided in Table 1-1 and Table 1-2 below.

Table 1-1 – Impact by Source and Study Area - GVA

	Southampton	Regional Area	UK
Core Operations	475.6	598.2	890.0
Students	215.8	299.6	383.3
Tourism Impact	7.0	6.6	6.4
Innovation Support	153.8	253.1	583.0
Workforce Productivity	47.7	124.1	450.7
Health	0.7	8.2	180.4
TOTAL GVA	900.6	1,289.9	2,494.0

Source: BiGGAR Economics

Table 1-2 – Impact by Source and Study Area - Jobs

	Southampton	Regional Area	UK
Core Operations	6,514	8,810	14,322
Students	5,341	7,052	8,351
Tourism Impact	342	305	270
Innovation Support	1,823	3,593	10,003
TOTAL Jobs	14,020	19,760	32,946

Source: BIGGAR Economics

1.2.2 Core Operations

The core operational impact of the University includes the economic activity and employment supported directly by the University itself as well as the activity and jobs supported by its expenditure – and the expenditure of its staff - elsewhere in the economy.

In 2015/16 the University of Southampton provided around 5,974 direct full-time equivalent (fte) jobs in the regional area, spent around £30.7 million purchasing goods and services from businesses in the region and invested approximately £120.8 million in new buildings and research infrastructure.

Taken together it was estimated that these core operations generated £890.0 million GVA across the UK of which around £598.2 million was retained within the regional area and £475.6 million was retained in Southampton. It was also estimated that this activity supported around 14,322 UK jobs, including around 8,810 in the regional area and 6,514 in Southampton.

1.2.3 Student Impacts

Students studying at the University of Southampton are another important driver of economic activity in the region. By spending money on items such as food and drink, accommodation and entertainment, students stimulate demand and support employment in regional businesses. Students also provide an important source of flexible, part-time labour, which is vital for sectors such as tourism, catering and retail. They also make a significant contribution to the third sector in the region by volunteering for charities and community groups.

In 2015/16 students at the University of Southampton generated £383.3 million GVA for the UK economy and supported around 8,351 jobs. This included around £299.6 million GVA and around 7,052 jobs in the regional area and £215.8 million GVA and 5,341 jobs in Southampton.

1.2.4 Tourism

Each year the University of Southampton helps to attract thousands of visitors who would otherwise have little reason to visit the region and it has played a significant role in the regeneration of the Cultural Quarter at the heart of Southampton. These visitors include friends and family of students and staff, delegates to conferences and events hosted by the University, prospective students and their friends and family attending open days, and people visiting attractions operated by the University, such as Science and Engineering week. All visitor expenditure helps to support jobs and activity within the tourist sector.

In 2015/16 the expenditure of tourists who visited the regional area because of the University generated around £6.6 million GVA for the regional economy and supported around 305 jobs.

1.2.5 Innovation Support

The University of Southampton is a major source of innovation support in the region across a breadth of disciplines and subjects.

Intellectual property developed within the University has enabled the formation of several highly successful spin-out companies and supported the growth of businesses all over the world through commercial licensing agreements.

The University of Southampton plays an important role in enabling the formation and growth of new businesses by providing early-stage support to staff and student start-ups and incubation facilities to support the growth of young businesses. The University of Southampton Science Park is home to around 100 businesses, which directly employ around 1,180 people.

Academics at the University support the growth of businesses within the region and elsewhere in the UK by providing specialist consultancy and contract research services and enabling businesses to access specialist facilities and training. Often this is done in association with major commercial partners. These services enable businesses to address challenges and realise opportunities that they may not be equipped to tackle internally, helping to support continued innovation and growth.

Students assist the innovation and growth of businesses and local health services through their participation in placement schemes and knowledge transfer partnerships. These have a three-fold impact: they improve the employability of the students when they graduate, they impact on the University's links with employers and they feed back into research and development activity.

It was estimated that in 2015/16 these innovation support activities enabled UK businesses to generate an additional £583.0 million GVA for the UK economy, of which £253.1 million GVA was in the regional area and £153.8 million was in Southampton. It was also estimated that this activity supported around 10,003 jobs across the UK, of which around 3,593 were in the regional area and 1,823 were in Southampton.

1.2.6 Workforce Productivity

One of the most significant ways in which the University of Southampton drives economic activity in the region is by enhancing the productivity of the workforce by providing a steady stream of graduates equipped with industry relevant knowledge and skills. This productivity effect can be measured using data on the additional lifetime earnings of graduates compared to non-graduates. This contribution differs from the others in that it accrues over a working lifetime. It is calculated based on the annual cohort of graduates in a given year although there is a cumulative effect year-on-year with each round of graduates.

The students who graduated from the University of Southampton in 2015/16 and who now live and work in the UK can be expected to earn around £450.7 million more over the course of their lifetimes than they might have if they did not have a degree. This contribution is an indication of the additional value that these graduates will generate for the businesses and organisations that employ them and therefore represents a direct contribution to the long-term productivity of the UK economy. It is further estimated that around £124.1 million of this productivity effect could be retained within the regional area of which £47.7 million could be retained in Southampton.

1.2.7 Health

The University is a key player in medical research on a regional, national and international level, particularly in the fields of respiratory diseases and cancer treatment. In 2015/16 the University of Southampton attracted more than £33 million in medical research funding. The research supported by this funding will help to stimulate further investment in R&D by the pharmaceutical industry, which will support further jobs and economic activity elsewhere in the economy. Over time this investment should also drive improvements in patient care, leading ultimately to better quality of life for people around the world. The long-term value

of these social and economic benefits to the UK economy are expected to be around £180.4 million GVA.

1.3 Wider Benefits

The University of Southampton plays a key role in driving economic growth in the regional area but the full value of this role is difficult to quantify.

In part this is because measures such as GVA and jobs assess only the quantity and not the quality, of economic activity supported. Measures such as GVA and jobs say nothing for example about the important role that the University plays in ensuring that economic development is sustainable and delivers long-lasting benefits for society as a whole. For example, the University played a major role in underpinning the recent inward investment of Lloyd's Register to the area, thereby ensuring that these highly skilled jobs were secured for the region. There is also an on-going link between the University and the photonics cluster with graduate start-ups being able to access University facilities that in turn provide essential support for their growth and development.

The University also plays an important role in supporting the development of new and emerging economic sectors in the region by ensuring that students are equipped with industry relevant skills and helping business to access the latest available research. In so doing the University plays a key role in enabling the region to become a modern, knowledge driven economy.

Another important reason why it is difficult to quantify the full economic contribution of the University of Southampton is that the benefits of some areas of activity simply cannot be captured in monetary terms. For example, the presence of the University makes a vital contribution to the cultural life of the region by ensuring that Southampton is, and remains, a lively and vibrant cultural centre that provides a high quality of life for its residents. Although this has clear economic benefits in terms of attracting and retaining talent and investment to the region, the full impact goes significantly beyond its monetary value.

2 APPROACH, INTRODUCTION AND BACKGROUND

This report describes and quantifies the economic benefits associated with the University of Southampton. It examines the importance of the University to the economies of Southampton, the regional area and the UK and identifies the ways in which different activities create impact.

This section describes the general approach taken to the study and provides some background information about the University of Southampton.

2.1 Approach

The key objective of this study is to describe and, where possible, quantify the economic value generated by the University of Southampton.

2.1.1 Sources of Impact

The sources of impact considered are:

- core operations, including income and employment at the University, the money the University spends on supplies and capital projects, and the expenditure of their staff;
- student related impacts, including student expenditure, part-time working and volunteering;
- lifetime productivity gains of graduates of the University of Southampton;
- innovation support activities, including services to industry such as contract research, continuing professional development, knowledge transfer partnerships, student placements, incubators and science parks;
- tourism impacts from friends and family visiting students and staff, open days, and people attending conferences and events hosted by the University; and
- health impacts associated with health research undertaken by the University and services hosted by them, for example, NIHR and the Cochlear Implant Centre.

2.1.2 Measures of Impact

Unless stated otherwise, economic contribution has been reported using two measures:

- gross value added (GVA), which measures the value that an organisation, company or industry adds to the economy through its operations. The report uses the production approach to measuring this contribution, where GVA is equal to the value of production less the value of the inputs used. Typically, this is estimated by subtracting non-labour costs from total revenue; and
- employment (jobs), which are headcount jobs unless stated otherwise.

One of the reasons these measures are so widely used is because they provide a convenient way of capturing the entire economic contribution of an organisation in a single number. However, monetary figures fail to capture the full value of many types of activity so this estimate is likely to be an underestimate. For this reason

the assessment also highlights wider, unquantifiable contributions created by the University of Southampton. Although these contributions cannot be quantified this does not in any way detract from their value.

2.1.3 Study Areas

Although additional study areas are presented in Appendix A, this report mainly considers the impact of the University in three areas:

- Southampton;
- the Regional Area – (a combination of the Solent LEP area and Enterprise M3 LEP area); and
- the UK as a whole.

In each case the impact that occurs in Southampton is included in the regional area and the regional area is included within the UK impact, unless stated otherwise.

2.1.4 Use of Evidence and Assumptions

In general, the approach taken throughout this report was to use the best evidence available. Where possible, this means that the data was obtained directly from the University of Southampton. Where this was not possible, an appropriate assumption was made based on BiGGAR Economics' previous experience of comparable institutions in the UK. Where it was necessary to make such an assumption this is clearly highlighted in the text.

When this occurred and a range of possible values were available, the approach taken was to err on the side of caution and adopt an assumption toward the lower end of the range. This approach is in accordance with best practice and should provide some confidence that the reported impacts will, if anything, tend to under rather over estimate the total contribution of the University.

2.2 The University of Southampton

The remainder of this section gives an overview of the scale and scope of the University of Southampton, including its notable research and commercialisation strengths.

2.2.1 Origins & Scale

The origins of the University of Southampton date back to 1862 when the Hartley Institution was established in the centre of Southampton. It received its Royal Charter to award degrees in 1952 and then became the University of Southampton. The University is spread across 7 campuses, including a campus in Winchester and also one in Malaysia. It has a total income of £555.6 million, employs almost 6,000 fte staff and has almost 27,000 full time students. At this scale, it is a very large local employer, second only to the NHS in the area.

In April 2017 the University secured £300 million in Bond financing with a record low interest rate: a strong indicator of the quality and credibility of the institution.

2.2.2 Rankings

The University of Southampton is a research-intensive, commercially focused institution and a founding member of the prestigious Russell Group of research universities. The University ranks highly in both national and global rankings.

It is regularly ranked in the top 1% of universities globally. The University of Southampton was ranked 21st in the UK by The Times and Sunday Times Good University Guide 2017, which also placed the University in the Top 10 in 11 subject areas. The University was also placed in 121st position in the Times Higher Education World Ranking 2016/17, and in 102nd position in the QS World University Rankings 2018. It is ranked by Thomson-Reuters as one of Europe's "most innovative universities".

In the 2016 National Student Survey, 86% of students were satisfied with the overall quality of their course at the University of Southampton and 83% approved of the University's support for their personal development placing Southampton in sixth position in the Russell Group for this area.

2.2.3 Research

The University of Southampton is a world-leading research and commercialisation institution with a broad and diverse research base. It is ranked in 8th position in the UK for Research Intensity by the Research Excellence Framework in 2014. Its major research specialities include medicine, engineering and oceanography and its work tackles some of society's greatest challenges. The work of the University and its research is critical to the delivery of the NHS in the Solent area and beyond and it is particularly renowned for its work in Cancer Immunology, which is aiming to find cures for a wide range of cancers. A new Centre for Cancer Immunology is due to open in Spring 2018.

The University of Southampton also has a reputation as one of the UK leading aerospace and defence research-intensive academic institutions. As such, it plays an important role in supporting the aerospace and defence sectors, which have a strong presence in the area.

The University's research income has grown by around 4% per year over the last five years and comes from a diverse range of sources. It has a strong track record of securing research income from non-UK Government sources. There is a strong commercial focus in the University's research with over 40% of its research income involving commercial partners.

The University of Southampton is home to the Southampton Marine and Maritime Institute (SMMI) which is a unique, internationally recognised, centre of excellence for research, innovation and education. Its work spans both the natural ocean environment (marine) and human use of the sea (maritime).

