Cornwall and the Isles of Scilly Local Enterprise Partnership

Smart Specialisation Skills Framework

Final Report

February 2016

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Executive Summary

Overview

This report was prepared to identify the skills required by the Smart Specialisation sectors in order to enable them to undertake Research and Development and Innovation (R&D&I) and take advantage of new market opportunities. The assessment is placed in the context of current and anticipated resident skills profiles over the same period to identify any gaps and key issues that need to be addressed, resulting in a framework to guide future skills support for the Smart Specialisation markets, from school through to Higher Education (HE) provision.

The analysis builds on the research and consultations with key stakeholders and businesses in the Smart Specialisation markets, undertaken as part of the development of the evidence base[1] and the R&D&I Framework[2] for future investment in Cornwall and Isles of Scilly (C&IoS) from the European Structural and Investment Fund (ESIF) programme.

Key Strengths and Challenges

In order to support the development of the evidence base for the Smart Specialisation Strategy within C&IoS a number of sector skills studies were undertaken[3] to provide baseline information and to outline the implications for the development of skills within the area arising from potential growth. Based on a review of this existing research; a review of the socio-economic and policy context; an assessment of current provision; and discussions with training providers and members of the C&IoS LEP Employment and Skills Board, a number of key issues have been identified:

- low levels of productivity within the area; an ageing workforce and lower levels of 18-24 year olds and working age population; and below average levels of higher qualified residents within the workforce;
- demand for higher level qualifications (Levels 3 and 4+) and provision in line with industry needs as the Smart Specialisation Sectors evolve;
- skills needs relevant to all Smart Specialisation sectors including: science, technology, engineering and maths (STEM) qualifications; technicians; engineers; ICT programmers and the application of ICT, management and leadership;
- the need to target different cohorts to ensure there is a pipeline of talent – for example, by embedding the importance of STEM subjects at an early age and ensuring young people are aware of the opportunities arising; attracting younger people to stay in the area (through graduate retention interventions); attracting new entrants into the sectors, some of whom may be outside the labour market; and upskilling the existing workforce;
- greater integration among existing providers and provision of routeways from school through to higher education and employment;

[1] AMION Consulting, Cornwall and the Isles of Scilly Research and Development and Innovation Evidence Base, October 2015.
[2] AMION Consulting, Cornwall and the Isles of Scilly Research and Development and Innovation Framework, October 2015
[3] The Aerohub Skills Action Plan, Pye Tait Consulting April 2013; A Skills Action Plan for the Space Sector, Pye Tait Consulting, Scott Space December 2013; Identification of Creative and Digital Skills Needs in C&IoS July 2013, Perfect Moment, Adroit Economics, Digital Peninsula Network, Creative Skills for Cornwall Council; Current and Future workforce skills and the supply and demand for new or specialised training provision, Cornwall Marine Network July 2015

- the need for greater promotion of apprenticeships and vocational routeways into jobs as an alternative to the academic route;
- collaboration among employers – which is variable across the Smart Specialisation sectors at present;
- lack of current demand from some sectors, and therefore a need to invest in provision in anticipation of the projected growth, which is a challenge for some training providers in itself due to 'risky' upfront investment;
- training for teachers and trainers – to ensure that they have up-to-date, relevant industry expertise and knowledge;
- up-to-date intelligence, from employers and industry, so that provision remains relevant – particularly in terms of skills requirements and gaps in provision; and
- overcoming other barriers to education and training such as accessibility (travel to work and college), and flexibility.

Notwithstanding these challenges, C&IoS has a number of key strengths and best practice to build on, which, coupled with changes arising from devolution and apprenticeship policy for example, provide significant opportunities for both residents and businesses within the Smart Specialisation sectors to exploit the emerging growth markets. These include:

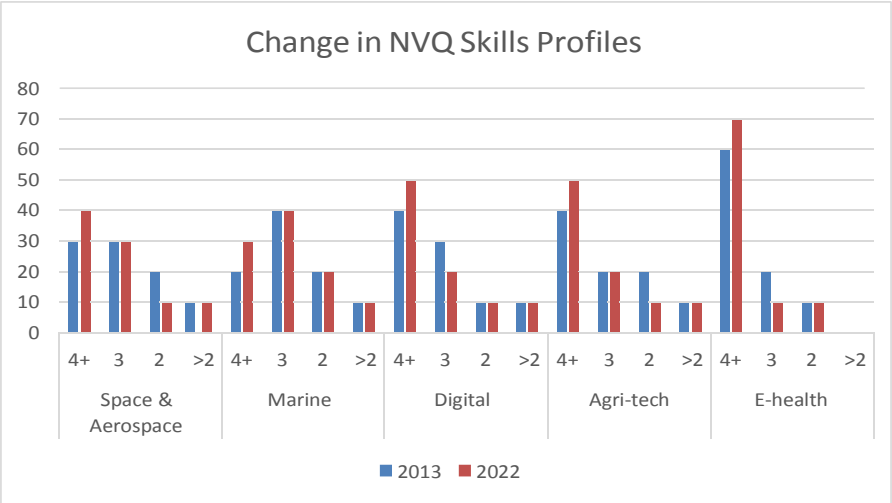
- a consensus and agreement among stakeholders regarding the key skills issues that will impact on the Smart Specialisation sectors, including the need for:
  - more residents skilled at higher levels - NVQ Level 4+;
  - up-skilling across all sectors, as a result of the new technologies and in response to the ageing workforce; and
  - technicians; engineers; and ICT programmers.
- high quality education and skills infrastructure to serve the emerging Smart Specialisation markets:
  - Enterprise Academy and STEM ambassadors;
  - Cornwall and Truro and Penwith FE Colleges – with specialisms (vocational and academic) and higher level skills provision (for example, foundation degrees);
  - specialist provision for Marine and Agriculture;
  - three HE institutions working together under CUC (Combined Universities Cornwall) – Exeter, Falmouth, and Plymouth Universities; and
  - Cornwall Apprenticeship Agency – providing apprenticeship solutions specifically for SMEs.
- provision at all levels – from promotion of STEM at school through to higher level qualifications (Masters research and PhDs) and the CUC research programme;
- some collaboration among employers in the relevant sectors, existing networks, and best practice models to build on – for example, Cornwall Manufacturing Forum, Software Cornwall, Cornwall Marine Network, and Nurturing Excellence;

- good level of employer engagement and linkages between businesses and the Colleges; some partnership working among schools/businesses but less developed collaboration among businesses/HE institutions; and
- Devolution Deal and changes to apprenticeships, which will provide significant opportunities post 2017 and flexibility to target the Smart Specialisation sectors.

Skills Requirements

Based on the current numbers employed in the Smart Specialisation sectors and projections which factor in both expansion and replacement demand, and skills deepening, skills profiles for each Smart Specialisation sector have been developed to identify the change over the period 2013-2022, as shown in Figure 1 below. The proportion of jobs requiring higher level skills at NVQ Level 4 and above for all sectors is 56% compared with 45% for the economy as a whole.

Figure 1: Change in NVQ Skills Profiles for the Smart Specialisation Sectors



In absolute terms, the skills profiling demonstrates the need for an additional 2,000 people with higher level qualifications at NVQ Level 4+ by 2022 (see Table 1):

Table 1: Breakdown of NVQ skills requirements by Smart Specialisation sector, 2022

	Total Expansion and replacement	NVQ 4+	NVQ 3	NVQ 2	NVQ 1	None
Aerospace	609	304	170	90	45	0
Marine	846	346	287	174	45	-6
Digital	937	747	106	53	37	-6
Agri-tech	509	311	101	72	17	8
E-Health	372	289	42	34	6	1
	3273	1997	706	423	150	-3
%		62%	24%	14%	5%	0

Placing the demand for skills in the context of the future supply of skills, and assessing the broad skills balance which focuses on skills/qualifications patterns rather than volume considerations, provides an indication of whether the sector might be expected to experience either a moderate or extensive deficit or over-supply of skilled individuals, as shown in the Table 2. The assessment indicates that:

- securing appropriate Level 4+ skills may prove troublesome particularly if the Smart Specialisation sectors are to develop into mature technology driven activities (i.e. at growth rates above current forecasts);
- securing appropriate Level 3 skills may be difficult for some of the Smart Specialisation sectors (Marine Technology and Space/Aerospace) but not all; and
- it is not anticipated that there will exist any restrictions in terms of satisfying Level 2/lower requirements.

Table 2: Skills balance

NVQ	Agri-tech	Digital Economy	e-health	Marine Technology	Space & Aerospace
4+	MD	ED	ED	ES	BAL
3	MD	MD	ES	ED	ED
2	MS	ES	ES	MD	MS
<2	ES	ES	ES	ES	ES

Furthermore, following an analysis of the projected increase in the share of Level 4+ individuals in the Smart Specialisation sectors by 2022, it is apparent that the sectors are going to experience increased competition with other parts of the C&IoS economy to recruit higher level skills. If skills requirements to support projected growth are to be achieved, the Smart Specialisation Sectors' share of the required recruitment of Level 4+ individuals (excluding replacement demand) will need to double.

The assessment of the projected demand for and supply of skills within the Smart Specialisation sectors and the current education and training infrastructure available, suggests that it is unlikely that there will be a shortfall in provision to meet the needs of employers. However, if left unaddressed, the key issues highlighted earlier could have implications for business growth. The Skills Support Framework and the key principles underpinning it, have therefore been developed to ensure that future skills support and interventions directly address these potential barriers to growth.

The Smart Specialisation Skills Framework

Five key objectives have been identified to guide future support, which will in turn need to adhere to a set of guiding principles to improve outcomes through: flexible delivery; accessible provision; business involvement at all stages of the process; and ongoing monitoring and provision of up to date intelligence to ensure continued relevance of provision. The five themes relate to:

- ***raising aspirations*** of young people by embedding the importance of STEM subjects from an early age and promoting the potential career options arising within the Smart Specialisation sectors within C&IoS;
- ***supporting employer-led provision*** to ensure that training providers are responsive and deliver courses required by industry that will enable them to fill skills gaps and skill shortages. This will include provision that encompasses delivery in the workplace and industry placements;
- ***ensuring sufficient higher level skills provision*** including advanced apprenticeships, undergraduate courses (including foundation degrees) and postgraduate studies, including masters and PhDs. Attracting and retaining students after their studies and attracting students back to C&IoS who may have studied elsewhere, are key issues that need to be addressed through the provision of graduate placement initiatives and other enterprise support programmes to retain talent and skills in the local area;
- ***up-skilling the existing workforce*** to improve productivity through continuous professional development and career progression. Ensuring workers have the expertise to adapt to new working practices and advanced product design will become increasingly important as the Smart Specialisation sectors develop. This will apply to businesses throughout the supply chains, and is important as a result of the ageing workforce in the area; and
- ***providing routeways*** for new entrants into the Smart Specialisation sectors, including individuals currently outside the labour market and disadvantaged groups who may need intensive support to get back into employment.

Recommendations

The report concludes with a series of recommendations for the various stakeholders involved in managing and delivering future support for skills in the sectors:

Recommendations for key stakeholders
Smart Sector Employers (working through their co-ordination bodies or sector champions):
• establish a pool of STEM ambassadors to go into schools to promote the potential employment and career opportunities in their sectors; • have an input into the Cornwall Careers Offer, particularly in terms of the eight information, advice and guidance benchmarks, including a commitment to provide workplace experience for Year 11 students; • feed industry intelligence into the LEP Employment and Skills Board and Cornwall Training Providers network on a regular basis regarding skills and training needs arising within their industries, particularly given the rapid changes expected over the coming years; • work with training providers to develop new standards and curriculum for the Smart Specialisation Sectors where required, particularly in relation to higher level apprenticeships, and to encourage greater take-up of the vocational route into employment in the sectors; • participate in trialing new innovative models of training delivery (for example, shared apprentices);

- provide entry level employment and training opportunities for unemployed individuals and people outside the labour market, including supported employment and intermediate labour market opportunities; and
- invest both in new talent and in training their existing workforce.

Local Authorities, LEP and partner agencies:

- build on the best practice projects being delivered across the region and ensure that the lessons learnt (for example in terms of embedding STEM, providing CPD for STEM teachers, and the provision of work experience) are shared across all 271 schools;
- finalise the development of the 'Careers offer' in conjunction with the Smart Specialisation Sector bodies;
- develop a 'skills offer' for employers, particularly SMEs in the Smart Specialisation sectors that involves skills brokers working with businesses to:
  - undertake a diagnostic session or audit of what the business needs in terms of skills and an development of an action plan;
  - provide assistance to co-ordinate recruitment of trainees (including apprentices);
  - access to training at all levels; and
  - promote existing schemes such as graduate retention and knowledge transfer partnerships.
- ensure that the 'skills offer' is part of a wider package of business/commercial support offered to the Smart Specialisation businesses through linkages with the Growth Hub;
- provide funding/bursaries to encourage participation in research and development in the sectors, to complement the ERDF funded provision;
- provide funding to overcome barriers to education and learning – for example travel, childcare, equipment; and
- continue to raise the profile of apprenticeships among young people, their parents, and employers in the Smart Specialisation sectors, for example through planned jobs and careers fairs.

Training and education providers:

- build on work undertaken to date in promoting apprenticeships and higher level apprenticeships as a route into the Smart Specialisation Sectors;
- develop and deliver short course and joint training provision for the Smart Specialisation sectors;
- develop bespoke training (including new standards) for employers or groups of employers to be delivered either online, through the classroom or in the work place;
- pilot new models of delivery with Smart Specialisation sector employers, for example shared apprenticeships/graduate schemes;
- work collaboratively with employers to identify and develop opportunities for Knowledge Transfer Partnerships and other research and development projects;
- work with employers to develop employability projects to assist individuals outside the labour market become economically active, for example sector based work academies; and
- work collaboratively to provide access routes to Level 4 provision for disadvantaged groups.

1 Introduction

1.1 Overview

AMION Consulting was appointed by Cornwall Council and the Cornwall and Isles of Scilly Local Enterprise Partnership (LEP) in February 2015, to develop a Smart Specialisation and Research and Development and Innovation (R&D&I) Framework for future investment in R&D&I in Cornwall and the Isles of Scilly (C&IoS). The Framework was underpinned by a thorough review of evidence relating to each of the five Smart Specialisation markets:

- agri-tech;
- digital economy;
- e-health and e-wellbeing;
- marine technology; and
- space and aerospace.

Extensive consultations were undertaken with businesses, industry specialists and other key stakeholders including the Council, the Colleges and Higher Education (HE) establishments, and relevant government departments to identify the potential market opportunities for C&IoS. The R&D&I Framework provides guidance for the allocation of European Structural and Investment Funding.

One of the critical factors in developing the Smart Specialisation markets is the availability of a skilled workforce. Consequently this report was commissioned by C&IoS LEP to:

- review the evidence to date and assess the skills requirements for each of the Smart Specialisation markets over the course of the European Programme (up to 2022) and to place these requirements in the context of current and anticipated resident skills profiles over the same period; and
- to provide a framework to guide skills support for the Smart Specialisation markets (from school through to HE provision), based on the current organisational landscape.

1.2 Methodology

1.2.1 Our Approach

Our approach to compiling this report has involved the following:

- Contextual review – which has involved a desk based review of the sector skills reports building on the work carried out for the evidence review, an assessment of the socio-economic, policy and operational contexts within the area;
- Mapping provision – through research and discussions with the Council, local Colleges, the University network, and other key providers within the area;

- Best practice - review of best practice rom elsewhere;
- Consultations with stakeholders – including education and skills providers, the Council, and other key partner agencies; and
- Skills profiling – four elements come together in generating a profile of future Smart sector skills requirements, namely the:
  - definition of Smart Specialisation markets in terms of the mix of economic activities which are defined to comprise each market;
  - relative scale of these activities;
  - distribution of skills within these activities; and
  - nature of skills deepening in the light of changing occupation and skills profiles within the activities.

  Such issues are addressed through a technical exercise that combines three separate datasets in an integrated skills framework model. These include:

  - Business Register and Employment Survey (BRES) provides detailed information on employment at local area level down to 5 digit sector level. This facilitates a broad estimate of Smart Specialisation market scale though the process is not without challenge;
  - Commission for Employment and Skills (CES) Working Futures datasets provide an historic and projected estimate of employment, occupation and skills, at different sector levels, across sub-national geographies; and
  - Annual Population Survey (APS), in its raw data (confidential/licenced) form provides more detailed exposition of skills profiles across sectors and occupations.

1.2.2 Smart Specialisation Sector Definitions

The sectoral definition of the Smart Specialisation markets used in this analysis corresponds for the most part, to that used in the recent 'Cornwall and Isles of Scilly Research, Development and Innovation: Evidence Report'[4]. The latter points out that using Standard Industry Classification (SIC) codes to approximate developing technology sectors is far from ideal but adopts the protocols contained in earlier studies for Cornwall and the Isles of Scilly by Catalys and Strategic Economics Ltd as agreed by the steering group involved in overseeing the preparation of the evidence report which comprised representatives from the Council, the Local Enterprise Partnership, Academia and relevant industry representatives. This provides a narrow and arguably restricted definition of the sector that is focused on the subsectors linked to the use of new technology only, it does not incorporate the entire/wider supply chain linked to that particular industry which in the case of the broader Agri-food sector extends to approximately 24,800 (or 11%) employees within the C&IoS workforce.

[4] AMION Consulting Ltd, ICF International, JOHT, and Catalys October 2015

Table 1.1 details the broad range of activities included within the Smart Specialisation sectors and the accompanying SIC codes that underpin the analysis in this report. An alternative method for calculating employment in the E-health and Wellbeing sector has been used, as discussed in Section 3.1 of this report.

Table 1.1: SMART Sector Definition

Smart Sector	SIC Definition	SIC Codes
Agri-tech	Support to animal/crop production; seeds and plant genetics, aquaculture, manufacture of fertilisers, pesticides, agro-chemicals, natural science research, environmental consulting	1610; 1621; 1629; 1630; 1640 1700; 3210; 3220; 20150; 20200 72190; 74901
Digital Economy	Manufacture of computers/related electronics, telecoms, process instruments, business/leisure software development & publishing, consultancy, facilities management, other IT	26110; 26120; 26200; 26301 26309; 26400; 26511; 26512 26513; 26514; 26520; 26600 26701; 26702; 26800; 58120 58290; 62011; 62012; 62020 62030; 62090
E-health/wellbeing	Hospital activities, Other human health	86101; 86900; 26200; 26309; 62020; 62030; 62090; 63110 63120
Marine Technology	Building/repair of boats and ships, manufacture of steam generators, electric motors, batteries & accumulators, engines, pumps, compressors, bearings, gears, electricity production/distribution	30110; 30120; 33150; 25300; 27110; 27120; 27200; 28110 28120; 28131; 28132; 28150; 35110; 35120; 35130
Space & Aerospace	Air/space transport, support to air transport, cargo handling, satellite telecomms, renting/leasing air transport equipment, manufacture & repair of air/spacecraft & machinery,	51101; 51102; 51210; 51220; 52230; 52242; 61300; 77351; 77352; 30300; 33160

1.3 Structure of the report

The remainder of this report is set out in the following sections:

Section 2 - provides the context for the development of the skills framework – including a brief review of the relevant policy framework, socio-economic context, and existing research;

Section 3 - describes the outcomes from the skills profiling work, in terms of the demand and supply of skills within the Smart Specialisation Sectors and implications for future provision;

Section 4 - reviews current provision in terms of funding and delivery;

Section 5 - outlines a framework for supporting future interventions based on the preceding analysis and sets out a number of key priorities for future support; and

Section 6 - presents our conclusions and recommendations for interventions that will support the development of Smart Specialisation skills in C&IoS that will enable businesses to respond to the emerging opportunities arising in these high

technology sectors.

2 Context

2.1 Introduction

This section describes the context for the development of the Smart Specialisation Skills Framework in terms of the socio-economic conditions in the area and key issues that the skills interventions will seek to influence and the policy drivers for Smart Specialisation and the acquisition of skills in C&IoS. It also provides a brief overview of the relevant skills studies and research carried out to date and summarises the skills shortages that need to be addressed, to ensure that businesses in the Smart Specialisation Sectors are able to recruit and upskill existing employees to take advantage of the new market opportunities.

2.2 Policy

Table 2.1 provides an overview of the relevant policy context for the development of the Smart Specialisation Skills Framework and outlines key programmes, policy initiatives / themes and strategies at the European, national and local levels. An extended assessment of the policy context is provided at Appendix 1.