2.2.4 Links with Business and Industry

Along with four other universities, the University of Southampton is part of the SETsquared partnership which is ranked as the best Global University Business Incubator in the world. In its first 12 years, SETsquared supported more than 1,000 businesses, raised £1 billion in finance and created an economic impact in the UK of £4 billion. The incubator supports high-tech start-up companies, provides opportunities for student enterprise and enables academics to maximise the impact of their research. The University has produced a number of notable spin-out companies through SETsquared in recent years.

The University also works with the Solent LEP, EM3 LEP and other LEPs to extend its role in supporting innovation and knowledge exchange with business and industry.

It has a long and impressive list of major industrial research partners including Shell, Nestle, ARM, Boeing, Airbus, Lloyd's Register, IBM, BAE Systems, Huawei, Unilever, GlaxoSmithKline, Rolls-Royce, Microsoft and Northrop Grumman.

A key link between the University and its commercial partners comes through the Web Science Institute which draws together world-leading researchers from across the University of Southampton in a range of interdisciplinary research activities. Its members include researchers from social and computational sciences, the humanities, medicine and health sciences, business and law and the natural sciences. The Institute runs major international research programmes funded by UK Research Councils, the EU, Government and Industrial Partners. Web Science research at Southampton has led to commercial applications, spin-out businesses and other activities including:

- Garlik - Garlik's purpose is to change people's experience of using the web by providing services that help consumers protect themselves from the risk of identity theft and financial fraud.
- The Open Data Institute - The ODI was co-founded in 2012 by the inventor of the worldwide web Sir Tim Berners-Lee and AI expert Sir Nigel Shadbolt to address today's global challenges using the web of data.
- W3C PROV Working Group - its purpose is to support the widespread publication and use of provenance information of Web documents, data, and resources. And to publish recommendations that define a language for exchanging provenance information among applications.
- EPrints Services – this is the world-leading open-source digital repository platform which was developed at the University of Southampton. EPrints has been providing stable, innovative repository services across the academic sector and beyond for over 15 years.

Other significant research areas at the University include:

- The Optoelectronics Research Centre (ORC), one of the world's leading institutes for photonics research. It has contributed significantly to the remarkable growth of the photonics industry, including the optical telecommunication technology that underpins the internet as well as many solutions in medicine, biosciences sensing, security and manufacturing.
- The Rolls Royce University Technology Centre for Computational Engineering at the University of Southampton is funded by Rolls-Royce Plc and based in the Computational Engineering and Design research group (CED). Its aim is to apply modern computational tools, methods and environments to problems in aerospace engineering and related fields.

2.2.5 International Reach

The University has strengthened its international reach over the last five years in several ways. For example:

- In Singapore, the University of Southampton has founded a new Photonics Institute along with Nanyang Technological University. This has been designed to have a total of 120 staff and includes five research centres: Centre for Optical Fibre Technology; Centre for Disruptive Photonic Technologies; Luminous! Centre of Excellence for Semiconductor Lighting and Displays; Centre for Optical & Laser Engineering and Optimus! Photonic Centre of Excellence.

- The University is a member of the Worldwide University Network which has identified four global challenges for research, namely: global higher education and research; public health (non-communicable disease); responding to climate change and understanding cultures.
- In 2015, the University of Southampton signed a five-year education agreement with the China Scholarship Council to boost academic research and institutional collaboration. The primary focus of the programme is for selected Chinese students to undertake PhD study at the University across a wide selection of disciplines.
- The University is one of the "UK 5" Universities to have a campus in Malaysia. At present it has around 200 students and offers degree programmes that are split with the first two years taking place in Malaysia and the final two years taking place in the UK at the University.

3 CORE OPERATIONAL IMPACTS

This section describes the impacts generated by the daily operations of the University of Southampton. The core impact includes:

- the direct impact of the University of Southampton;
- impacts associated with the University's supply chain;
- impacts generated by staff expenditure; and
- impacts associated with the capital expenditure of the University of Southampton.

3.1 Direct Impact

The direct GVA of an institution can be estimated by subtracting expenditure on bought in goods and services from total income. In 2015/16, the University of Southampton generated income of £555.6 million, and expenditure on goods and services of £105.5 million. By subtracting this expenditure from income it was estimated that the direct GVA contribution of the University of Southampton was £450.1 million GVA.

Additionally, the University of Southampton employed a total of 10,772 staff (headcount) which was equivalent to 5,974 full-time equivalent (fte) jobs.

Table 3-1 – Direct Impact

	Southampton	Regional Area	UK
GVA (£m)	445.7	450.1	450.1
Employment	5,916	5,974	5,974

Source: BiGGAR Economics

3.2 Supplier Impact

The University of Southampton's expenditure on goods and services, of £105.5 million, will also generate a beneficial impact in the economy. This impact will depend on the industry that the goods and services were sourced from. The University provided this information directly. Therefore, in order to estimate the economic impact, turnover/GVA and turnover/employee ratios, as well as indirect multipliers, were applied to spending by industry to generate GVA and employment impacts.

To attribute this impact by study area it was necessary to consider the location of the University's suppliers. Based on data provided by University it was assumed that 100% of supplies would be secured by UK suppliers, 29% by suppliers in the regional area and 9% by suppliers from Southampton.

In this way it was estimated that the University of Southampton generated £101.6 million GVA and supported 2,687 jobs in the UK, of which £22.3 million GVA and 573 jobs were in the regional area and £6.0 million GVA and 151 jobs were in Southampton.

Table 3-2 – Supplier Impact

	Southampton	Regional Area	UK
GVA (£m)	6.0	22.3	101.6
Employment	151	573	2,687

Source: BiGGAR Economics

3.3 Staff Expenditure

Staff employed by the University of Southampton also have an impact on the wider economy by spending their wages. In 2015/16, the University of Southampton employed 10,772 members of staff (5,974 fte), who were paid a total of £295.4 million.

Where staff spend their wages depends to a large extent on where they live, and will therefore vary for staff living in each study area. The assumptions made about the spending profile of staff residing in each study area is given in Table 3-3. This shows, for example that staff living in the regional area were assumed to spend 7% of their salary in Southampton, 74% in the regional area and 93% of their salary in the UK. The remaining 7% of spending is assumed to be spent outside the UK.

Table 3-3 – Location of Staff Spending by Residence

	Where staff spend their salaries	
Where staff live	Southampton	Regional Area
Southampton	33%	74%
Elsewhere in the Regional Area	7%	74%
Elsewhere in the UK	2%	20%

Source: BiGGAR Economics

It was therefore estimated that by spending their wages staff at the University of Southampton contributed £246.9 million GVA and 4,366 jobs in the UK, £116.5 million GVA and 2,130 jobs in the regional area and £23.3 million GVA and 437 jobs in Southampton.

Table 3-4 – Staff Expenditure Impact

	Southampton	Regional Area	UK
GVA (£m)	23.3	116.5	246.9
Employment	437	2,130	4,366

Source: BiGGAR Economics

3.4 Capital Investment

Capital projects generate wealth and support employment within the construction sector. Capital investments at Boldrewood Innovation Campus, Chamberlain Halls of residence and the Life Sciences building have been undertaken in recent years.

The University of Southampton is currently involved in a £140 million capital investment programme to develop the National Linear Infrastructure Lab, the Centre for Cancer Immunology and the South Gower Teaching and Learning Centre. In addition, a further £474 million capital investment programme is planned over the next five years to 2022.

The scale of major capital investment projects means that expenditure often varies substantially from year to year. This means that expenditure in any one financial year may not reflect the true impact of this activity over time, and therefore average capital spend over 10 years was used to estimate this impact.

In the ten-year period between 2011/12 and 2020/21, it is expected that the University of Southampton will spend an average of £120.8 million on capital investment per year.

Some of this expenditure will be on land and buildings, and will therefore result in additional turnover in the construction sector, but some of this spend is likely to be on plant, machinery and equipment, and therefore will result in additional turnover in the manufacturing sector. The University provided data on the level of capital expenditure spent on machinery and equipment.

By applying appropriate economic ratios and multiplier to this expenditure it was estimated that capital investment generated £91.4 million GVA and 1,295 jobs in the UK economy, of which £9.3 million GVA and 134 jobs are in the regional area.

Table 3-5 – Capital Investment Impact

	Southampton	Regional Area	UK
GVA (£m)	0.6	9.3	91.4
Employment	9	134	1,295

Source: BiGGAR Economics

3.5 Summary Operational Impact

Therefore, it was estimated that the total impact of the University's core operations is equivalent to £890.0 million and 14,322 jobs in the UK, of which £598.2 million GVA and 8,810 jobs are in the regional area and £475.6 million GVA and 6,514 jobs are in Southampton.

Table 3-6 – Core Operational Impact

	Southampton	Regional Area	UK
GVA £(m)			
Direct Impact	445.7	450.1	450.1
Supplier Impact	6.0	22.3	101.6
Staff Spending	23.3	116.5	246.9
Capital Investment	0.6	9.3	91.4
Total GVA	475.6	598.2	890.0
Employment			
Direct Impact	5,916	5,974	5,974
Supplier Impact	151	573	2,687
Staff Spending	437	2,130	4,366
Capital Investment	9	134	1,295
Total Employment	6,514	8,810	14,322

Source: BiGGAR Economics

4 STUDENT IMPACTS

4.1 Student Population

In 2015/16 there were 26,956 full time students studying at the University of Southampton[2]. The University has experienced a robust and resilient trend in student number growth for more than 10 years.

Approximately 65.1% (17,536) are undergraduates, with postgraduates making up the remaining 34.9% (9,420). Based on the data provided by the University, 98% of students live in the Regional Area.

Table 4-1 – Student Population by Region

	Southampton	Regional Area	UK
Undergraduate	14,540	17,258	17,536
Postgraduate	7,111	9,156	9,420
Total	21,651	26,414	26,956

Source: The University of Southampton

Within this total, there are approximately 6,000 international postgraduate students from over 150 countries at the University (22% of the student population). Generally this is a group with a relatively high disposable income that supports and enhances the local expenditure impact. The number of international students has grown by 25% between 2012 and 2016. Around 10% of the total student body are from China. Students from the EU (excluding the UK) make up a further 9% of the total student body.

4.2 Student Expenditure

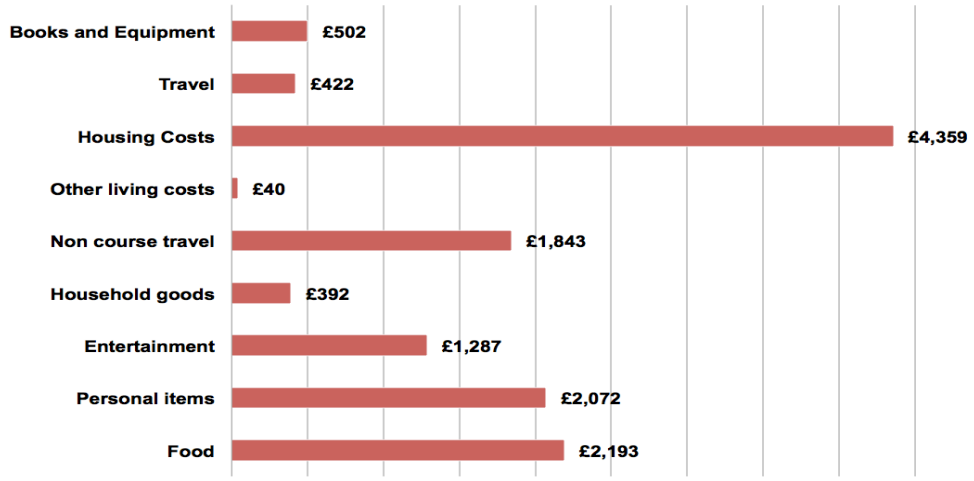
Students at the University of Southampton have an impact on the economy through their spending in the same way that staff generate impact by spending their wages. The money that students spend generates economic activity in the businesses that they purchase goods and services from.

The basis for estimating this impact was a study by the Department of Business, Innovation and Skills.[3] As the survey was undertaken in 2011/12 the results were adjusted for inflation and are summarised in the figure below. Based on this, it was estimated that students living in the Regional Area spent an average of £13,111 per year.