Table 2.1: Policy context for the development of the Smart Specialisation Skills Framework

Programme / policy initiative / theme / strategy	Key aspects
2014-2020 European Programmes	
ERDF – Smart Specialisation	Smart Specialisation is focused on maximising the growth of markets in which an area has a competitive advantage. To access funding from the European Regional Development Fund (ERDF) a Research and Innovation Strategy for Smart Specialisation must be in place. As set out in the C&IoS ESIF Strategy the overall aim is to raise levels of research, development and innovation in business as a driver of growth and productivity across C&IoS. Access to an appropriately skilled workforce represents one key aspect of the support that businesses will need to undertake more Research and Development and Innovation.
ESF Operational Programme	European funding available to support Smart Specialisation skills will primarily come from the European Social Fund (ESF). The ESF will be used to deliver actions that promote employment, social inclusion and skills development.
National policy	
Fixing the Foundations: Creating a more prosperous nation (HMT)	Raising productivity is now at the heart of the government's strategy for securing growth and raising living standards. Their approach to raising productivity is built around two pillars: **1. Encouraging long-term investment in economic capital, including infrastructure, skills and knowledge, through:** - competitive tax system - rewards for saving and long term investment - a highly skilled workforce - world class leading universities, open to all who can benefit - a modern transport system - reliable, low cost carbon energy - world-class digital infrastructure

Table 2.1: Policy context for the development of the Smart Specialisation Skills Framework

Programme / policy initiative / theme / strategy	Key aspects
	- high quality science and innovation **2. Promoting a dynamic economy that encourages innovation and helps resources flow to their most productive use, through:** - planning freedom, more houses to buy - higher pay, lower welfare society - more people able to work and progress - financial services that lead the world in investing in growth - competitive markets with less regulation - a trading nation open to international investment - a rebalanced economy and a thriving northern powerhouse A number of the potential investment priorities outlined in this skills framework will directly support some of the priorities set out within the government's productivity plan and will need to ensure that they are developed in line with new programmes being introduced by the government to achieve their aspirations e.g. support for universities to collaborate with industry, particularly in relation to commercializing research; and the creation of the network of Technology Institutes.
UK Commission for Employment and Skills (UKCES)	The Commission is responsible for giving businesses and people advice, developing employment and skills policies and helping more employers invest in skills. It is leading the debate with industry to drive better outcomes for skills, jobs and growth, push forward employer ownership of skills and testing what works to address barriers to growth.
Rigour and Responsiveness in Skills	Rigour and Responsiveness in Skills (2013) was developed jointly by the Department for Education (DfE) and the Department for Business and Skills (BIS) to accelerate reforms to the skills system in England. The government's key objectives relate to raising standards; improving the quality and consistency of apprenticeships; creating focused traineeships; delivering meaningful qualifications; improved funding responsiveness; and providing better information and data.
Vision for Apprenticeships 2020	Over the next five years the government aims to consolidate economic recovery and ensure that it benefits everyone. Raising productivity is one the Government's top priorities for achieving this, and in doing so, they are committed to increasing the quality and quantity of apprenticeships in England, reaching 3milliion starts in 2020. Their priorities are outlined under five key themes: • ***improving the quality and recognition of apprenticeships*** – so that all apprenticeships provide substantive professional or technical training, transferable skills and competency in English and Maths; an attractive offer that young people and adults aspire to as a high quality career; availability across all sectors and all levels, including degree; and opportunities that deliver skills, knowledge and behaviours that employers are looking for; • ***putting employers in the driving seat*** – so that apprenticeships enable businesses to build their pipeline of skilled future staff. Measures include the establishment of the Digital Apprenticeships Service which will be easy to use and navigate; ownership of the design and content of the apprenticeship standards and assessments; and responsibility for payment; • ***improving routes into apprenticeships and work*** – through clear progression from technical and professional education into skilled employment and apprenticeships and adequate preparation and awareness raising by employers and apprentices; • ***building the long-term apprenticeship system*** – though the establishment of the Institute for Apprenticeships responsible for overseeing quality; employer-designed

Table 2.1: Policy context for the development of the Smart Specialisation Skills Framework	
Programme / policy initiative / theme / strategy	**Key aspects**
	standards; and training providers who are responsive to meet the evolving needs of businesses; and • ***funding apprenticeships*** – employers will choose and pay for training through the Digital service; the funding system will support the commitment to increase the quality and quantity of apprenticeships; and funding will be placed on a sustainable footing through the introduction of a 0.5% levy on businesses that have a payroll in excess of £3m per annum. As the Government reforms are rolled out, it will be important that the interventions to support businesses in the Smart Specialisation sectors are developed alongside government support and funding, and add value to the proposed changes – particularly in relation to the new standards and levy that will be introduced.
Review of Computer Science Degree Accreditation and STEM Degree Accreditation and Graduate Employability	Two independent reviews are currently being carried out in response to the Government's Science and Innovation Strategy, in relation to the accreditation of STEM degree courses and Computer Science degrees and improving graduate employability. The reviews are being led by Wakeham[5] and Shadbolt[6] respectively in order to gain a better understanding of the skills requirements of employers, how STEM and computer science graduates' skills and knowledge relate to labour market demand, and how existing accreditation systems support this, with a view to improving graduate employability. The reviews will consider the extent to which graduates might benefit from degree courses which feature increased employer engagement, more up to date course content and where appropriate increased levels of work experience. It will be particularly important that the findings from the 2 reviews are used to develop closer working relationships among businesses in the Smart Specialisation sectors and the HE establishments in C&IoS advocated within the Smart Specialisation framework.
Cornwall and the Isles of Scilly	
C&IoS LEP Employment and Skills Strategy	The Employment and Skills board of the C&IoS LEP has developed an employment and skills strategy for the period 2012-2020. The Smart Specialisation Skills framework and suggested interventions will complement this strategy which aims to: • create an aspirational and innovative enterprise culture; • improve skills and boost employment in growing global markets; • enable those out of work to compete in the labour market; • increase employer and individual investment in skills; and • improve the quality of and access to information for learners.
C&IoS Devolution	In July 2015, Cornwall's first Devolution deal was agreed with Government which will result in more than £5bn of government funding being given to Cornwall to manage at a local level. This will include funding for employment and skills. At the local level there is a desire to train people in skills that match current and anticipated future employer demands. Funding will be sought to support apprenticeships, further education for young adults and adults, together with careers education, information, advice and guidance.

2.3 Socio-economic context

[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407457/15-138-wakeham-review-stem-degrees-tor.pdf
[6] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407456/15-137-shadbolt-review-computer-science-degrees-tor.pdf

This section provides a summary of key labour market statistics for C&IoS compared with South West and national trends. An extended assessment of the socio-economic context is provided at Appendix 2.

- **Population** – C&IoS have an ageing population with 30% of the population over 60 compared to the national average of 22.4%. There is also an increasing proportion of the population over 75 (10% of the population in Cornwall, 10.7% on the Isles of Scilly).

  In terms of migration, there are more people moving into the area than migrating out, with the exception of those aged 20 to 24, where there is a larger number of people leaving the area.

  While the total population in Cornwall is growing faster than the national average, the projections indicate that by 2037 Cornwall is expected to have a working age population of 345,600, which represents 54% of their overall population compared with 59% for England. The proportion of older people is expected to be 30% compared with the national figure of 24% and the proportion of children up to the age of 15 is expected to be marginally lower at 16% compared with 17% nationally.

- **Economic activity** – while the numbers of those economically active remained static over the last year, the proportion of economically active residents declined. Employment numbers have increased, and the level of unemployment has reduced by a fifth.

- **Occupational breakdown** – of those in work during 2014/2015 there was a higher proportion in skilled trades in Cornwall (15.1%) compared to the South West (11.6%) and England (10.5%), and a lower proportion in professional occupations (15.7%) compared to the South West (18.8%) and England (19.8%).

- **Education** – the proportion of pupils achieving 5+ GCSEs grades A* - C in Cornwall in 2014/15 was 64.8% which was a slight improvement on 64.5% in 2013/14. Despite GCSE attainment being lower than the South West average of 66.4% in 2014/15, it was higher than the national average which fell from 65.5% in 2013/14 to 64.2% in 2014/15.

- **NVQ qualifications** – while Cornwall exceeds the national averages for NVQ levels 1 – 3, the area is lagging behind in terms of higher qualifications. However, there have been an additional 48,700 residents achieving a NVQ4 and above since 2010.

- **Skills shortages** – the UK Commission for Employment and Skills (UKCES) Employer Skills Survey found that 14% of all establishments in Cornwall identified a skill gap in 2013, with 3% of establishments having a skill-shortage vacancy. This is slightly lower than the national average of 15% (skills gap) and 4% (skill-shortage) respectively. Skills shortage vacancies vary by occupation in Cornwall which demonstrated a greater shortage in skilled trade occupations (16.08%), caring, leisure and other services staff (16.19%) and elementary staff (18.29%). This differs from the national average, which sees greater shortages in professional vacancies (19.27%), associate professionals (18.79%) and caring, leisure and other services staff (18.63%).

- **GVA**[7] – GVA stood at £8.4 billion in 2013 compared to £8.1 billion in 2012. GVA per head was £15,403 in 2013, representing an increase of 2.4% increase since 2012. However, C&IoS LEP have the lowest GVA per head of all the LEP areas at 65.8% (UK = 100).

2.4 Review of existing research

2.4.1 Sector skills studies

In order to support the development of the evidence base for the Smart Specialisation strategy within C&IoS, a number of sector skills studies have been undertaken to provide baseline information and the implications of potential growth opportunities arising for the development of skills within the area. A brief summary of the conclusions from each of the relevant studies is set out below and composite summary of the skill shortages and gaps in C&IoS is set out in the next sub-section.

Aerospace

The Aerohub Skills Action Plan (2013-2022)[8] identified Cornwall as having a small but fast growing aerospace presence, which extends into the wider engineering and advanced manufacturing sectors in Cornwall. While Cornwall has less than 1% of the population, the county's aerospace industry constitutes almost 2% of the UK industry and the qualifications profile of the existing aerospace and advanced engineering sectors is almost comparable to that of the wider UK industry. Cornwall's advanced manufacturing sector includes Marine, Aerospace, Advanced Precision Engineering and General Engineering each of which requires similar skill-sets, with particular needs relating to:

- a firmer foundation of science, technology, engineering and mathematics skills (STEM);
- more people with basic engineering skills;
- more apprentices in manufacturing, advanced manufacturing and aerospace frameworks;
- additional licensed aircraft engineers;
- modular/short courses for up-skilling the existing workforce; and
- deeper and higher skills (Levels 6-8) for aerodynamics, stress engineering, composites (especially ceramic matrix for engines and lightweight, high strength composites for skins/ribs), electronics, avionics, software design and development.

In the short to medium-term the report concluded that there was a need to expand the base of Level 3-5 engineering (electrical, mechanical, electronic, and civil); IT (computer hardware, network and systems design and management, software design); manufacturing management (process, project, production) and aviation operations.

Furthermore it acknowledged the need to ensure that skills in the supply chain are addressed in parallel, particularly for small and micro businesses, which would require more flexible delivery

[7] Gross Value Added is a measure of the economic value of goods and services produced in an area
[8] Pye Tait Consulting April 2013

of engineering skills and knowledge but also up-skilling managers and supervisors in project management, process control and advanced engineering knowledge and skills in the supply chain.

To underpin the provision of more advanced STEM and engineering skills the report recommended more be done to develop the pipeline of skills which encompasses:

- more provision at the school level – building on best practice such as the Bloodhound programme which aims to inspire the next generation of engineers, and to ensure there is a focus on STEM once pilot projects or initiatives funded by Europe for example have come to an end, through the promotion of engineering and manufacturing careers and high quality careers information, advice and guidance which will require more effective education of teachers, careers advisers and parents;
- developing existing employees – through cost effective provision; and
- provision of Level 3, apprenticeships, and higher level skills - through more effective collaboration between employers and providers of apprenticeships in terms of the design and delivery of the apprenticeships, particularly higher level apprenticeships and skills in advanced manufacturing and engineering – to ensure that Cornwall reaches the UK aerospace target of 50% of the workforce qualified to Level 4+.

The report went on to say that the sector needed to be both strategic and operational in terms of workforce planning. From an operational perspective, in order to service Aircraft (MRO) (airframe, engines, avionics); Unmanned Aerial Systems (UAS) support and servicing, aircraft painting, and aircraft disassembly, businesses would primarily need Levels 3-5, but also excellent management, administration, and IT supported by a steady stream of highly qualified people emerging from the regions colleges and universities. These skills would also benefit the wider economy as they would be applicable to both the marine and advanced engineering sectors in C&IoS too.

However, if C&IoS is to attract new high-tech inward investors and research firms these will require a workforce that is qualified at Level 6-8 as well as Level 4 and 5 technicians. This requires vision and a more strategic approach, to build a strong core of higher aerospace skills at the Aerohub and across Cornwall in order to underpin not only the wider Cornish economy but to support the growth of an advanced manufacturing base which complements the UK's wider aerospace strategy, through for example the establishment of a Cornwall Institute for Advanced Aerospace Technology, which would convey Cornwall's ambition. The report recognised that this would be a long-term project (10 year) but one which could start off with virtual provision in the first instance.

Space

A skills action plan for the Space sector (2013-2022) was prepared in December 2013[9]. The core conclusions and recommendations from the research included the following:

- the initial focus for Cornwall in the Space sector – should be space telecommunications and earth observation/environmental monitoring;

[9] Pye Tait Consulting, Scott Space December 2013

- in the short-term, there will not be a big demand for high level skills, but certain types of space-related activity will demand local technician recruits and there will be a cross demand from advanced engineering and manufacturing, software engineering, composites and telecommunications skills at Levels 3-6;
- demand at higher levels is likely to be satisfied from staff brought into the area but high level qualifications in subjects such as astrophysics, materials science and telecommunications are likely to grow in demand as space, aerospace and technology activities expand;
- the potential of space related activities to underpin and leverage scientific and technical developments in other sectors should not be underestimated;
- from a supply side perspective, Cornwall benefits from an established set of high quality educational providers providing the full range of Level 1-5 and higher level skills, including: the University of Exeter (with expertise in astrophysics, star formation, exoplanets, stellar physics, engineering structures, control systems, and remote sensing applications); University of Plymouth (strengths in marine science, robotics, advanced composites manufacturing, environmental technologies, earth observation, engineering and technology); University of Falmouth (media and games software); Truro and Penwith College (sciences, ICT, engineering); and Cornwall College (business skills and management development, IT, engineering, manufacturing);
- centres of gravity include Goonhilly which operates as an earth station with ambitious plans (underway) to develop the site further for satellite communications, deep-space communications and radio-astronomy as well as developing a conference and training centre and reinstating the visitor centre; activities at Falmouth are attracting a number of small high-tech companies some of which are showing ambitions in and resonance with space. Similarly the Aerohub at Newquay is a potential centre of gravity for space activities as the aerospace capabilities on the site are complementary to those needed for space engineering;
- the Tremough Innovation Centre and Environment and Sustainability Institute at the Penryn Campus are catalysts for activities spinning out of the universities and some companies are potentially interested in building systems for space or exploiting technologies developed for space;
- STEM skills are absolutely crucial to the space sector and to allied high-tech sectors. In the longer term, a STEM department at either Penryn or Falmouth would add to the critical mass of science and spaced related activity in the county;
- there needs to be some sort of enterprise hub for space in Cornwall linked to the Satellite applications catapult, the UKSA and European Space Agency;
- integrate a space theme into STEM developments;
- enhance space awareness at schools and within information, advice and guidance (IAG) provision; and

- in the short to medium-term the development of space capability will require the same skill-set as that for aerospace and advanced manufacturing. Specifically, expanding the base of Level 3-5 engineering, IT, manufacturing management skills and aviation/space operations; and
- in the longer term consideration should be given to opening and operating an Aero-Space Academy based at one of the existing college or University sites to attract 14-18yr olds to study STEM based curriculum - leading to engineering, computing and technology A levels and vocational qualifications; and developing higher level degrees (satellite management, systems, advanced telecoms, astro-physics).

Digital

The report 'Identification of Creative and Digital Skills Needs in Cornwall and the Isles of Scilly (July 2013)' was prepared by Perfect Moment in conjunction with Adroit Economics, Digital Peninsula Network, and Creative Skills for Cornwall Council with ESF funding from the Convergence Programme. The outputs from the study were intended to underpin the preparation of a work and skills strategy for the creative and digital sectors in C&IoS and to provide an evidence base to guide future investment. Through analysis of the growth and employment opportunities arising in the sectors and an assessment of the demand and supply of skills, the report identified a number of key issues and recommendations for Cornwall. The key issues related to:

- a limited market and trading conditions acting as the main barriers to growth with marketing skills being their weakest area;
- a mismatch between businesses perceived area of skills weakness, marketing and the training most recently accessed (technical);
- a preference for delivery of intensive training and online delivery;
- only a third of all businesses were interested in accredited training – specifically vocational training (44%), a degree or equivalent (33%) and statutory H&S (30%);
- an industry dominated by micro businesses and self-employment which act as a barrier to businesses acquiring a wide range of skills;
- skills gaps at a national level – particularly in relation to programming – due to a lack of knowledge in the labour market of the opportunities that the work presents for well-paid employment and negative perceptions of the work;
- a need for employees who can combine high level creative skills with high level IT skills; and
- a high number of part-time worker in the sector which present challenges to up-skilling the workforce.

A number of specific recommendations were made to improve both the supply and demand for skills in the creative and digital sectors including:

- provision of an holistic approach to business support and skills – through a light touch business diagnostic service to help businesses identify the 'real' skills and training they require for sustainability and growth;
- provision of support to help businesses understand the most effective way in which skills needs and gaps can be addressed;
- recognition that skills training isn't the only answer for micro-businesses. Creative and collaborative solutions should also be explored to enable businesses across the sectors to access marketing and other business skills;
- support to identify and access new markets;
- provision of services which blend online learning with peer-to-peer learning which provides opportunities to network and access to high-level experts;
- the provision of marketing and sales skills, which businesses cite as key areas of weakness;
- availability of bite-sized higher level training;
- closer working between the employers and schools to improve the perception of IT jobs; and
- additional research into key growth sub-sectors to enable more targeted development.

Marine

In July 2015, Cornwall Marine Network published the findings of their research[10] carried out to identify the current and future job opportunities and associated technical and professional skills needs arising for the Marine Renewable Energy (MRE) industry and what additional training provision was required to fill skills shortages gaps identified by businesses regarding MRE entry and growth. The key driver for the report was an acknowledgement that a suitably qualified, skilled and available workforce was a fundamental industry requirement for sustainable development and growth, but that there were gaps in the available research.

The report identified that future opportunities in Cornwall were most likely to focus on two aspects of the sector – offshore wave and floating offshore wind. The key conclusions with regard to the supply and demand for skills are set out below.

It should be noted, that although this report focused on providing an evidence base to support the technical and professional skills required by the marine technology sector, the sector also recognises that there are a number of more generic skills needs and barriers to engagement faced by the high number of SMEs in the sector. The recommendations listed in the previous section for businesses in the Digital sector are equally applicable to businesses in the Marine Tech sector also, with the inclusion of support for re-skilling at Level 2 and Level 3, so that existing tradespeople can diversify into the new specialisms emerging.

Existing skills and training provision (supply)

[10] Current and future workforce skills and the supply and demand for new or specialised training provision for C&IoS, Cornwall Marine Network July 2015

- Cornwall's businesses already possess the vast majority of core skills required throughout the MRE lifecycle with specialisation of these skills to fulfil job roles within the MRE sector (planning and project management, research and development, feasibility, design, manufacture, installation, operation and maintenance and decommissioning);
- However, there is not MRE engagement with the full coverage of job roles as the industry reaches commercialisation – the opportunities for Cornwall lie in transferring such core skills to the MRE sector or gaining specialist skills/qualifications identified as business skills gaps;
- Training provision within the South West supplies many of the core skills required by industry but there is a clear need for roll out of existing training not yet delivered within the county as well as more targeted training to support the MRE sector; and
- Development of the MRS sector doesn't require new core skills but a new combination of existing skills and competencies (e.g. a combination of technical and maritime skills) or specialist qualifications and skills requirements applicable for delivery as short courses. However, some core skills are facing shortages – for example STEM skills are a pre-requisite. The demand for people holding these skills, predominantly in relation to engineering within Cornwall is currently exceeding supply – particularly at a technician level.

Gaps in skills training provision (demand)

- New qualifications required at an industry level in relation to Level 3 MRE assembly technician; MRE operations and maintenance/service technician; supervisory control and data acquisition; operation of jack-up barges (Levels 2-4); handling of dredging equipment required for sub-sea cable installation; drilling courses; and decommissioning installations;
- Inclusivity of particular themes within existing training courses to make them more applicable to specific MRE job roles – e.g. mechatronics in all engineering design training provision, high voltage power engineering systems to be embedded within electrical design engineering degrees; software training in computer aided design; technical, commercial and legal skills for project management; embedding metallurgy in materials engineering; and quality control engineer training to reach quality assurance certification;
- Extension of existing provision to Cornwall – Level 6/7 training in engineering (all types) - with reliability engineering and a focus on value engineering; high voltage power engineering; materials engineering with metallurgy; aerodynamics training; submerged arc welding; remotely operated vehicle pilot; use of concrete (Levels 1-7); confined space training; and offshore health and safety (H&S);
- Local delivery of a range of short courses required by businesses in transference of core skills – for example, marine operations risk management, project management and administration for engineers, marine mammal monitoring and passive acoustic monitoring;
- Vocational education and training, pathways and industry experience – which will require availability of:

  - higher technician-level and degree apprenticeships;
  - financial incentives for apprentices and employers to encourage more pathways compared with the alternative academic route;
  - shared apprenticeship schemes and use of apprenticeship training agencies;
  - built-in employment policies to retain apprentices after training;
  - use of locally co-ordinated trailblazers – to tailor standards to business needs;
  - shared secondments between businesses – to gain experience within academic courses at University;
  - improved links between businesses and training providers;
  - use of Higher National Certificate (HNC) and Higher National Diploma (HND) course to deliver practical skills; and
  - careers guidance that focuses on how secondary-level education can progress into vocational options.
- Development of core STEM skills for the MRE industry in Cornwall – to address the shortage of engineering skills at all levels. This will require flexibility through modular delivery, retention of the transferability of the skills; guidance around STEM and more specifically MRE related careers and career paths including persuasive communication on the favourable aspects of the industry, highlighting the vast spectrum of jobs, available training, and progression routes; and appointment of business ambassadors to take the lead in the promotion of STEM – particularly business representative organisations and groups; and
- In relation to funding and delivery of training, this needs to:
  - become flexible, employer-led, modular, consolidated and delivered locally;
  - assisted through grants for certification and in the absence of industry standards recognised by the European Qualifications Framework;
  - be more readily available to fund higher level courses – to address middle-level engineering gaps; and
  - be developed through closer relationships between industry and education institutions.