[2] Part-time students are not included in this element of the contribution as attendance at University is not their main activity and much of their expenditure is unrelated to their studies. However, their contribution to the economy is included in the graduate premium calculations in Section 7.

[3] Department for Business Innovation & Skills, Student Income and Expenditure Survey 2011/12, June 2013

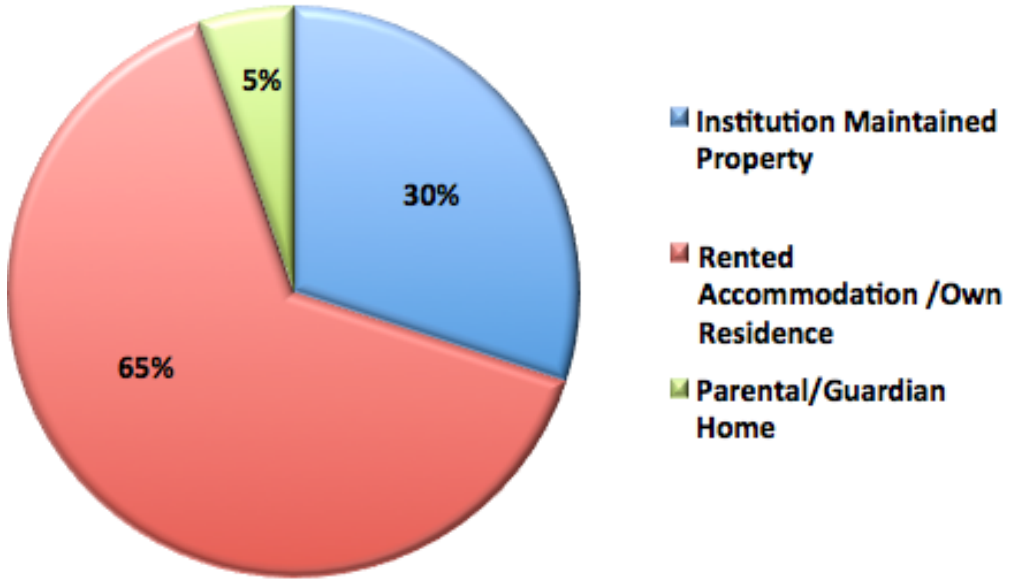
Figure 4-1 – Student Expenditure by Category



Source: Business Innovation & Skills, Student Income and Expenditure Survey 2011/12

The type of accommodation a student lives in influences how much they spend. For example, students living in their parental or guardian home are unlikely to spend money on housing and are likely to spend significantly less on food and household goods. Furthermore, the accommodation expenditure of students in institution maintained properties has been included in the direct income of the University and so was excluded here. A breakdown by students is provided in Figure 4-2.

Figure 4-2 – Student Residences by Type



Source: The University of Southampton

After these adjustments it was estimated that full-time students at the University of Southampton spent £342.5 million in 2015/16. By applying economic ratios and multipliers appropriate to the sectors in which the expenditure took place it was estimated that the expenditure supported a total of £136.2 million GVA and 2,392 jobs in Southampton, £196.0 million GVA and 3,300 jobs in the regional area, and £263.0 million GVA and 4,175 jobs in the UK.

Table 4-2 – Student Spending Impact

	Southampton	Regional Area	UK
GVA (£m)	136.2	196.0	263.0
Employment	2,392	3,300	4,175

Source: BiGGAR Economics

4.3 Part-Time Work

Students at the University of Southampton also make an impact on the economy if they undertake part-time employment for local businesses. Mainly these jobs are in the hospitality, catering and retail sectors and are different in nature to student placements, which are more skilled positions that are directly related to the students' area of study.

National Student Survey data indicates that 33% of University of Southampton students are likely to be in employment.[4] A nationwide student survey undertaken in 2010 found that, on average, students work 14.2 hours a week. Therefore it was estimated that, 8,894 students at the University of Southampton work part-time in various sectors, but mainly in catering, hospitality and retail.

However, not all of this employment is necessarily additional to the local economy because other residents in the area may have undertaken some of these jobs. In order to take these factors into account it was necessary to make assumptions about the proportion of student labour that is additional to the local labour market – to assess only the additional contributions to the local economy.

To ensure that only additional student labour was counted, the total amount of student labour provided by students was adjusted using evidence about the local youth unemployment rate from the Annual Population Survey published by the ONS.

Appropriate economic ratios and multipliers were then applied, based on the industries in which students usually work. In this way it was estimated that students at the University of Southampton undertake part-time employment during the academic year contributed £79.5 million GVA and 2,949 jobs in Southampton, £103.5 million GVA and 3,752 jobs to the regional area, and £120.3 million GVA and 4,176 jobs nationally.

Table 4-3 – Student Part-Time Work Impact

	Southampton	Regional Area	UK
GVA (£m)	79.5	103.5	120.3
Employment	2,949	3,752	4,176

Source: BiGGAR Economics

[4] Labour Force Survey (2016), Table A06: Educational status, economic activity & inactivity of young people: People aged 16 to 24 by educational status, economic activity and inactivity (not seasonally adjusted)

4.4 Volunteering

In addition to undertaking paid employment, students at the University of Southampton also make a socio-economic contribution by undertaking voluntary work.

A study published by the Chartered Institute of Personnel Development (CIPD) for example found that people who took part in employer supported volunteering had greater levels of community awareness, increased communication levels and increased confidence.[5] A study undertaken by the University of Portsmouth[6] drew similar conclusions, reporting that students who undertook volunteering were more likely than non-volunteering students to be in work or further study 6 months after, and were more likely to be in professional employment.

Data provided by the University of Southampton suggests that their students volunteered a total of over 6,060 hours in 2015/16, although this is likely to be an underestimate as not all students will report their volunteering to their University. The value of this volunteering was then quantified based on data from ONS, from which it was possible to estimate the average value of volunteering per hour. Students were expected to volunteer in the area where they lived.

In this way it was assumed that volunteering by students at the University of Southampton contributed around £67,000 GVA in the regional area.

Table 4-4 – Student Volunteering Impact

	Southampton	Regional Area	UK
GVA (£'000s)	54.9	67.0	68.3

Source: BiGGAR Economics

4.5 Student Impacts Summary

Through their spending, part-time work and volunteering students at the University of Southampton were estimated to support £215.8 million GVA and 5,341 jobs in Southampton, £299.6 million GVA and 7,052 jobs in the regional area and £383.3 million GVA and 8,351 jobs in the UK.

[5] CIPD (2015), On the brink of a game-changer
[6] University of Portsmouth (2015/16), *Volunteering and Third Sector Report* (internal report)

Table 4-5 – Student Impact

	Southampton	Regional Area	UK
GVA (£m)			
Student Spending	136.2	196.0	263.0
Student Part-Time Employment	79.5	103.5	120.3
Student Volunteering	0.1	0.1	0.1
Total GVA	215.8	299.6	383.3
Employment			
Student Spending	2,392	3,300	4,175
Student Part-Time Employment	2,949	3,752	4,176
Total Employment	5,341	7,052	8,351

Source: BiGGAR Economics

5 REGIONAL ECONOMIC BENEFITS

The University of Southampton is connected to its region in many ways and represents a major asset for linking with key local industries, sectors and employers. In this chapter we briefly discuss a number of ways in which this happens.

5.1 Supporting and Developing Regional Industries

The research, knowledge and teaching provided by the University are particularly important in supporting and developing regional industries. For example, the University of Southampton is home to the Southampton Marine and Maritime Institute whose work spans both the natural ocean environment (marine) and the human use of the sea (maritime). The SMMI constitutes world-class, authoritative, independent expertise. It fosters new research collaborations, educates the next generation of maritime leaders, and generates knowledge and intelligence for businesses of all sizes, government at all scales and organisations of all kinds. Alone and with partners it creates new technologies and innovations to stimulate economic growth and improve quality of life and the environment.

The University is also a key driver in the development of regionally important industries such as photonics, and aerospace and satellite technologies. Southampton Airport and the cruise ship industry both view the University as an important local asset.

5.2 Support for Local Services

The University also supports the provision of vital health services to the local population through its work with the University Hospital Southampton NHS Foundation Trust which provides services to 1.9 million people living in Southampton and South Hampshire, plus specialist services such as neurosciences, cardiac services and children's intensive care to more than 3.7 million people living in central southern England and the Channel Islands.

The Trust is a major centre for teaching and research in association with the University and other partners including the Medical Research Council and Wellcome Trust.

The region's nationally important cluster of health related research, which is quantified in Chapter 9, also provides local people with access to cutting-edge therapies and clinical trials, particularly in the area of cancer research through the University's Centre for Cancer Immunology.

5.3 Cultural Life of the Region

The University of Southampton also plays a key role in the new Arts Complex scheme in the city centre, which forms a major part of Southampton's Cultural Quarter regeneration project. The University contributes to the economic vitality of the region by attracting tourist visitors and permanent residents, through the enhanced cultural attractions they have to offer such as the Turner Sims music venue, the Nuffield Southampton Theatres' presence at the University's Highfield Campus, and the John Hansard Gallery of contemporary art. The monetary impact of these arts venues is considered in Chapter 8, although it is difficult to fully quantify how improvements in the region's cultural offering can attract and support investment and economic activity.

The University's significant role in the cultural regeneration of the city is helping, to some extent, to mitigate the effects of the long-term decline of the shipbuilding industry. In part, this has stemmed from an influx of young, often international students, who support bars, restaurants and theatres. But it has also arisen from the development of venues such as those mentioned above. The development of the Cultural Quarter in Southampton (as described in Figure 5-1) is underpinned by the on-going support of the University of Southampton,

Figure 5-1: Southampton Cultural Quarter

The University of Southampton has had a significant role to play in the social and economic regeneration of city and the creation of its central Cultural Quarter: a major master planning and infrastructure investment programme which has been designed to transform Southampton's city centre and play a vital part in nurturing a creative, prosperous and vibrant economy in the city and wider region.

The restoration of Guildhall Square in the City Centre, the opening of the Sea City Museum, and the soon to be opened Studio 144 (planned for 2018) have added to and complement existing cultural landmarks which build on an already strong heritage of maritime and arts activity.

Innovative partnerships between cultural organisations, the City Council and the universities have been at the heart of the City's regeneration. For example, the University of Southampton has committed to relocating their John Hansard Gallery, from the Highfield Campus to Studio 144 in the City Centre. In addition, Nuffield Southampton Theatres, which is also located at the Highfield Campus, is putting in a major new facility downtown in the City Centre.

These venues will act as a further cultural catalyst to the regeneration of Southampton, driving inward investment and further development in the city centre and making the city ideally placed to attract business that will add significant value to the economy of Southampton.

The opening of Studio 144 marks the completion of the ambitious Cultural Quarter Regeneration Programme..

The University's Winchester Campus is home to the Winchester School of Art. Its up-to-date facilities include a Creative Services Centre with large-scale printers, a flat-bed printer, a laser cutter, a 3D printer, a T-shirt printer and a Mimaki wallpaper printer. The Winchester Campus offers high-quality workshops with specialist technical staff, and a photo-media area for photography and video, including a black and white darkroom and a new editing workshop. There is also a gallery on campus, which is open to the public, along with a specialist library.

5.4 Widening Access to Education

Although there are a number of high-performing schools throughout the region, in the area immediately surrounding the University of Southampton, levels of progression to higher education are relatively low. For example, based on the percentages of pupils at the end of key stage 4 who achieve 5 or more GCSEs at A*-C, the local authorities of Portsmouth, Southampton and the Isle of Wight perform in the bottom 25 of 151 local authorities[7].

[7] Department for Education, 2017, Table LA6: Achievement of 5+ A*-C grades including English and mathematics GCSEs of pupils at the end of key stage 4 for each local authority1 and region

The University of Southampton tries to improve access through an extensive programme of outreach schemes aimed at reaching a wide audience with a range of academic abilities and social backgrounds. One example is the Widening Access to Medicine residential event (BM6 Programme) which is targeted at students in year 12 who meet certain eligibility criteria. This includes: young people looked after by a Local Authority; those in receipt of a 16-19 bursary or similar grant; first generation to pursue Higher Education; parents, carer or individual in receipt of a means-tested bursary; in receipt of free school meals at any time in years 10-13 or living in a postcode area that falls within the lowest 20% on the Index of Multiple Deprivation authenticated by the University.