In summary, the report recommends focus is given to the elements of the lifecycle where there are growth opportunities, training becomes more flexible and industry-led, there is greater promotion of STEM from school age, practical experience is given more prominence, capacity building resources are available to tailor provision, and training is in line with industry standards.

Agri-tech

In 2013, the UK government, science base and food and farming industry came together to identify and develop the opportunities and strengths of the UK agricultural technologies sector as a whole. The strategy developed identified a set of actions to deliver a vision for the UK to: become a world leader in agricultural technology, innovation and sustainability; and exploit opportunities to develop and adopt new and existing technologies, products and services to increase productivity and thereby contribute to global food security and international development. With regard to skills, the strategy identified the need for the following, both of which are applicable to agri-tech businesses within C&IoS:

- skills for research – moving towards technology and higher level scientific and managerial skills to match advances in informatics, precision farming and engineering. Many of the skills are interdisciplinary – with a need to bring together agronomy and automation to develop production systems that are less dependent on human labour and interventions. The application of maths and computing are essential to biology for the decoding of plant, animal and microbial genomes. The sector also needs researchers with commercial understanding who are able to see the potential application of their work. In addition to the other key industrial sectors requiring STEM graduates to join the industry, there is also a risk of higher skills shortages in niche areas such as agronomy, plant pathology and agricultural engineering; and
- skills for the take-up of new technologies – and mechanisms to help businesses exchange knowledge, which will require continuing professional development for the current workforce and new recruits to meet demand.

E-Health

To date, there has been limited research undertaken that specifically looks at the skills requirements in E-health, although it is envisaged that the work carried out in relation to Digital skills will be applicable to this sector. The findings set out below are taken from the Evidence Report that underpinned the C&IoS R&D&I Framework. They are based on research and consultations with businesses and practitioners.

The skills needed to underpin E-health encompass the range of health, wellbeing and care disciplines, digital and IT expertise plus business and commercial skills. While consultations indicate the need for some specific skills development areas they also highlight the need for 'translational skills' - skills needed to work across different disciplines, with new technologies - which may be outside the usual professional skills training programmes.

Some initiatives have been developed through the Convergence Programme, which provide a base for further development and/or begin to address specific skills needs of this sector. These include:

- PhD business collaborations - whilst few of the current cohort of collaborations are specifically e-health or e-wellbeing related PhDs, they illustrate an opportunity for business collaboration in R&D which has both higher level skills and business development benefits and provide a model that could be rolled out to all the Smart Specialisation sectors;

- using technology in the health and care sectors - the Convergence Programme has supported the development of health and social care vocational training, with the establishment of a skills escalator project. It has been developed by the C&IoS 'Excellence in e-health and e-care' group which is looking at the full pathway of skills development from low level skills through to degree level. Truro & Penwith College has also developed a telehealth induction programme for Assisted Learning for Independence (ALFI), together with BT Cornwall. It is a modular course and will roll out to new employees as BT Cornwall expands its national hub work outside the county;
- software development - software engineering and programming is identified as a big skills gap in C&IoS. This is important for e-health and e-wellbeing development, where part of the market opportunity could be in the area of innovative software development to support e-health and e-wellbeing initiatives and approaches. Truro-Penwith College are working on an apprenticeship programme to Level 4 with Software Cornwall to help address this skills gap, which could start in September 2015; and
- business skills in collaborative working - a need for businesses and health and care practitioners to have/develop the skills and expertise for working on collaborative projects and looking at innovative approaches and which could include leadership, negotiation, collaboration and an understanding of wellbeing/health prevention. For example, Plymouth University developed a pilot on-line collaborative learning project called 'Stakeholders Online', bringing patients and professionals together to discuss mental health issues, opportunities and solutions using web-casts and an anonymised online discussion forum. For healthcare professionals participation was counted as CPD. This could provide a model with the involvement of businesses to introduce new ideas and discuss approaches with practitioners and users.

Given the work carried out to date and in progress on skills development, there is an opportunity to look at the potential of 'exporting' new skills programmes beyond C&IoS as a market opportunity. Further skills development needs and opportunities could relate to those relevant for social innovations; and to the large healthcare student population in C&IoS including their involvement in clinical placements/working at the community level, which could be a focused opportunity related to e-health and e-wellbeing.

2.4.2 Summary of the skill shortages and gaps in C&IoS

The following key skill shortages and gaps for each of the Smart Specialisation are findings from the research outlined in the previous section, with the exception of e-Health which has been informed by consultations with practitioners at the workshop event held in April 2015 to gather evidence on the key opportunities and barriers to growth for the sector. It highlights some areas of commonality, most notably the need for additional:

- STEM skills;
- engineers at all levels particularly technicians; and
- software engineers and programmers.

Table 2.2: Skill shortages and gaps in C&IoS

Agri-tech	Space/aerospace	Digital	e-Health	Marine
Lack of STEM Agronomy Plant pathology Agricultural engineering	STEM level 3 - 6 (A levels/Diploma/NVQ3 to Bachelor's Degree) Advanced aero-engine design and manufacture. Advanced materials and composites. Aerodynamics. Aircraft and engine control systems. Avionics. Maintenance and repair skills. Software engineers. Electronics engineers. MRO Licensed engineers (stress, fatigue, damage tolerance) Management and operation skills - (manufacturing, process, project, supply chain, inventory, marketing)	Software Engineers IT &Telecoms Management Systems Developers Internet Professionals Programming Marketing and sales Networking Ability to use high level creative skills with high level IT skills.	IT Literacy among Healthcare sector Software engineering Programming Marketing Leadership, collaboration, partnership working	STEM skills, particularly in relation to engineering at a technician level. Core engineering skills at all levels. Middle/technician level engineering skills. Level 2 – (GCSEs, Diploma, Apprenticeship, NVQ L2) Level3 (A levels, Diploma, Apprenticeship, NVQ3) and Level 4 (Higher Apprenticeship, HNC) Level 6 and 7 (Degrees) - mechanical, electrical, electronics, structural, civil, control systems, computer, materials, acoustical engineering. Aerodynamics training Submerged - arc welding courses Remotely Operated Vehicle (ROV) - pilot/ pilot technician Confined space training Offshore H&S

3 Demand and supply of skills for Smart Specialisation

3.1 Introduction

This section presents details of the current and projected employment in the Smart Specialisation sectors. It then forecasts future skills requirements, compares demand with the expected supply of skills and identifies the anticipated skills balance (or relationship between supply and demand).

3.2 Current profile of employment

Estimates of current employment in the Smart Specialisation sectors as defined in the Evidence Report are sourced through 5-digit BRES data (and reproduced in Table 3.1). The BRES dataset provides substantial detail on employment but some care is required in interpretation. BRES employment figures are ultimately survey-based estimates using a sample of some 80,000 companies nationwide, drawn from the Inter Departmental Business Register (IDBR) on the basis of stratified random sampling.

Table 3.1: Smart Sector CWIoS Employment (Evidence Report)

Smart Sector	Employment
Agri-tech	690
Digital Economy	2,212
E-health/wellbeing	11,476
Marine Technology	1,681
Space and Aerospace	562

As such, accuracy is likely to higher where an economic activity is more mainstream, larger-scale and broadly based, spatially. The more that Smart sector activities are emerging rather than established, smaller rather than large, and have more variable representation at lower level geographies, the more likely it is that some estimates will have high sampling errors.

Accordingly, while the figures in Table 3.1 are a useful scalar, it is likely that some lower-level activities will be underrepresented in employment terms. This is an important consideration as the profile of skills associated with development of the Smart Specialisation sectors as a whole must inevitably reflect sub-sector composition. For this reason, we consider a number of weight structures in defining the skills profiles.

Likewise, this discussion confirms that the definition of the Smart sectors is a critical element of the skills profiling to be carried out. By way of example, a significant proportion of the BRES space and aerospace sector in C&IoS is attributed to a specific sub-sector - service activities incidental to air transportation (SIC 52230). This sub-sector includes operation of aerodromes, air-terminals, air traffic control, aircraft refueling, airfield ground services, fire-fighting and prevention and communications. While these are all clearly related to air-transport, the extent to which they all qualify equally as technology driven, and are consistent with Smart sector

perspectives, is a matter of debate. Nevertheless inclusion will have an impact on the skill profiles[11].

Finally, while the matching of SIC codes to technology sectors is a complex task, there is the matter of the extent to which potential supply-chain interactions are accounted for. There is always a risk that sector selection protocols may serve to omit important supply-chain links or that supply-chain links may be exaggerated if these companies supply sectors beyond that of interest[12].

With these caveats noted, we proceed using the sectors definitions detailed earlier in Table 1.1, but with one exception. As shown in Table 3.1, E-Health contains a very large employment figure, as a result of adopting the recommendations and earlier definition of the sector[13], despite the difficulties noted in terms of matching activity to SIC codes.

For the purposes of this skills profiling exercise and assessment of projected demand, we have used an alternative definition. The first step is to move beyond the use of sectors 86101 (hospital activities) and 86900 (other human health activities) as the basis for estimating the size of the e-health sector. It is clearly the case that some element of e-health activity will exist within these sectors but it will not equate to their entirety. Instead we use the (licenced) APS dataset to establish the proportion of health sector employment that is defined as an IT occupation and use this as a scalar applied to the figure in Table 3.1. This will not necessarily 'capture' the full range of e-health activity but it identifies a constituency of individuals more likely than not to be party to it.

The second step is to use UK input-output tables to examine the potential for supply-chain links. The input-output tables provide a summary of activity in the economy, including intermediate consumption – the technical term used to represent firms buying and selling to each other. There are two ways of using this table. In the first instance, it can be used to identify the pattern and relative scale of purchases by one sector from other sectors. Secondly, it is possible to place a scalar on the amount of sales of a given supply sector to a demand sector[14].

Using this approach, and restricting analysis to a narrow range of potential supply sectors (manufacture of computers/communications equipment, computer consultancy, computer/IT services, data processing/hosting, and web portals), the definition of the e-health sector is reduced from 11,476 to 434, a number that more closely corresponds to the values of other sectors. The employment figures in Table 3.2 (adjusted by the revision of e-health) form the first 'scale-related' element in the skills exercise.