5.5 Attract & Retain Economic Activity

The University and its individual research clusters provide an anchor point for the local economy, attracting large investments and income from competitive sources based on their strengths and their reputation. The Boldrewood Innovation Campus at the University of Southampton is home to some of the most up-to-date buildings and facilities and houses the centre for innovation, business and education in maritime engineering and engineering sciences. It has recently attracted the relocation of Lloyd's Register's Global Technology Centre to the campus from London, resulting in an additional 400 jobs in Southampton. The Technology Centre is the cornerstone of Lloyd's Register's global marine research and technology network and is co-located with the University's Marine and Maritime Institute (SMMI). The facility is successful in attracting investment, building on and complementing the University's existing marine and oceanography expertise.

Also based on the campus are the Transportation Research Group, the Airbus Noise Technology Centre and the Rolls Royce University Technology Centre for Computational Engineering.

In more recent years the University has refined and developed its approach to working with large multinationals in response to how the companies themselves have evolved over time. The current approach is largely based around its model for engaging with Rolls-Royce where the University signs up to a strategic agreement with the company that sets out the full scope of their involvement in a number of different areas. In the health sector the University has significant relationships with Epigen and GlaxoSmithKline.

5.6 Defence and Aerospace Research

The University plays an important role in supporting the aerospace and defence sectors which have a strong presence in the Solent area: it has earned a reputation as one of the UK's leading aerospace and defence research-intensive academic institutions. Numerous connections contribute considerably to the University's strong engineering REF scoring on impact.

Rolls-Royce, BAE Systems, Airbus and Northrop Grumman are all strategic partners where there is breadth as well as depth of engagement. Research links exist with many Tier 1 and 2 companies and with small companies, especially in the region, and these links apply almost as much to companies in the electrical and electronic engineering area as to mainstream aeronautical engineering and defence systems companies.

The multi-disciplinary University Strategic Research Groups (USRGs) in sensing technologies and in autonomous systems have significantly extended reach and engagement with industry and generated many projects and new relationships.

Structures, materials and component technologies also feature strongly in research relationships.

The long established Rolls-Royce and Airbus Technology Centres recognise expertise in noise and computational engineering that has a direct impact in engine and airframe technology development programmes and leads to additional research and development through collaborative programmes supported by either the European Union or UK funding agencies, especially via the Aerospace Technology Institute (ATI).

The University is, along with Cranfield University, one of only two university associate partners in the DGP's Defence Solutions Centre.

At the local level, the University is the lead academic supporter of the Farnborough Aerospace Consortium in its work to build in-region economic value in the A&D sector and it has been instrumental in forging new initiatives that link with SMEs and build bottom-up company research projects through the NATEP programme.

The University of Southampton sends many graduates into the aerospace and defence sector and it is one of seven universities that deliver the Defence Technical Undergraduate Scheme (DTUS) which is a university sponsorship programme for students interested in joining the armed forces or the MOD. The Thunderer Squadron, based in Southampton, was set up purposely to support DTUS students at the University, and engages in various military exercises each semester.

6 INNOVATION SUPPORT

The University of Southampton supports economic activity through its industry-focused research and collaborative work with businesses. This activity includes:

- commercialisation of technology through licensing of intellectual property to external organisations, and spin-outs using technology created at the University;
- services to industry such as consultancy, contract research and facilities and equipment hire;
- workforce knowledge transfer, including services such as continuing professional development (CPD), student placements, and Knowledge Transfer Partnerships; and
- science parks and business incubation services provided to support the growth of young and high quality businesses.

Examples of the University of Southampton's collaborative activities include the University hosting two Rolls-Royce University Technology Centres and an Airbus Technology Centre. In addition, the University undertakes a number of contract research projects in infrastructure with companies such as Network Rail and National Grid.

The University of Southampton is also part of the EpiGen Consortium, an international alliance of the world's leading epigenetics researchers, which collaborates with Nestlé. The aim of the research programme is to understand and substantiate optimal nutrition for mothers during pregnancy and for infants in order to promote metabolic health throughout life.

An example of the University of Southampton's support to early stage businesses growth and development is shown through its involvement in the SETsquared partnership, an enterprise collaboration programme between five research-intensive universities. The SETsquared partnership has been ranked by the UBI Index[8] as the best University Business Incubator globally. Its key achievements are discussed in Figure 6.1.

[8] The UBI Index has been designed by UBI Global in Stockholm to benchmark the performance of business incubators around the world. Its aim is to help business incubators and accelerators to become more efficient and competitive.

Figure 6-1: SETsquared Partnership

The SETsquared Partnership is a commercialisation and enterprise collaboration among five leading research-intensive universities in the South of England; Bath, Bristol, Exeter, Southampton and Surrey.

Since its establishment in 2002, SETsquared has developed a successful model for unlocking economic growth from the commercialisation of research, collaboration with businesses and incubation of spin-outs and start-ups. In its first 12 years of operation, it incubated over 1,000 companies, assisting them to raise over £1 billion of investment capital to finance their growth. By 2014, these companies had created a combined economic contribution to the UK economy of £3.8 billion of GVA and created around 9,000 new jobs.

SETsquared continues this contribution to the economy. In 2016 there were 269 early stage companies being actively supported, and member companies raised £166.7 million and employed 7,075. Projecting forward into the future, companies incubated by SETsquared will continue to contribute £billions and tens of thousands of new jobs to the UK economy. For these contributions, SETsquared is ranked the Global #1 University Business Incubator by UBI. (See http://www.tuwien-holding.at/de/personen/84-25112015-incubatorranking.)

The SETsquared Centre in Southampton provides not only state-of-the-art incubation facilities in an open-plan office space but more importantly provides assistance in developing the business propositions for early stage companies; pitching opportunities and connections to investors from angels to early stage venture capitalists to multi-national corporate investors; business plan assessment and coaching sessions; mentors and advisors with global connections; and connections with the University's research facilities and talent to overcome technical hurdles.

6.1 Commercialisation

The University of Southampton is a source of technological innovation through the commercialisation of research activities that it undertakes. This includes licensing of the University's intellectual property, as well as commercialisation of research through the creation of new spin-out companies.

6.1.1 Licensing

A university is able to commercialise its research through pre-existing companies through licensing agreements. Licence agreements give companies the legal right to use intellectual property (IP) developed at the university to generate commercial gains. In return, companies usually pay royalties to the university.

The relationship between the royalties paid for a technology and the turnover it generates can vary between licence agreements. A well-known rule of thumb for determining the value of a licensing agreement is the 25% rule, according to which a licensor should receive about 25% of the profits accruing to the IP.

In 2002, Goldscheider (who originally developed the rule) conducted empirical analysis on more than 1,500 companies and found that the average royalties payment accounted for 5% of the total turnover generated by that technology although it varies slightly by sector. Therefore, it has been assumed that the value of royalties paid in licensing agreements accounts for 5% of total turnover.

In 2015/16 the University of Southampton received approximately £626,000 in licensing income, of which around 10% came from companies in the regional area and 62% came from companies in the UK. By applying the appropriate royalty rate by industry, and then the appropriate economic ratios and multipliers it was estimated that licensing of technology generated £1.9 million GVA and around 50 jobs in the regional area and £6.8 million GVA and almost 200 jobs in the UK.

Table 6-1 – Licensing Impact

	Regional Area	UK
GVA (£m)	1.9	6.8
Employment	54	182

Source: BiGGAR Economics

6.1.2 Spin-Outs

The research carried out by the University can also generate impact by being spun-out into a company, which will generate turnover and employment.

The University is very active in its approach to the commercialisation of research and is one of the leading applicants to the ICURe programme, which aims to develop and support commercially sustainable spin-outs and long-term licences from universities across the UK (Figure 6-2).

Figure 6-2: ICURe

The ICURe, Innovation to Commercialisation of University Research, programme offers university researchers with commercially promising ideas up to £50k to 'get out of the lab' and validate their ideas in the marketplace.

In 2013, a House of Lords Inquiry found that while the UK has an internationally competitive base of scientific research, comparatively little of this research resulted in a spinout or the licensing of intellectual property. In response, the University of Southampton secured initial funding of £3M and developed the ICURe programme which has been piloted nation-wide under the SETsquared branding in order to overcome the problem identified by the Inquiry.

Beginning in late 2014, the ICURe programme pilot has attracted over 100 research teams to date from over 30 UK universities. The results that have emerged so far clearly prove that the concerns of the Inquiry are addressable. With 35 spinout companies being created and over 50 new IP licenses being negotiated, the ICURe programme is demonstrating dramatic results.

The University of Southampton has had 12 research teams go through the ICURe programme, and already 6 spinouts have resulted and several more are in progress. Along with a number of new IP licenses, these are beginning to contribute to the UK and regional economies.

An evaluation of ICURe's pilot phase in early 2017 found that the programme has exceeded all of its objectives and is an effective and economical instrument for accelerating the commercialisation of academic research. It is also producing a range of wider benefits in strengthening University links with industry and enhancing the entrepreneurial skills of both early career and senior researchers.

Data submitted by the University of Southampton show that there were a total of 50 spin-out companies in 2015/16, directly supporting over 800 jobs and almost £94.8

million in turnover. Almost 88% of the direct employment supported was in the regional area.

When industry appropriate economic multipliers were applied it was estimated that the University of Southampton's spin-outs generate £37.4 million GVA and 684 jobs in Southampton, £46.4 million GVA and 1,008 jobs in the regional area and £66.8 million GVA and 1,493 jobs in the UK.

Table 6-2 – Spin-Out Impact

	Southampton	Regional Area	UK
GVA (£m)	37.4	46.4	66.8
Employment	684	1,008	1,493

Source: BiGGAR Economics

6.2 Services to Industry

The University of Southampton also provides a variety of services to businesses in the regional area and elsewhere in the UK.

6.2.1 Commercial Business Services

The University of Southampton generates economic activity through its work with businesses in areas such as consultancy, contract research, facilities hire and continuing professional development (CPD).

With enterprise units in eight faculties, the University is particular strong in generating income from consultancy.

In particular, the Statistical Sciences Research Institute of the University offers training for professionals and researchers, including courses tailored to the specific needs of government agencies and companies. Short courses in applied social surveys are also offered to enable social scientists and applied researchers in government, market research and the voluntary sectors to develop skills in survey design, implementation and analysis.

The University of Southampton also offers a range of continuing professional development (CPD) courses within health and social care, including courses in cognitive behavioural therapy and courses within the allied health professions, nursing and midwifery and social work.

The Southampton Education School works in partnership with industry and government agencies to fulfil staff training needs. Partners include the Army, local schools and local education authorities as well as overseas partnerships with Chinese institutions. CPD courses in modern foreign languages are provided by the Centre for Languages, Linguistics and Area Studies who hold an extensive programme of workshops, seminars and conferences. They also offer online resources for teachers to support learning and provide research and information on pedagogical approaches and language education policies.

The University of Southampton's CPD clients include Barclaycard, British Airways, Ford, HMRC, Home Office, Met Office, NATS (air navigation service provider), the NHS and the World Health Organization.

The income associated with this activity, equal to £57.3 million, and the location of clients is presented in Table 6-3.

Table 6-3 – Income from Services to Industry

	Total	... of which % from clients in ..	
	(£m)	Regional Area	UK
Consultancy Income	30.1	2%	91%
Contract Research Income	10.5	3%	98%
Facilities Hire Income	11.9	56%	97%
CPD Income	4.8	14%	68%
Total (£m)	57.3	13%	94%

Source: The University of Southampton.

It is reasonable to assume that businesses and other organisations that invest in this type of activity only do so because they expect the projects to generate positive returns. Although details about the level of returns for individual clients of the University of Southampton are not available, evaluations of relevant schemes suggest that a conservative estimate of these returns could be in the region of 360%.

The knowledge transfer activity of the University of Southampton was estimated by applying this multiplier to the income from commercial business services in 2015/16. The employment impact was estimated by dividing the direct GVA impact by GVA/employee in relevant sectors. The indirect effects were then captured by applying appropriate economic multipliers.

In this way, it was estimated that business services provided by the University of Southampton in 2015/16 might be expected to generate £34.5 million GVA and 540 jobs in the regional area, and £336.7 million GVA and 6,013 jobs in the UK.

Table 6-4 – Commercial Business Services Impact

	Regional Area	UK
GVA (£m)	34.5	336.7
Employment	540	6,013

Source: BiGGAR Economics

6.3 Knowledge Transfer Partnerships

The University of Southampton also contributes to innovation support through Knowledge Transfer Partnerships (KTPs), a UK wide initiative run by the UK Government that is designed to enable businesses to gain access to the knowledge and experience of UK universities and colleges.

A KTP is a three-way partnership between an academic, a business partner (including private sector companies. charities and public sector organisations) and a recent graduate (known as an Associate) who is employed to work on a specific project relevant to the business partner. The duration of the KTP is typically around 3 years. In the six years leading up to 2015/16 the University of Southampton completed 93 KTPs, with a range of industrial partners. Many of the completed KTPs were undertaken in the regional area (35%, which is equal to 33).

The economic benefits of these projects was estimated using evidence from formal evaluation of the KTP programme[9] published by the Technology Strategy Board. This study found that the net additional GVA supported by KTPs in the South East of England amounted to £0.7 million over the six years after the KTP was completed, and that on average each KTP supported 3 jobs. This implies that the annual impact of each completed project is equal to £0.11 million. The GVA impact of on-going KTPs was assumed to be 10% of completed ones.

Using this evidence it was estimated that KTPs supported by the University generated £0.7 million GVA and 18 jobs in Southampton, £1.3 million GVA and 33 jobs in the regional area and £3.8 million GVA and 93 jobs in the UK.

Table 6-5 – Knowledge Transfer Partnerships Impact

	Southampton	Regional Area	UK
GVA (£m)	0.7	1.3	3.8
Employment	18	33	93

Source: BiGGAR Economics

6.4 Student Placements

Students on placement bring innovation and talent to many businesses and organisations and the knowledge that students contribute to technology and research can have a transformative effect on a business.

Their impact can be particularly significant for SMEs where the permanent workforce may be relatively small and placements in the health sector can have a very significant effect on the running of the local health services.

In 2015/16 around 7,000 work placements took place for University of Southampton students. These were for courses in chemistry, physics, electronics and computer sciences, engineering, medicine, health sciences and business subjects. Although many were mandatory as part of the course, this figure also included short-term non-mandatory placements, sandwich placements and general work experience. Of these, around 98% of placements were in the UK, and 93% were in the regional area.

The nature, number and duration of student placements undertaken at the University varies from course to course, therefore the data provided by the University was analysed to calculate the total time spent on placements.

Given that the placement would involve a period of induction and that the students on placement will tend to be in more junior roles, it was assumed that the contribution to their host organisation would be one third of the contribution of an average worker. Therefore, the economic impact was estimated by calculating how the hours worked translated into an equivalent fte jobs estimate, then applying the 33% productivity assumption to generate an employment impact. The total economic impact was then estimated by applying average GVA/employment ratios and multipliers.

Using this evidence it was estimated that the placements undertaken by students at the University of Southampton generated £2.3 million GVA and 37 jobs in

[9] Regeneris Consulting (2010), Knowledge Transfer Partnerships Strategic Review, Technology Strategy Board

Southampton, £41.2 million GVA and 660 jobs in the regional area and £49.3 million GVA and 890 jobs in the UK.

Table 6-6 – Student Placement Impact

	Southampton	Regional Area	UK
GVA (£m)	2.3	41.2	49.3
Employment	37	660	890

Source: BiGGAR Economics

6.5 University of Southampton Science Park

The University of Southampton Science Park at Chilworth was established by the University in the early 1980s.

The Park aims to be one of the top university-linked science and innovation campuses in the UK. Its focus is therefore in developing its scientific ethos and facilitating the growth of high-quality technology businesses from formation to maturity. The Park is home to a catalyst programme that aims to attract embryonic companies to the Science Park.

The Park provides:

- accommodation – high-quality accommodation with flexible terms, allowing companies to access appropriate facilities as they expand;
- business support – a business support environment providing access to the services required by small businesses (e.g. finance, marketing, HR, business mentoring); and
- community – an entrepreneurial community, enabling individuals to develop their skills, learn from one another and contribute to exchange of business ideas.

There are around 100 companies located on the University of Southampton Science Park and they cover a range of sectors, including engineering, IT and scientific research.

The University of Southampton Science Park management team have gathered accurate data on the turnover and employment of the tenant companies and this has been used to estimate the total direct economic impact of the business activity supported by the Science Park. From this information, companies located on the Science Park are estimated to employ 1,180 staff and to have a combined turnover of £230 million. This data suggests that average turnover per head in these companies is £195,000 which is 64% above the industry average of £118,000 and indicates that the companies on the Science Park have particularly high rates of productivity.

Indirect GVA and jobs effects were estimated by applying appropriate economic multipliers. By this method the University of Southampton Science Park is estimated to generate a gross impact of £201 million GVA and support 2,425 jobs throughout the UK.

This total has been adjusted to take account of the effects of additionality (i.e. where would these companies have located if the Science Park did not exist?) and of those companies that are counted elsewhere in the analysis, i.e. spin-out companies and those that are a direct part of the University.

If the University of Southampton had not created the science park, a proportion of these tenant businesses would most likely have been hosted at another location elsewhere in the UK. In this way, the University of Southampton will be displacing some science park activity from other areas. So while the associated expenditure that results from tenants is additional to the regional area, the overall additionality at the UK level is not as strong. A further group would have located outside the UK. For this reason, the additionality of the science park activity is assumed to be 100% in the regional area, but only 75% at the UK level. As a result, the impact generated by the science park is higher at the regional level than the national level.

In this way it was estimated that the Science Park supported by the University generated £119.8 million GVA and 1,332 jobs in the UK of which £127.8 million GVA and 1,299 jobs were in the Regional Area and £113.4 million GVA and 1,084 jobs were in Southampton.

Table 6-7 – Science Park's Impact

	Southampton	Regional Area	UK
Total Impact			
GVA (£m)	143.1	161.1	201.3
Employment	1,522	1,802	2,425
Adjusted Impact			
GVA (£m)	113.4	127.8	119.8
Employment	1,084	1,299	1,332

Source: BiGGAR Economics

6.6 Student Enterprise

An increasingly important area of activity at the University is student enterprise. Two very strong examples of this culture are the Enactus and Future Worlds projects which have been set up at the University.

Figure 6-3: Enactus

Enactus is a global non-profit organisation which is dedicated to inspiring students to improve the world through entrepreneurial action. It is active in 36 countries worldwide and provides a platform for members to create community development projects that harness and develop their talents and skills while improving the livelihoods of people in need.

Guided by educators and supported by business leaders, Enactus members take an entrepreneurial approach that empowers individuals to transform both the lives of the people they serve, and in turn, the lives of the students as they develop into more effective, values-driven leaders.

Enactus Southampton is a member of this global network. In the seven years since it was established, its work has improved the lives of over 50,000 people.

Each year Enactus organises an annual series of regional and national competitions that provide a forum for teams to showcase the impact of their outreach efforts and to be evaluated by executives serving as judges. National champion teams advance to the Enactus World Cup to experience excellence in competition, collaboration and celebration. In 2015 the University of Southampton represented the UK and emerged as winners of the prestigious Enactus World Cup competition.

Figure 6-4: Future Worlds

Launched in December 2015, Future Worlds is an initiative that brings together University of Southampton researchers, entrepreneurs, successful start-ups and aspiring student innovators.

With a focus on invention and entrepreneurship and highlighting the innovative commercial opportunities being developed by researchers and students at the University of Southampton, Future Worlds provides exclusive access to events, support, and mentors through its global network of contacts. The project aims to helps turn these opportunities into market-ready solutions for a range of industries.

In 2017 the UK's Minister of State for Digital and Culture Policy praised Southampton's Future Worlds start-up incubator for its presence at the forefront of UK start-up technologies at the Consumer Electronics Show in Las Vegas.

6.7 Summary Innovation Support

Through their spending, part-time work and volunteering students at the University of Southampton were estimated to support £253.1 million GVA and 3,593 jobs in the Regional Area and £583.0 million GVA and 10,003 jobs in the UK.

Table 6-8 – Innovation Support Impact

	Southampton	Regional Area	UK
GVA (£m)			
Licensing	-	1.9	6.8
Spin-Outs	37.4	46.4	66.8
Services to Businesses	-	34.5	336.7
KTPs	0.7	1.3	3.8
Student Placements	2.3	41.2	49.3
Science Park - Adjusted	113.4	127.8	119.8
Total GVA	153.8	253.1	583.0
Employment			
Licensing	-	54	182
Spin-Outs	684	1,008	1,493
Services to Businesses	-	540	6,013
KTPs	18	33	93
Student Placements	37	660	890
Science Park - Adjusted	1,084	1,299	1,332
Total Employment	1,823	3,593	10,003
The total impact of the Science Park at the UK level is £201.3 million GVA and 2,425 jobs. This has been adjusted to allow for additionality and to eliminate double counting with the spin-out impact. The adjusted figure has been used in calculating the overall total for the innovation support impact.			

Source: BiGGAR Economics

7 TEACHING AND LEARNING IMPACTS

The section considers the long-term economic effects of the University of Southampton's teaching activity.

7.1 Estimating the Graduate Earnings Premium

The subject in which a student graduates determines the earnings premium that they can expect to achieve over the course of his or her working life. The impact associated with graduates from the University was therefore estimated by applying the graduate premium for each subject area by the number of graduates in that subject area.

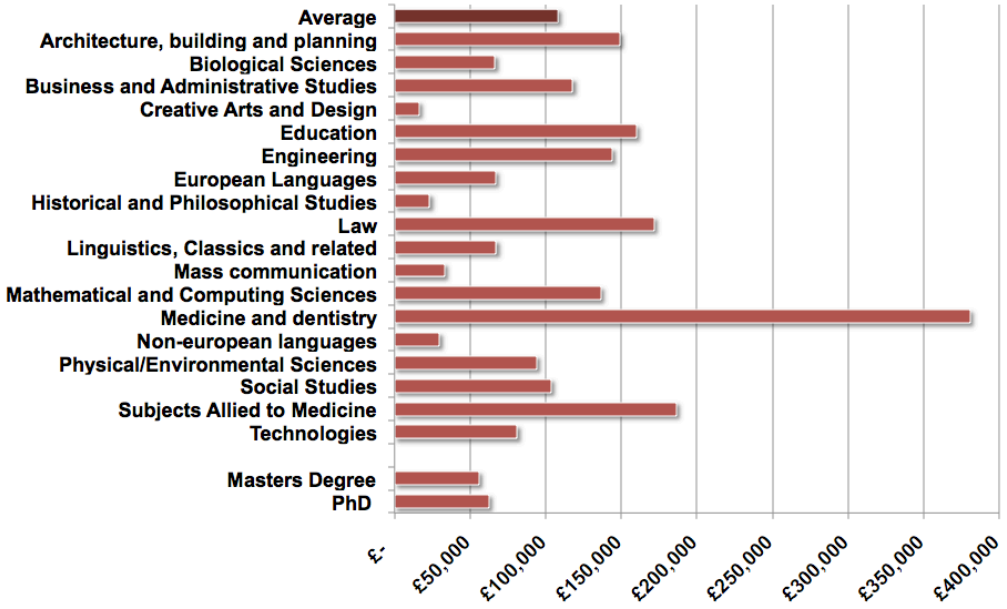
On average, undergraduates can expect to earn £108,121 more over their working life than if they had not gone to university. This figure is based on a comprehensive study by the Department for Business, Innovation and Skills which was carried out in 2011 and covers graduates in all disciplines. However, this average hides considerable variation as graduates in medicine and dentistry can expect to earn £380,604 extra, while graduates in creative design can expect to achieve a premium of £16,183 during their working life. The graduate premium by degree is given in Figure 7-1.

The premium associated with post-graduate qualifications[10] is also given in Figure 7-1. This shows that a PhD qualification is associated with a total additional premium of £62,395 and a Masters degree is associated with an additional premium of £55,720.