[11] This sub-sector doubles/halves as a proportion of the total space/aerospace sector depending on which geography is chosen.

[12] For example, including all employment in a sub-sector that supplies a Smart sector as part of the Smart sector supply chain will exaggerate the size of the Smart sector if the sub-sector also supplies other sectors.

[13] Smart Specialisation Framework, Strategic Economics Ltd 2014

[14] There is a complexity in that while the Supply and Use tables published annually for the economy are similar to IO tables, they are not the same and some matrix manipulation is required to deliver appropriate tables.

Table 3.2: Smart Sector CWIoS Employment (with E-Health revision)	
Smart Sector	**Employment**
Agri-tech	690
Digital Economy	2,212
E-health/wellbeing	434
Marine Technology	1,681
Space and Aerospace	562

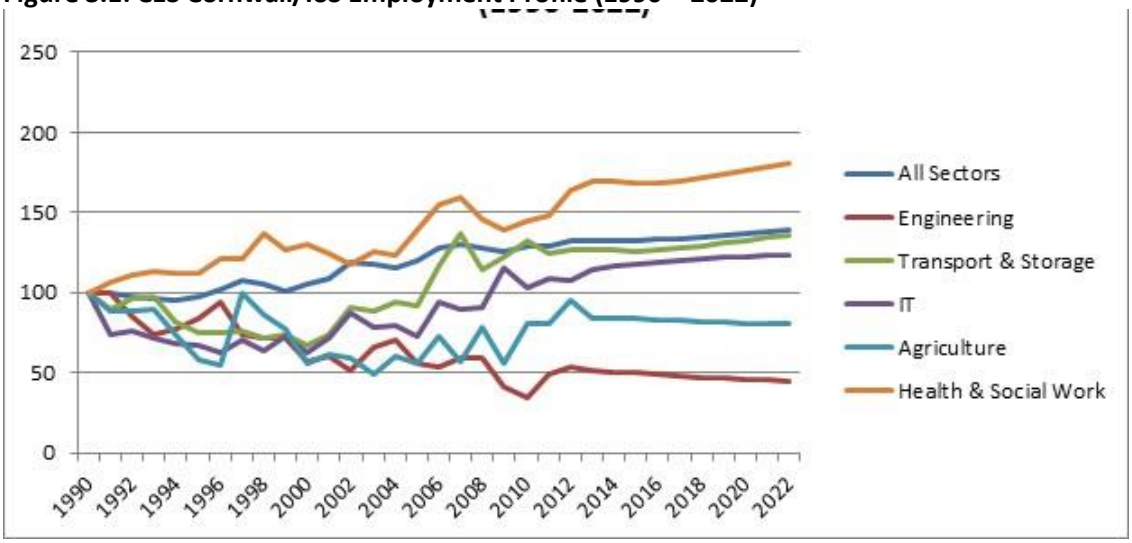
3.3 Employment projections

The next stage of the skills profiling, requires consideration of the projected change in the mix of sub-sector employment over coming years as this will also drive estimates of skill needs.

A perspective on future employment trends is given by the CES Working Futures datasets. These are commissioned annually from the Institute for Employment Research as a guide to skills issues in the UK and typically take a forward view, which at this moment in time, extends to 2022. The datasets are useful in that they enable both an historic and (short-term) future perspective, although it should be noted that the sub-regional (LEP level) coverage is limited to 22 sectors compared to the 75 sectors available at regional and national geographies.

Figure 3.1 provides a summary of CES employment profiles for (broadly) Smart Specialisation sector activity across C&IoS from 1990 to 2022 (indexed to 100 at 1990). While the historic data is interesting, there is a very clear difference between the profiles moving forward from the present day. Whereas employment in agriculture and engineering (manufacture of computers and related, electrical and other equipment) is projected to decline, the reverse is true for health and social work, transport and storage, and IT (telecommunications, computing and information services).

Figure 3.1: CES Cornwall/IoS Employment Profile (1990 – 2022)



With just 22 sectors to describe the entire C&IoS economy, these employment profiles are broad and some distance from the 5-digit BRES definitions used in the Smart Specialisation Evidence Report. As such, while they provide an indication of trends, they are of limited assistance in addressing the issue at hand, namely the profile of employment that should be used as the basis of the skills analysis.

There are a number of options for refining the employment profiles for example, we could simply use original (CWIoS) Smart BRES sector definitions as the basis for the skills analysis and take the view that there is likely to be only marginal change in sub-sector mix over the course of the next few years (this could in turn, be adjusted to reflect assumptions about the impact of intervention strategies).

An alternative option might be to assume that the CWIoS Smart sectors are likely to be similar, in relative employment terms, to comparable sectors in another geography so that the distribution of employment in the latter can be used to provide an appropriate set of weights. It could be argued that this process provides an indication of a 'mature' rather than emerging Smart Specialisation sectors and is more consistent with the aims of the exercise as whole, however we have used an approach which is a variation on the first option.

Our approach maintains the original Smart Specialisation BRES sector definitions but links the underlying sub-sector performance to more detailed economic projections. For example, it takes the 2014 baseline position and keeps a fixed relationship between CWIoS Smart sub-sectors and CES South West employment projections[15]. We then build on this profile to incorporate 'expansion demand' or the impact of the ESIF Smart Specialisation interventions and 'replacement' demand to arrive at the projected demand for employment by 2022.

Estimates of the expansion demand from the ESIF investment have been based on the broad profile of spend across the Smart Specialisation sectors set out in the Smart Specialisation and R&D&I Framework 2015, and a projected cost per job of £100,000, given the nature of the R&D&I interventions involved. The replacement demand on the other hand, refers to the need for employers to replenish their workforce for a variety of reasons (most notably retirement, occupational mobility and geographical mobility) resulting in employee turnover. Generating estimates of replacement demand is far from straightforward as it is necessary to collate intelligence on drivers of change in the relevant workforce. As far as the Smart Specialisation sectors are concerned, we have generated replacement demand estimates on the basis of intelligence within the CES datasets. We have constructed replacement rates for each of the broad sectors by:

- taking the workforce age profiles contained in the CES for the South West and used these as a proxy for C&IoS;
- applying CES South West retirement rates (by age-band) as the basis of C&IoS retirement profiles; and
- adopting CES patterns of occupational mobility evidenced in the South West.

South West data profiles have been used because APS datasets are not robust at the local level.

[15] Effectively linking the sub-sectors to a larger 'host' sector in the context where a more nuanced set of projections are feasible using 75 sectors.

The Smart Specialisation sector demand profiles that result from both the expansion and replacement demand are outlined in Table 3.3. Over the course of the period to 2022, it is estimated that an additional 3,300 jobs will be required to sustain the Smart Specialisation Sectors. This figure comprises growth of 1,100 jobs attributable to the CES forecasts plus ESIF investment and just under 2,200 jobs of replacement demand.

Table 3.3: Projected CES employment demand by 2022

	A. 2013 Baseline	B, Total Employment 2022 (CES forecasts)	C. Total Employment 2022 (CES and ESIF)	D. Net New Jobs 2013-22 (D=C-A)	E. Replacement Demand 2013-22	F. Total Recruitment Demand 2013-22 (F=D+E)
Aerospace	562	633	898	336	276	612
Marine	1,681	1,712	1,946	265	581	846
Digital	2,212	2,167	2,347	135	804	939
Agri-tech	690	728	859	169	338	507
E-Health	434	499	631	197	178	375
Total Jobs	5,579	5,739	6,681	1,102	2,177	3,279

3.4 Future skills profiles

3.4.1 Methodology

Constructing a profile of the skills required by the Smart Specialisation sectors requires us to:

- establish skill distributions for the underlying sub-sectors; and
- identify the nature of any skills deepening likely to take place over time.

Given the nature of demand, different skills profiles will be required for the jobs arising from the expansion and replacement demand.

As referred to earlier, our analysis is based on detailed scrutiny of two datasets – the CES Working Futures datasets and the (licenced) Annual Population Survey[16] [17]. The CES datasets provide a time-series record and projections of employment and skills distribution for 22 sectors (Cornwall & Isles of Scilly) and 75 sectors (South West), while the (licenced) APS, provides a much more detailed sector breakdown but is ultimately sample based with the same issues discussed in relation to BRES relating to sectors and geography.

The obvious approach to defining the sub-sector skill distributions would simply be to match the BRES Smart sub-sector definitions to the APS at the Cornwall and Isles of Scilly level. However this is not viable as the APS coverage of sub-sectors at sub-regional level is not robust (the APS

[16] Office for National Statistics. Social Survey Division. (2015). *Annual Population Survey, January - December, 2013*. [Data collection]. *2nd Edition.* UK Data Service

[17] While both datasets provide relatively detailed skills information, since one purpose of the study is to contrast demand-side skill needs with resident-based skills status, and the latter is generally reported for NVQs rather than QCFs, we use the NVQ qualifications structure as the framework of analysis.

profiles are more robust, in terms of sampling, at larger geographies, particularly the national level).

An alternative would be to set the APS to one side and use the 2 digit skills profiles outlined in the CES, at the South West level, as the basis for the analysis[18]. This would have the benefit of profiling on the basis of a 'proximate geography' and allow some variation in skills profiles but (despite the 75 sectors available) would not reflect the subtleties of sub-sector activity implicit within some Smart sector definitions.

A third option, and the one used for this analysis, involves mixing elements of the two procedures described as this also facilitates analysis of skills deepening. It involves integrating the datasets by matching/reweighting the South West CES and APS datasets at two-digit SIC level (thereby ensuring there exists a consistent skills distribution at two sector level) and then using APS sub-sector variation in skills profiles as the basis of more disaggregated profiling.

One of the major issues in projecting the demand for skills is the extent to which skills deepening takes place and the mix of skills changes over time. The issue is illustrated in Figure 3.2 which shows the skills distribution of the Cornwall and Isles of Scilly employment base as reported by the CES. This skills mix is generally stable until the early 2000s from which point there is a pronounced rise in the share of Level 4+ qualifications (offset lower down the skills spectrum) with projections that the share will reach some 45% by 2022.

Figure 3.2: CES CWIoS Skills Profile (1990-2022)

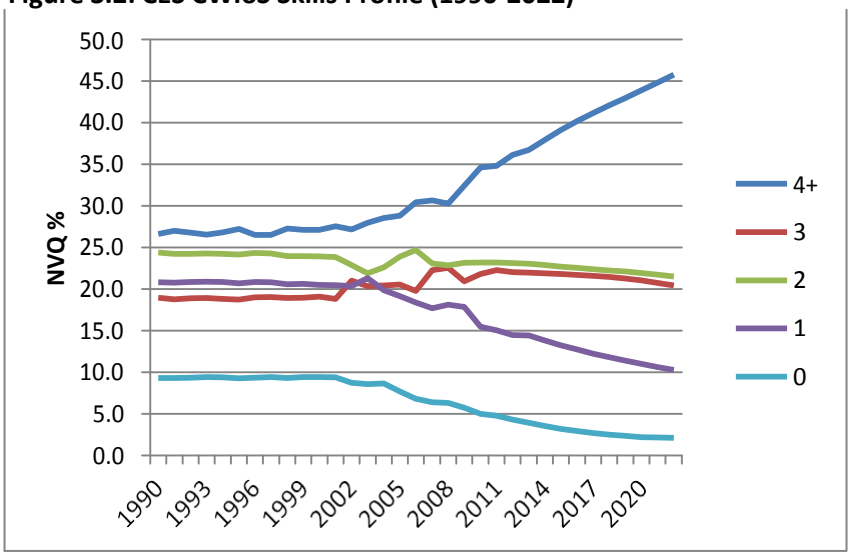
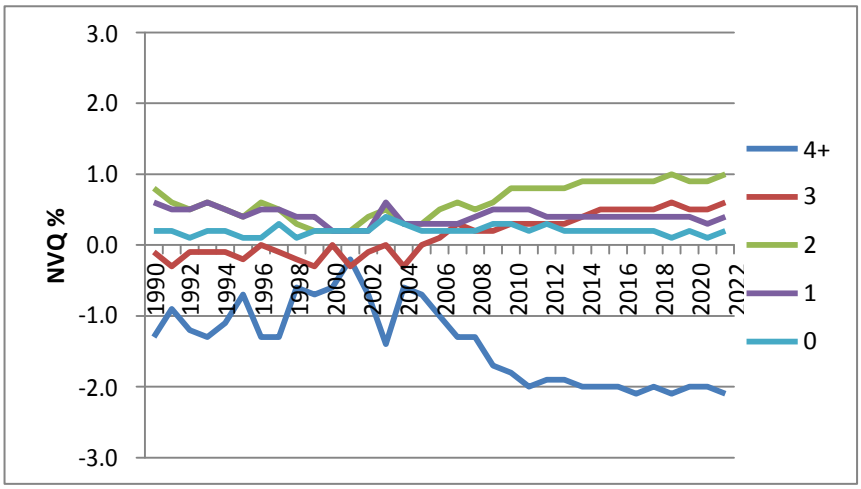


Figure 3.3 provides another perspective and illustrates the differential share of NVQ's between Cornwall and Isles of Scilly and the South West[19]. While the NVQ 4+ differential is prominent, it is important point to note that the penetration of CWIoS skills is projected to be broadly similar to that for the wider South West[20], which is a useful guide to skills deepening in the period 2014 to 2022.

[18] The 22 sectors available for CES Cornwall and Isles of Scilly do not provide sufficient gradation.
[19] Defined as CWIoS share less the SW share – positive values imply greater penetration in CWIoS than the SW and vice versa.
[20] This is something of a simplification in that the comparison makes no adjustment for variation in economic activity between the two areas.

Figure 3.3: CES CWIoS/SW Skills Differentials (1990-2022)



3.4.2 Existing and future skills profiles

On the basis of this logic, and with reference to the requirements specified earlier, skill profiles are provided adopting a protocol whereby:

- Smart Specialisation sectors activities are defined using the definitions outlined in the Smart Specialisation Evidence Report with the exception of the e-health sector which is redefined as described;
- Smart Specialisation sector scale has been identified by maintaining the Smart Sector concentration relative to the South West and factoring in expansion and replacement demand;
- skills profiles are defined on the basis of the integrated CES/APS approach described; and
- sector skills deepening is assumed to follow projected CES estimates for the South West.

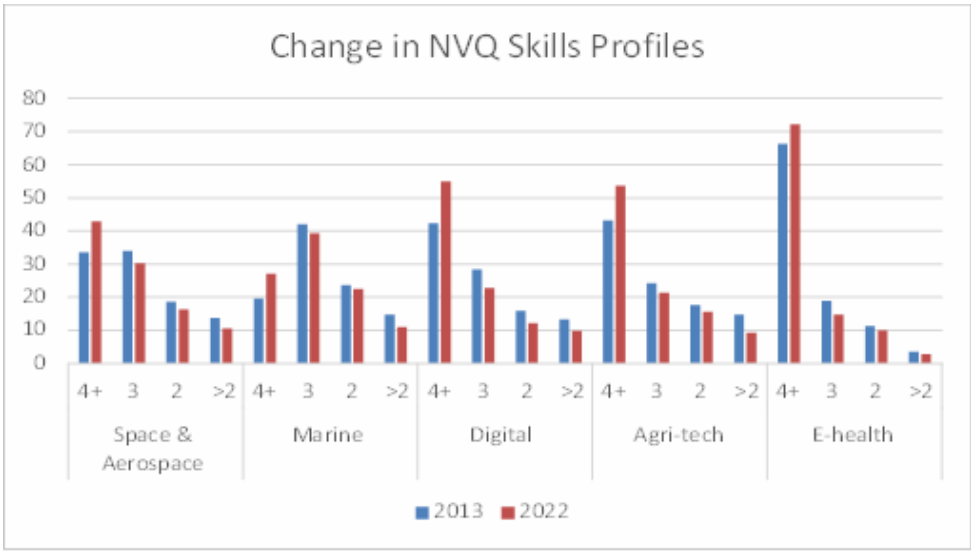
Table 3.4 details the results of this set of assumptions in terms of skills profiles for each of the Smart Specialisation sectors. Figure 3.4 shows the change in NVQ profiles from 2013 to 2022, with all sectors showing an increase in the proportion of jobs requiring higher level skills at NVQ Level 4 and above.[21] Across the Smart sectors as a whole an average of 56% of jobs are projected to be requiring Level 4+ as compared with 45% in the economy as a whole.

[21] The lower level of additional NVQ4+ qualifications for the Marine Industry, and correspondingly higher number of NVQ3 requirements, results from the SIC definitions and codes used to underpin the analysis (as agreed by the Future Economy Working Group). It is envisaged that the inclusion of additional classifications for example control systems technologies; communication technologies, (marine) environmental technologies and oceanography would raise the requirement for Level 4+ qualifications in this Smart Specialisation sector.

Table 3.4: Projected CWIoS Smart Sector Skills Profiles: 2022

Smart Sector	NVQ4+	NVQ3	NVQ2	<NVQ2	Total
Agri-tech	53.7	21.3	15.6	9.4	100
Digital economy	55	22.9	12.2	9.9	100
E-health	72.2	14.8	10	2.9	100
Marine Technology	27.1	39.3	22.5	11.1	100
Space/Aerospace	42.9	30.3	16.3	10.5	100

Figure 3.4: Change in the profile of NVQs by Smart Specialisation Sector



In absolute terms, as shown in Table 3.5, the profiling of skills demonstrates the need for an additional 2,000 people with higher level qualifications at NVQ 4+ by 2022.

Table 3.5: Breakdown of NVQ skills requirements by Smart Specialisation sector, 2022

	Total Expansion and replacement	NVQ 4+	NVQ 3	NVQ 2	NVQ 1	None
Aerospace	609	304	170	90	45	0
Marine	846	346	287	174	45	-6
Digital	937	747	106	53	37	-6
Agri-tech	509	311	101	72	17	8
E-Health	372	289	42	34	6	1
	3273	1997	706	423	150	-3
%		**62%**	**24%**	**14%**	**5%**	**0**

The change in the distribution of NVQ Level 4 + qualifications in relation to Foundation, Undergraduate and Postgraduate qualifications between 2013 and 2022 is shown in Table 3.6. Growth of post graduate level qualifications across all sectors has resulted in a decline in

demand for both graduate and foundation level qualifications, although the proportion of graduate level jobs remains the most popular of all three higher level qualifications. By 2022, across all the Smart Specialisation sectors there is forecast to be a requirement for an additional:

- 599 postgraduates (30%)
- 1,118 graduates (56%)
- 280 foundation level graduates (14%)

Table 3.6: Cornwall: Distribution of Level 4+ Skills (%)

	Post Graduate (Level 7&8)		Graduate (Level 6)		Foundation (Level 4,5)	
	2013	2022	2013	2022	2013	2022
Aerospace and Space	21.6	27.0	62.2	58.8	16.2	14.2
Marine Technology	23.0	28.9	62.9	57.7	14.1	13.4
Digital	26.3	33.0	63.2	55.9	10.5	11.0
Agri-tech	32.5	37.8	58.5	54.6	8.9	7.6
e-health	21.4	25.7	45.2	52.6	33.4	21.7

Though starting at different points, the profiles presented in Figure 3.4 previously are consistent in demonstrating a shift in requirements up the skills spectrum. This applies equally in marine technology and aerospace/space despite more extensive Level 3 roles within the sectors. As such, the implication is that jobs created by any intervention strategy will converge towards these profiles if the jobs are distributed in line with sub-sector activity profiles.

Table 3.7 provides another perspective outlining anticipated occupations and roles for each of the sectors. This is based an analysis of Smart Specialisation sector composition within the APS. The following profiles present a breakdown of occupations for the Smart Specialisation sectors at the UK level, which act as a comparator for what a mature market might look like, and are helpful in terms of planning future education and training course provision.

Table 3.7: C&IoS Smart Sector Occupations and roles

Occupations	%	Cum %	Dominant Roles
Agri-tech Sector			
Skilled agricultural & related trades	14.9	14.9	Agricultural & related
Science, Research, Engineering Profs	14.2	29.1	IT, telecoms, engineering
Business Assoc prof	9.6	38.8	Sales, marketing, related
Corporate Managers & Directors	8.8	47.6	Functional & production managers
Elementary trades & related	8.5	56.0	Elementary agricultural
Business, media professionals	7.1	63.2	Planners, surveyors, consultancy
Admin occupations	6.8	69.9	Finance, recording
Digital Economy Sector			
Science, Engineering, Technology prods	57.0	57.0	IT & Telecomms
Corporate Managers & Directors	11.2	68.2	Functional managers
Business Assoc prof	8.0	76.2	Sales, marketing, related
Science, Engineering, Assoc Profs	7.5	83.7	IT technicians