Some of the students who gain PhDs at the University of Southampton will have a Masters degree elsewhere and therefore the proportion of their graduate premium associated with their Masters degree will not be attributable. The graduate premium of PhD and Master students was therefore estimated separately to avoid double counting. Where it was assumed that PhD students had already received a Masters, the additional premium was calculated by multiplying this number by the difference between the Masters premium (£55,720) and a PhD (£62,395).

[10] The source does not provide a breakdown of post-graduate qualifications by discipline

Figure 7-1 – Graduate Premium by Degree Type

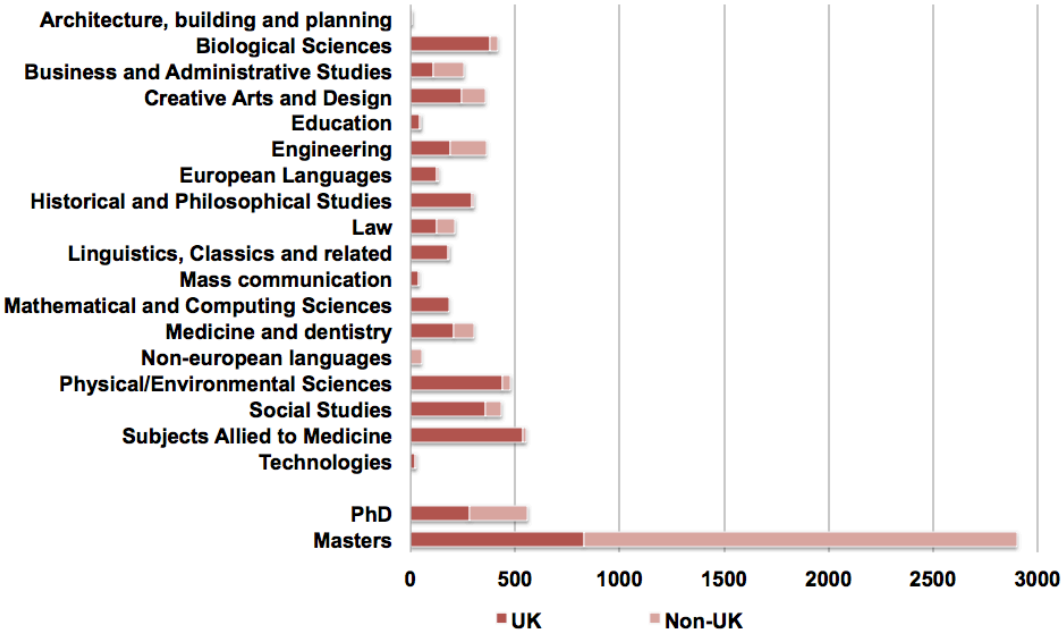


Source: Department for Business, Innovation and Skills (2011), The Returns to Higher Education Qualifications

In 2015/16, 4,335 people completed undergraduate degrees at the University of Southampton of which 80% were from the UK. A breakdown by degree subject and nationality is provided in Figure 7-2, with business and administrative studies being the most popular.

A further 3,460 people graduated with a Masters or PhD, with 68% of all graduates coming from outside the UK. It was estimated, based on a study by HEFCE, that 39% of those studying for a PhD would already have a Masters degree.

Figure 7-2 – University of Southampton: Graduates by Degree Type



Source: University of Southampton

The graduate premium is realised in the area in which the graduate resides after graduation. Based on information provided by the University of Southampton about 27% of UK graduates remain in the regional area after graduation, and about 95% remain in the UK. For non-UK graduates, around 2% remain in the UK after graduating.

The location and associated earnings premium of the University of Southampton graduates is shown in Table 7-1. In total, it was estimated that graduates from the University in 2015/16 who remained in the UK could expect to realise an estimated collective graduate premium of £450.7 million over their working lives, of which £124.1million could be in the regional area and £47.7 million could be in Southampton. There are no job impacts associated with this contribution.

Table 7-1 – Graduation Premium Impact

	Southampton	Regional Area	UK
GVA (£m)	47.7	124.1	450.7

Source: University of Southampton, BiGGAR Economics

8 VISITOR ECONOMY

The University of Southampton also attracts visitors to the region who would otherwise not visit the area, including friends and family of students and staff, people attending conferences and events, prospective students and visitors staying in term-time accommodation. The expenditure of these visitors helps support wealth and employment in the local tourism sector.

8.1 Open Days, and Conferences and Events

Each year the University hosts several conferences and events that attract visitors to the area, as well as open days for prospective students.

Table 8-1 – Visitors to the University of Southampton's Events

Event Type	No. of Delegates/Visitors
Open Days	43,351
Day Conferences	27,274
Visitor Attractions	120,083
Residential Conferences	3,314
Residential Courses	724
Other Group Events	4,587
Total	199,333

Sources: The University of Southampton. BiGGAR Economics estimate

The value of expenditure associated with these visitors was estimated using data on expenditure of different types of visitors. The assumptions used for different types of visitor are summarised in Table 8-2.

Table 8-2 – Visitor Expenditure Assumptions

Origin of Visitor and Nature of Visit	Average Expenditure/trip
Day Visitor, spend per visitor	£42
Domestic Overnight Visitor, spend per visitor	£154
Overseas Business, spend per trip	£409
Overseas Visitor, spend per trip	£354

Sources: TNS, The GB Tourist Statistics 2014; TNS, The GB Day Visitor Statistics 2014; VisitBritain, International Passenger Survey, 2014

The total level of spending supported by open days, conferences and events, and University accommodation was estimated by multiplying the total number of visitors/ delegates by the average spend for the relevant category in Table 8-2.

However, if the University of Southampton had not hosted certain conferences and events, they would most likely have been hosted at another location elsewhere in the UK. In this way, the University of Southampton will be displacing some conference-related tourism expenditure from other areas. So while the associated expenditure that results from attendance at these conferences and events is additional to the regional area, it is not always additional at the UK level. For this reason, the additionality of the conference activity is assumed to be 75% in the

regional area, and 50% in the UK. As a result, the impact generated by conference-related tourism expenditure is higher at the regional level than the national level.

The direct and indirect impact of this expenditure was estimated by applying economic ratios and multipliers for the tourism sector. In this way it was estimated that visits to conferences and events hosted at the University of Southampton generated £4.0 million GVA and 194 jobs in Southampton, £3.3 million GVA and 155 jobs in the regional area and £2.8 million GVA and 116 jobs in the UK.

Table 8-3 – Event and Conference Visitor Expenditure Impact

	Southampton	Regional Area	UK
GVA (£m)	4.0	3.3	2.8
Employment	194	155	116

Source: University of Southampton, BiGGAR Economics

8.2 Visits from Friends and Relatives

In addition to attracting visitors to the region directly, the University's staff and students will also attract friends and relatives to visit to the area. In 2015/16 there were a total of 37,724 UK-based staff and students at the University of Southampton, of which 28% were staff, and 72% were students. Visits to staff and students generate economic activity in local businesses and supply chains, which may otherwise have been spent elsewhere.

The impact of these trips was estimated by first establishing how many people visit staff and students at the University of Southampton each year, and how much they spend. The number of domestic and overseas visitors and their expenditure was estimated using data from the Great British Tourism Survey 2014, VisitBritain and the ONS.

Table 8-4 – Personal Visits to Students and Staff Assumptions

		Value
Staff (headcount)		10,772
Students		26,952
Average spend per VFR trip		
	Domestic	£96
	Overseas	£361
VFR trips per capita		
	Domestic	0.85
	Overseas	0.2

Sources: TNS, The GB Tourist Statistics 2014; VisitBritain, International Passenger Survey 2014; ONS, Mid-Year Population Estimates 2015

Using this approach it was estimated that, after adjusting for VAT, the total spend of these visitors would be £4.2 million in the UK, with over 95% retained in the regional area. The direct and indirect impacts of this expenditure were estimated by applying economic ratios and multipliers for the tourism sector.

In this way it was estimated that friends and family visiting staff and students at the University of Southampton generated £1.9 million GVA and 95 jobs in Southampton, £2.8 million GVA and 130 jobs in the regional area and £3.7 million GVA and 154 jobs in the UK.

Table 8-5 – Visiting Friends and Relatives Impact

	Southampton	Regional Area	UK
GVA (£m)	1.9	2.8	3.7
Employment	95	130	154

Source: BiGGAR Economics

8.3 Summary Visitor Impact

Adding together the sources of impact considered in this section suggests that the University of Southampton contributed £7.0 million GVA and 342 jobs in Southampton, £6.6 million GVA and 305 jobs in the regional area and £6.4 million GVA and 270 jobs in the UK. A breakdown is provided in Table 8-6.

As explained earlier in this section, the tourism impacts are lower at the UK level than at the Regional level due to the nature of displacement associated with certain conferences and events i.e. while some of the conferences and events are additional to the area, had they not been hosted by the University of Southampton, they would most likely have been hosted at another University in the UK. Therefore for this reason the associated impacts are lower at the UK level than at the regional level.

Table 8-6 – Tourism Impact

	Southampton	Regional Area	UK
GVA (£m)			
Conferences and Events, and Open Days	4.0	3.3	2.8
Visiting Friends and Relatives	1.9	2.8	3.7
Other Tourism Activities	1.1	0.4	-
Total GVA	7.0	6.6	6.4
Employment			
Conferences and Events, and Open Days	194	155	116
Visiting Friends and Relatives	95	130	154
Other Tourism Activities	53	20	-
Total Employment	342	305	270

Source: BiGGAR Economics

9 HEALTH RESEARCH AND PRACTICE

The University of Southampton also makes a contribution to the local and wider economy through health-related research, as well as through the provision of health services. Its reputation in the medical field is long-established and well-regarded throughout the UK.

Figure 9-1: Faculty of Medicine, University of Southampton

The University's Medical faculty was established in 1971 and since then it has trained a generation of clinicians and scientists. In 2016 it celebrated the 40th Anniversary of its first medical graduates.

Its research is underpinned by three broad themes: basic discovery with early clinical translation; cross-disciplinary working between the medical, biomedical and physical sciences (engineering, computing and nanotechnology); and enterprise and innovation with strong links to business and industry.

The University's partnership with the NHS locally allows it to deliver translational research and equip the next generation of doctors to work in a rapidly-changing environment as well as allowing leading clinical academics to perform the very best clinical research through quality assured support, facilities and resources embedded at the heart of the University Hospital Southampton NHS Foundation Trust.

9.1 Impact of Medical Research

In 2015/16, the University of Southampton received £33.4 million in medical research funding. This generates impact through health gains to individuals, as well as stimulating private investment. These impacts are discussed in a report by the Wellcome Trust.[11]

9.1.1 Health Gains

The value of health gains to individuals (net of the health care costs of delivery) was assessed in the Wellcome Trust report using the quality adjusted life years (QALY) method. This is a widely used method developed by health economists to assess how many extra months or years of life of a reasonable quality a person might gain as a result of treatment. The Wellcome Trust report considered two areas of medical research: cardiovascular disease, and mental health.

The value of the health benefit was presented as a return on the initial expenditure on research (IRR). The best estimate for the IRR of cardiovascular research was 9.2% (within a range of 7.7% and 13.9%) and the best estimate for mental health research was 7.0% (within a range of 3.7% and 10.8%). These provide estimates of the benefits of health gains to patients treated, relative to the investment in medical research that results in new treatments.

In order to apply these rates to the University of Southampton an average of the two best estimates was taken. Therefore, it was assumed that every £1 invested

[11] Wellcome Trust, Medical Research Council, Academy of Medical Sciences (2008). Medial Research: What's it worth? Estimating the Economic Benefits from Medical Research in the UK

in medical research would result in health gains valued at £0.08 each year in the UK, in perpetuity.

Therefore the £33.4 million of medical funding received by the University of Southampton each year would result in a health gains valued at £38.0 million, if the net present value was considered over a 20-year period.

9.1.2 Economic Impact

The Wellcome Trust also considered the effect that medical research expenditure would have on GDP. The study considered the impact that this public research would have in stimulating investment in the private R&D sector, and the social returns to the private investment that is stimulated. The report found that a £1 investment by a public body in medical research and development stimulated in increase in private R&D investment of between £2.20 and £5.10. The report also found that the social rate of return to private sector R&D funding was approximately 50%.

As with the estimates for health gains, the study found a range of estimates for IRR for GDP impacts: the lowest estimate was 20%, and the highest estimate was 67%, with the best estimate given as 30%. Unlike the health gains, there were no estimates given for mental health research, so it was assumed that the 30% return would apply to all types of medical research. It was therefore assumed that each £1 invested in medical research at the University of Southampton generates an increase of £0.30 GDP for the UK economy each year in perpetuity.

Therefore, the £33.4 million of medical funding that is received by the University each year would result in an economic return of £142.5 million GVA, if the net present value of this impact was considered over a 20-year period.

9.1.3 Total Returns to Medical Research

The total returns of the medical research undertaken at the University of Southampton is the sum of the economic returns and the health gains. Therefore, the £33.4 million in medical research funding would result in a total impact with a net present value of £180.4 million throughout the UK.

The impact in the regional area was assumed to be proportional to its share of the UK population. Therefore the impact in the regional area was estimated to be £8.2 million GVA and the impact in the UK was estimated at £180.4 million GVA.

Table 9-1 – Health Research Impact

	Southampton	Regional Area	UK
GVA (£m)	0.7	8.2	180.4

Source: BiGGAR Economics

9.2 Wessex Institute

One of the ways in which the University extends and develops its links with medical research is through the Wessex Institute which is an enterprise unit within the Faculty of Medicine that hosts a number of distinct but linked centres and activities. These are:

- NIHR Evaluation, Trials and Studies Coordinating Centre
- Southampton Health Technology Assessments Centre

- NIHR Dissemination Centre
- Health and Care Research Wales funding schemes
- Consultancy work for public sector, charities, commercial and international organisations

The Wessex Institute generates millions of pounds of research income by translating innovative research, ideas and technologies into commercial successes and has created five spin-out companies that provide good examples of their business expertise. Many of their academics are also leading experts in their fields and are at the forefront of key global health issues.

The Wessex Institute has world-class facilities that feature cutting-edge equipment and laboratories. Its £9m Institute of Developmental Sciences building provides state-of-the-art laboratories and equipment that are being used by key research groups such as the Developmental Origins of Health and Disease Division and the Centre for Human Development, Stem Cells and Regeneration.

They also have close links with the Wellcome Trust Clinical Research Facility, which is at the heart of new developments in the causes and treatments of common diseases such as cancer, asthma, food allergies and heart disease; and the £11m National Institute for Health Research (NIHR) biomedical research units which are run in conjunction with NIHR, Southampton University Hospitals NHS Trust and the University.

9.3 Auditory Implant Service

The University of Southampton's Auditory Implant Service (USAIS) also has a significant impact on the local population. Hosted on the University's campus, the AIS was established in 1990 to help severe and profoundly deaf adults and children. Since the programme began at the centre, surgeons have implanted over 1000 auditory devices.

The staff delivering the service believe that the treatment of both adults and children by the same team is a great strength. Feedback from adult patients has provided valuable knowledge for working with young children who may be unable to report what they hear. A further advantage of this service is its location within the University of Southampton which provides an ideal situation for high quality research. The service treats patients from all over the south of England and the Channel Islands. Auditory implant surgeries are carried out by three surgeons at five hospitals in Southampton, Portsmouth and Hampshire.

9.4 Wider Impact on Healthcare Sector

The University of Southampton is the only Medical school in Hampshire and the major provider of Adult, Child and Mental health nursing undergraduate Bachelor's degrees and a Bachelor of Science Degree in Midwifery, as well as Postgraduate Diplomas for those wishing to train as a Nurse having already obtained a relevant bachelors in another subject. The University also provides around 30 continuing professional development courses for nurses including at masters and PhD level. It is clear that the impact of the Universities teaching on the healthcare sector within the region is significant and it is reasonable to assume that a large percentage of healthcare professionals practicing within the region underwent some form of initial training of continuing professional development at the University.

10 SUMMARY QUANTIFIABLE IMPACTS

Adding together the impacts considered in this report it can be estimated in 2015/16 that the University of Southampton generated:

- £0.9 billion GVA and supported around 14,000 jobs in Southampton;
- £1.3 billion GVA and supported around 19,800 jobs in the Regional Area; and
- £2.5 billion GVA and supported around 32,900 jobs in the UK.

A breakdown of these impacts is provided in Table 10-1 and Table 10-2, and the breakdown in additional study areas is provided in Appendix A - Additional Study Areas

Table 10-1 – Total Quantifiable Impact, GVA (£m)

	Southampton	Regional Area	UK
Sub-total: Core Impact	475.6	598.2	890.0
- Direct Impact	445.7	450.1	450.1
- Supplier Impact	6.0	22.3	101.6
- Staff Spending	23.3	116.5	246.9
- Capital Investment	0.6	9.3	91.4
Sub-total: Student Impact	215.8	299.6	383.3
- Student Spending	136.2	196.0	263.0
- Student Part-Time Employment	79.5	103.5	120.3
- Student Volunteering	<0.1	<0.1	<0.1
Sub-total: Innovation Support Impact	153.8	253.1	583.0
- Licensing	-	1.9	6.8
- Spin-Outs	37.4	46.4	66.8
- Services to Business	-	34.5	336.7
- KTPs	0.7	1.3	3.8
- Student Placements	2.3	41.2	49.3
- Science Park – Adjusted*	113.4	127.8	119.8
Sub-total: Tourism Impact	7.0	6.6	6.4
- Visiting Friends and Relatives	1.9	2.8	3.7
- Conferences and Events	4.0	3.3	2.8
- Other Tourism Activities	1.1	0.4	-
Sub-Total	852.2	1,157.5	1,862.8
Long-term Impacts	48.4	132.4	631.1
- Graduate Premium	47.7	124.1	450.7
- Medical Research	0.7	8.2	180.4
Total GVA	900.6	1,289.9	2,494.0

* The total impact of the Science Park at the UK level is £201.3 million GVA and 2,425 jobs. This has been adjusted to allow for additionality and to eliminate double counting with the spin-out impact. The adjusted figure has been used in calculating the overall total for the innovation support impact.

Source: BiGGAR Economics

Table 10-2 – Total Quantifiable Impact, Employment

	Southampton	Regional Area	UK
Sub-total: Core Impact	6,514	8,810	14,322
- Direct Impact	5,916	5,974	5,974
- Supplier Impact	151	573	2,687
- Staff Spending	437	2,130	4,366
- Capital Investment	9	134	1,295
Sub-total: Student Impact	5,341	7,052	8,351
- Student Spending	2,392	3,300	4,175
- Student Part-Time Employment	2,949	3,752	4,176
Sub-total: Innovation Support Impact	1,823	3,593	10,003
- Licensing	-	54	182
- Spin-Outs	684	1,008	1,493
- Services to Business	-	540	6,013
- KTPs	18	33	93
- Student Placements	37	660	890
- Science Parks – Adjusted*	1.084	1,299	1,332
Sub-total: Tourism Impact	342	305	270
- Visiting Friends and Relatives	95	130	154
- Conferences and Events	194	155	116
- Other Tourism Activities	53	20	-
Total Employment	14,020	19,760	32,946

* The total impact of the Science Park at the UK level is £201.3 million GVA and 2,425 jobs. This has been adjusted to allow for additionality and to eliminate double counting with the spin-out impact. The adjusted figure has been used in calculating the overall total for the innovation support impact.

Source: BiGGAR Economics

11 CONCLUSIONS

11.1 Impact in Context

This study has assessed the economic contribution made by the University of Southampton. In total it directly employs around 6,000 fte staff, has a full-time student population of around 27,000 and a turnover of over £555 million.

The key findings of the analysis were that in 2015/16, the University of Southampton generated £2.5 billion GVA[12] and supported around 32,900 jobs across the UK including £1.3 billion GVA and around 19,800 jobs in the regional area. This implies that:

- for each £1 that the University generated as a direct result of its operations, it supported expenditure of almost £6 in total throughout the UK economy of which almost £3 was retained within the regional area; and
- for each person directly employed, the University supported more than five jobs in total in the UK, including over three in the regional area.

The available evidence on student inflows and graduate destinations suggests that the University attracts a net inflow of around 1,500 people into the region to study each year. Data on student term-time residences suggest that around 7,200 new students relocate into the region to study each year at the University of Southampton, while at the same time around 5,700 people from outside the region graduate from the University and leave the area. The net inflow of people will, in turn, contribute to the on-going growth and vibrancy of the area.

11.2 Impact Time Frame

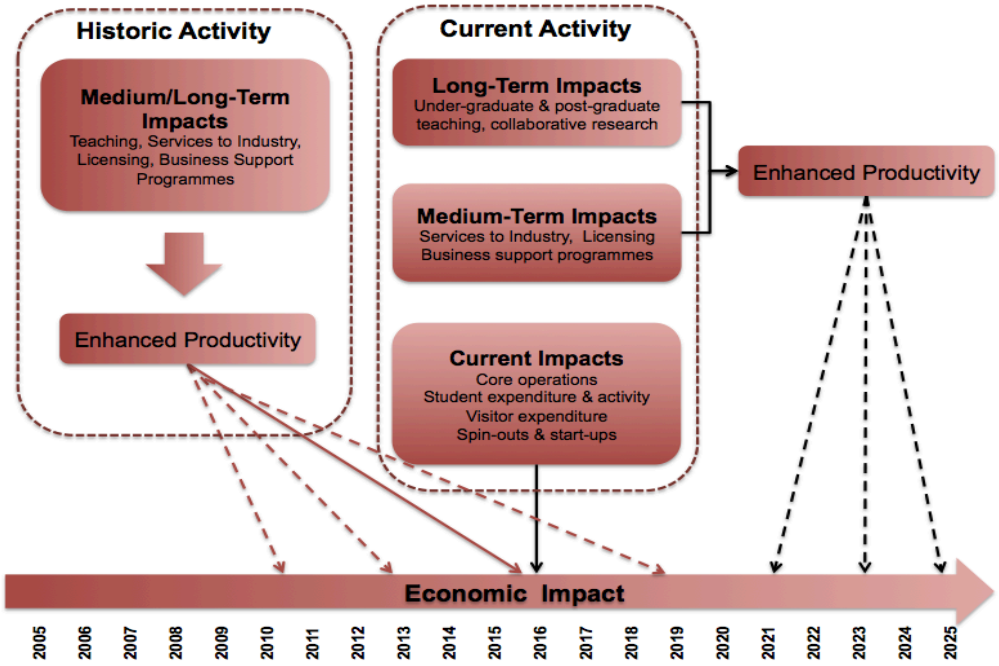
Some of the activity undertaken by the University of Southampton generates economic activity immediately, e.g. purchases made by the University generate activity amongst its suppliers almost straight away. However, much of the activity undertaken by the University does not generate immediate economic effects. For example, the additional income that its graduates will earn as a result of the enhanced skills they gain while studying will be generated over their entire working lives and not just in the year after graduation. The impact generated in 2015/16 will therefore be the cumulative impact of historic activity.

Limitations in data availability mean that it is generally not possible to estimate the actual impact of historic activity that is realised in any particular year. To overcome this, the report makes the simplifying assumption that activity undertaken in 2015/16 generates impact in 2015/16. This is reasonable because although the impact of some activity that occurs in 2015/16 will not transpire until a later date, some of the impact that was realised in 2015/16 will have been generated by historic activity.

Figure 11-1 summarises the different types of activity considered in the report and the time-scale over which they generate impact. The black arrows represent impact generated by current activity and the red arrows represent impact generated by historic activity. In each case the dashed arrows represent future impacts and the solid arrows represent impact in the current year.

[12] Gross Value Added – a widely used measure of the additional economic contribution of an organisation.

Figure 11-1 – Impact Time Frame



Source: BiGGAR Economics

The University produces an on-going dynamic economic contribution which will be realised over the course of several years. The data presented here represent the impact as a snapshot in time.

11.3 The Role of University in Productivity Growth

As producers of highly-skilled graduates and postgraduates, generators of world-class research and development and located at the centre of industry clusters, universities are recognised throughout the world as one of the critical drivers of economic growth and a defining feature of advanced economies.

The two fundamental activities of universities are the creation of both intellectual and human capital. Universities contribute to knowledge creation by undertaking basic and applied research which gives rise to the most influential technologies of today and the technologies of the future. Universities also provide high quality graduates for the labour market, which in turn increases innovation potential, as well as leading to productivity gains for the economy.

As a result, universities are major drivers of knowledge and innovation. This is fundamental to economic growth, since it is productivity growth that drives economic growth and productivity growth is in turn driven by knowledge and its diffusion (innovation).

The University of Southampton's particular strengths in medical research, engineering, marine research and aerospace and defence systems continue to offer a major source of productivity growth and innovation in these fields.

11.4 Incidental and Purposeful Benefits

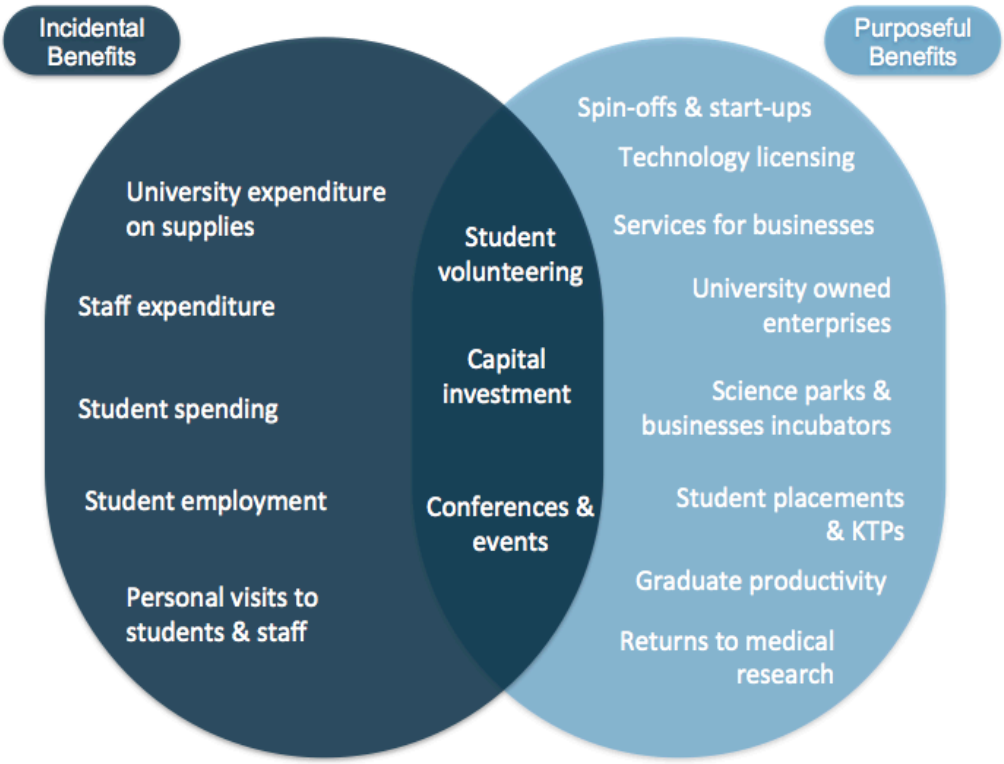
The impacts created by the University of Southampton can be categorised into two groups:

- ***Incidental benefits***: these arise as a result of the existence of the University as a large organisation and are in many ways comparable to the activities of any other large organisation with an extensive supply chain, a significant staff complement and a large consumer base. For this reason, these types of benefits are described as "incidental benefits". This includes the effects that are directly associated with the University's expenditure in the economy and that of its staff and students. In a sense this is secondary to the University's core mission of teaching, research and knowledge exchange. Some 51% of the University of Southampton's impact across the UK could be described as incidental benefits.

- ***Purposeful benefits:*** The University also undertakes a variety of activity with the explicit purpose of creating positive economic impacts in the local area and further afield. This type of activity is conceived specifically with the aim of driving innovation and productivity growth within the economy. These benefits are associated with the nature of the activity undertaken by the University rather than its existence as an organisation and might therefore be described as "purposeful benefits". Around 49% of the University's impact across the UK could be described as purposeful benefits.

Table 11-1 illustrates the division of benefits into incidental and purposeful categories. The division is not always clear-cut. Some areas such as volunteering are independent of the University but often draw on skills gained while studying and teaching.

Table 11-1Incidental and Purposeful Benefits



Source: BiGGAR Economics

11.5 Internationally Competitive University

The University of Southampton is regularly ranked in the top 100 universities in the world by several sources. Many subjects are ranked in the top 50 universities globally including nursing, archaeology, Earth and marine sciences, engineering computer sciences, geosciences and music.

Within the UK, the University is also a founding member of the prestigious Russell Group of research-intensive universities. In the most recent Research Excellence Framework, the University of Southampton was ranked in 8th position for research intensity.

As a result of its national and international profile and reputation, the University of Southampton is a major asset within its regional area and further afield.

12 APPENDIX A - ADDITIONAL STUDY AREAS

The study also estimated impact that the University of Southampton has on specific local areas within the surrounding region. The data in this section presents the results for estimated GVA and employment impacts in these localities.

Table 12-1 – Total Quantifiable Impact, GVA (£m)

	Portsmouth	Isle of Wight	New Forest	Test Valley
Sub-total: Core Impact	5.7	7.0	10.0	9.5
- Direct Impact	-	-	-	-
- Supplier Impact	0.3	1.3	0.9	1.3
- Staff Spending	5.4	5.5	7.8	7.9
- Capital Investment	<0.1	0.2	1.3	0.3
Sub-total: Student Impact	2.9	1.2	2.2	1.6
- Student Spending	1.9	0.8	1.4	1.1
- Student PT Employ	1.0	0.4	0.8	0.6
- Student Volunteering	<0.1	<0.1	<0.1	<0.1
Sub-total: Innovation Support Impact	15.8	2.4	2.3	2.4
- Licensing	-	-	-	-
- Spin-Outs	-	-	-	2.9
- Services to Business	-	-	-	-
- KTPs	-	0.1	-	0.1
- Student Placements	15.8	2.3	2.3	2.3
- Science Park	-	-	-	-
Sub-total: Tourism Impact	<0.1	<0.1	<0.1	<0.1
- Visiting Friends and Relatives	<0.1	<0.1	<0.1	<0.1
- Conferences and Events	-	-	-	-
- Other Tourism Activities	-	-	-	-
Sub-Total	24.4	10.7	14.6	16.6
Long-term Impacts	17.9	5.1	5.2	4.5
- Graduate Premium	17.3	4.7	4.7	4.2
- Medical Research	0.6	0.4	0.5	0.3
Total GVA	42.3	15.7	19.7	21.1

Source: BiGGAR Economics

Table 12-2 – Total Quantifiable Impact, Employment

	Portsmouth	Isle of Wight	New Forest	Test Valley
Sub-total: Core Impact	108	140	188	187
- Direct Impact	-	-	-	-
- Supplier Impact	6	33	24	34
- Staff Spending	101	103	146	149
- Capital Investment	0	4	19	4
Sub-total: Student Impact	70	29	55	40
- Student Spending	32	14	24	18
- Student PT Employ	38	16	30	22
Sub-total: Innovation Support Impact	252	40	37	188
- Licensing	-	-	-	-
- Spin-Outs	-	-	-	148
- Services to Business	-	-	-	-
- KTPs	0	3	0	3
- Student Placements	252	37	37	37
- Science Park	-	-	-	-
Sub-total: Tourism Impact	1	1	2	2
- Visiting Friends and Relatives	1	1	2	2
- Conferences and Events	-	-	-	-
- Other Tourism Activities	-	-	-	-
Total Employment	432	209	282	417

Source: BiGGAR Economics

Table 12-3 – Total Quantifiable Impact, GVA (£m)

	Southampton	Eastleigh	Winchester	Fareham
Sub-total: Core Impact	475.6	12.1	14.3	8.7
- Direct Impact	445.7	-	4.3	-
- Supplier Impact	6.0	1.9	1.6	1.7
- Staff Spending	23.3	9.5	7.6	6.8
- Capital Investment	0.6	0.7	0.7	0.2
Sub-total: Student Impact	215.8	3.2	10.8	1.8
- Student Spending	136.2	2.1	6.6	1.1
- Student PT Employ	79.5	1.2	4.2	0.7
- Student Volunteering	<0.1	<0.1	<0.1	<0.1
Sub-total: Innovation Support Impact	153.8	2.3	2.5	3.3
- Licensing	-	-	-	-
- Spin-Outs	37.4	-	<0.1	1.0
- Services to Business	-	-	-	
- KTPs	0.7	-	0.1	-
- Student Placements	2.3	2.3	2.3	2.3
- Science Park	113.4	-	-	-
Sub-total: Tourism Impact	7.0	0.1	0.1	<0.1
- Visiting Friends and Relatives	1.9	0.1	0.1	<0.1
- Conferences and Events	4.0	-	-	-
- Other Tourism Activities	1.1	-	-	-
Sub-Total	852.2	17.8	27.6	13.8
- Graduate Premium	47.7	8.4	11.2	4.7
- Medical Research	0.7	0.4	0.3	0.3
Total GVA	900.6	26.5	39.2	18.7

Source: BiGGAR Economics

Table 12-4 – Total Quantifiable Impact, Employment

	Southampton	Eastleigh	Winchester	Fareham
Sub-total: Core Impact	6,514	237	251	173
- Direct Impact	5,916	-	58	-
- Supplier Impact	151	48	40	43
- Staff Spending	437	179	143	127
- Capital Investment	9	10	11	3
Sub-total: Student Impact	5,341	79	274	44
- Student Spending	2,392	35	119	19
- Student PT Employ	2,949	43	154	25
Sub-total: Innovation Support Impact	1,823	37	63	54
- Licensing	-	-	-	-
- Spin-Outs	684	-	24	18
- Services to Business	-	-	-	-
- KTPs	18	0	3	0
- Student Placements	37	37	37	37
- Science Park	1,084	-	-	-
Sub-total: Tourism Impact	342	4	6	2
- Visiting Friends and Relatives	95	4	6	2
- Conferences and Events	194	-	-	-
- Other Tourism Activities	53	-	-	-
Total Employment	14,020	356	594	273

Source: BiGGAR Economics

Table 12-5 – Total Quantifiable Impact, GVA (£m)

	Gosport	Havant	East Hampshire
Sub-total: Core Impact	5.5	7.8	5.5
Direct Impact	-	-	-
Supplier Impact	<0.1	1.0	0.1
Staff Spending	5.5	5.5	5.4
Capital Investment	<0.1	1.2	<0.1
Sub-total: Student Impact	0.6	0.7	0.4
Student Spending	0.4	0.4	0.3
Student PT Employ	0.2	0.3	0.2
Student Volunteering	<0.1	<0.1	<0.1
Sub-total: Innovation Support Impact	2.3	2.3	2.5
Licensing	-	-	-
Spin-Outs	-	-	-
Services to Business	-	-	-
KTPs	-	-	0.2
Student Placements	2.3	2.3	2.3
Science Park	-	-	-
Sub-total: Tourism Impact	<0.1	<0.1	<0.1
Visiting Friends and Relatives	<0.1	<0.1	<0.1
Conferences and Events	-	-	-
Other Tourism Activities	-	-	-
Sub-Total	8.5	10.8	8.9
Long-term Impacts	1.6	1.3	1.7
Graduate Premium	1.4	1.0	1.4
Medical Research	0.2	0.3	0.3
Total GVA	10.1	12.0	10.2

Source: BiGGAR Economics

Table 12-6 – Total Quantifiable Impact, Employment

	Gosport	Havant	East Hampshire
Sub-total: Core Impact	104	148	104
Direct Impact	-	-	-
Supplier Impact	1	26	2
Staff Spending	103	104	101
Capital Investment	0	18	1
Sub-total: Student Impact	16	17	11
Student Spending	7	7	5
Student PT Employ	9	10	6
Sub-total: Innovation Support Impact	37	37	43
Licensing	-	-	-
Spin-Outs	-	-	-
Services to Business	-	-	-
KTPs	-	-	6
Student Placements	37	37	37
Science Park	-	-	-
Sub-total: Tourism Impact	0	0	0
Visiting Friends and Relatives	0	0	0
Conferences and Events	-	-	-
Other Tourism Activities	-	-	-
Total Employment	157	201	157

Source: BiGGAR Economics