Table 3.7: C&IoS Smart Sector Occupation s and roles			
Occupations	**%**	**Cum %**	**Dominant Roles**
e-health/wellbeing Sector			
Health Professionals	54.8	54.8	IT & related
Corporate Managers & Directors	11.7	66.5	Functional & production managers
Business Assoc prof	7.9	74.4	Sales, marketing, related
Science, Engineering, Technology Profs	7.8	82.3	IT & Telecomms technicians
Marine Technology Sector			
Skilled metal electrical, electronic trades	22.5	22.5	Metal/electronic working, fitting, instruments
Science, Engineering, Technology Profs	13.5	36.0	Engineering professionals , IT
Corporate Managers & Directors	9.8	45.9	Production, functional, transport managers
Business Assoc prof	9.3	55.1	Sales, marketing, business, finance
Process, Plant, Machine Operatives	8.1	63.3	Assemblers, process operatives
Admin Occupations	8.1	71.4	Finance, recording
Space/Aerospace Sector			
Science, Engineering, Technology Profs	14.7	14.7	Engineering, IT
Skilled metal electrical, electronic trades	13.4	28.1	Metal/electronic working, fitting, instruments
Leisure , travel, related	11.1	39.2	Leisure/travel services
Business Assoc prof	10.2	49.3	Transport, business, sales
Corporate Managers & Directors	7.7	57.0	Production, functional, transport managers
Science, Engineering, Technology assoc	7.5	64.5	Science, engineering, production associates
Elementary Admin & Services	7.2	71.7	Security, cleaning, storage

3.5 The supply of skills

The final element of the skills profiling is to place the analysis of skill requirements in a context related to the resident skill-base of Cornwall and Isles of Scilly. There are two ways of developing a picture of future resident skills:

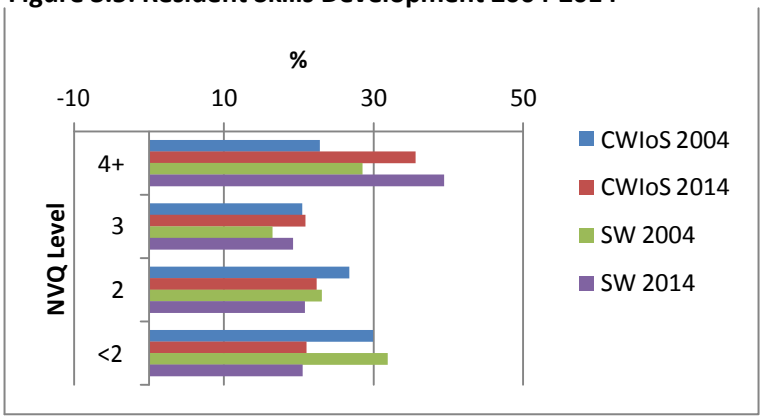
- construct a specific cohort progression model which combines basic demographic information (resident numbers, mortality, migration/immigration) with evidence in relation to both existing qualifications achievements and qualifications progression (i.e. what proportion of a given cohort with a given qualification progress to a higher qualification) to generate a distribution of resident skills across future years; or
- apply a simple linear trend based on evidence of change in skills profiles over recent years, a process that is much less research/input intensive but also less nuanced in terms of underlying drivers.

Given the scope of this skills profiling exercise, the second approach is adopted here and relies on intelligence provided by the APS[22]. Figure 3.5 below details the reported skills profiles of economically active residents in both Cornwall and Isles of Scilly and the South West for 2004 and 2014[23].

[22] This is sourced via published APS information rather than licenced APS data.
[23] Comparisons of this nature are only broad in nature given differences in sampling frames and approaches over time.

Over the course of ten years the evidence suggests that Cornwall's share of level 4+ qualifications has expanded extensively in line with the regional picture (although relatively more so for CWIoS) with offsetting adjustments primarily at Level 2 and below.

Figure 3.5: Resident Skills Development 2004-2014



Source: Annual Population Survey

Table 3.8 illustrates the published APS CWIoS skills profile for 2014 and reports the range of potential 2022 values using linear trend projections changing at:

- the same annual rate as 2004/2014
- half the annual rate 2004/2014.

The range values are consistent with 2004/2014 trends expanding the share of Level 4+ qualifications regardless of the trend rate applied. Level 3 share remains broadly stable in all circumstances with the expansion at Level 4 offset at Level 2 and below.

Table 3.8: Projected 2022 CWIoS Resident base skill distribution range (%)

NVQ	2014	2022
4+	35.6	38.2 – 45.6
3	20.9	21.0 - 21.2
2	22.4	18.9 – 21.6
<2	21.0	14.4 – 19.2

3.6 Skills balance

A significant number of assumptions are required to generate the demand-side and supply-side profiles discussed. While bringing the two together is an obvious next step, this stretches the analysis substantially.

It is not possible, in the absence of extensive survey and modelling work, to assess in detail the volume of future residents sufficiently qualified or qualified/skilled in appropriate areas/trades for each/any of the Smart Specialisation sectors.

It is possible, on the other hand, to provide a broad, general overview by contrasting projected supply-side (resident) skills profiles against demand-side (Smart sector) profiles. This is a very rough and ready approach that focuses on skills/qualifications patterns at the expense of any volume considerations.

Table 3.9 outlines the results of contrasting the two dimensions using six classifications. The skills position is defined as 'balanced' if demand-side skill share lies between the supply-side range values, moderately or extensively in deficit (MD/ED) if demand-side skill share exceeds the upper supply-side range value by less/more than 20% with moderate/extensive surplus (MS/ES) defined in the reverse way.

Table 3.9: Skills balance

NVQ	Agri-tech	Digital Economy	e-health	Marine Technology	Space & Aerospace
4+	MD	ED	ED	ES	BAL
3	MD	MD	ES	ED	ED
2	MS	ES	ES	MD	MS
<2	ES	ES	ES	ES	ES

It is clear that this approach is highly sensitive to underlying assumptions but (in the context defined) suggests that[24]:

- securing appropriate Level 4+ skills may prove troublesome particularly if the Smart Specialisation sectors are to develop into mature technology driven activities (i.e. at growth rates above current forecasts);
- securing appropriate Level 3 skills may be difficult for some of the Smart Specialisation sectors (e-health, marine technology and space/aerospace) but not all; and
- it is not anticipated that there will exist any restrictions in terms of satisfying Level 2/lower requirements.

It is also apparent that the Smart Specialisation sectors are going to experience increased competition with other parts of the C&IoS economy to recruit higher level skills. Currently 2.30% of all Level 4+ employees are employed in the Smart sectors. However, if skills requirements to support projected growth are to be achieved, their share of the required recruitment of Level 4+ individuals (excluding replacement will need to almost double to 4.23% (see Table 3.10).

Table 3.10: Projected increase in the share of Level 4+ individuals in the Smart Specialisation sectors by 2022

	All C&IoS	All Smart	Space	Marine	Digital	Agri	E-health
2013							
Employees	242,295	5,579	562	1,681	2,212	690	434
%L4+	36.7	36.6	33.6	19.7	42.3	43.2	66.3
No L4+	88,922	2,041	189	331	936	298	288
% of all L4+ employees	100.0	2.3	0.2	0.4	1.1	0.3	0.3
2022							
Employees	254,287	6,681	898	1,946	2,347	859	631
%L4+	45.0	46.7	42.9	27.1	55	53.7	72.2
No L4+	114,429	3,120	385	527	1,291	461	456
% of all L4+ employees	100.0	2.7	0.3	0.5	1.1	0.4	0.4
Net growth							
No L4+	25,507	1,079	196	196	355	163	168
% of all L4+ employees	100.0	4.2	0.8	0.8	1.4	0.6	0.7

[24] It is important to be aware that even marginal changes in assumptions will result in a different classification pattern.

4 Current Provision

4.1 Introduction

This section sets out a review of the funding available for skills development and of existing provision within C&IoS.

4.2 Funding skills provision

Funding the development of skills for individuals and businesses in the Smart Specialisation sectors will come from a range of sources, as outlined in Table 4.1. Mainstream, government funding will be provided primarily from the Skills Funding Agency (SFA), an executive agency of the Department for Skills, Innovation and Business (BIS) and other executive bodies such as the Higher Education funding Council for England (HEfCE), UK Commission for Employment and Skills (UKCES) and Innovate UK. Raising awareness of STEM within schools and providing assistance for people outside the labour market will also involve the Department for Education (DfE) and the Department for Work and Pensions (DWP). In addition to central government funding, the local authorities also provide funding through their Education and Skills budgets, for example to fund Adult and Community Learning and the LEP has funding to allocate to projects as part of their Growth Deal from Government. Following on from the Convergence Programme, C&IoS also have €603,706,863 funding available from the European Structural and Investment Fund for 2014-2020.

Alongside this public sector and European funding, the UKCES is responsible for promoting private sector investment in skills, either individually or in collaboration with other employers and partnerships as a central part of long-term growth plans. Table 4.1 presents an overview of generic funding to support skills development. Additional funding is available to support some of the Smart Specialisation sectors, for example through agencies such as the UK Space Agency (UKSPA, also part of BIS), which is outlined in more detail in the evidence report[25] prepared to support the Smart Specialisation and R&D&I framework.

Table 4.1: Funding skills provision and promotion of STEM to assist Smart Specialisation

Funding Department/Source	Funding available:
Department for Education (DfE)	Mainstream primary and secondary education: - Embedding STEM into the curriculum - CPD for teachers
The Careers and Enterprise Co (CIC)	Careers and Enterprise Fund Careers and Enterprise Advisors
Department for Business Innovation and Skills (BIS): • Skills Funding Agency (SFA) – via the National Apprenticeship Service and the National Careers	BIS – Industrial Growth Sectors, particularly Aerospace, Space, and other sectors involving significant technological change SFA: - Traineeships - Apprenticeships

[25] Smart Specialisation and Research and Development and Innovation Evidence Base, AMION Consulting, ICF, JOHT, Catalys 2015

Service • Higher Education funding Council for England (HEfCE) • Innovate UK • UK Commission for Employment and Skills (UKCES)	- Intermediate/Advanced Apprenticeships - Careers IAG - 24+ Advanced Learning Loans HEfCE: - HNC/HND - Foundation Degrees - Undergraduate degrees - Postgraduate degrees – masters; PhDs Innovate UK: - Knowledge Transfer Partnerships - Funding for technical feasibility study and collaborative R&D - Innovation vouchers UKCES - Industrial partnerships - Employer ownership of skills pilot - Employer Investment Fund - Growth and Innovation Fund
Cornwall Council	Adult and Community Learning - Adult education (Adult Skills Budget) - IT Learning Centres Skills for Business - Apprenticeships
Cornwall and Isles of Scilly LEP	Growth Hub - Apprenticeships - Brighter Cornwall – undergraduate work experience
European Funding	ESIF - Skills for Growth ERDF - Postgraduate placements - Postgraduate interns - Graduate Internship Scheme ESF - Skills Support for the Workforce - Adult skills - Apprenticeships - Traineeships - Offenders' Learning and Skills Service

While there is a range of public sector funding, local discretionary funding, European funding and private sector investment available to support skills development and higher level research to support the Smart Specialisation agenda, understanding what is available, for whom, and how to access this funding is often less clear, particularly for smaller businesses and SMEs. Streamlining advice and presenting a coherent 'skills offer' for businesses will be a key priority for the proposed Skills/Growth Hub within C&IoS moving forward.

To encourage greater ownership and leadership of skills, the SFA which is responsible for delivering the government's skills agenda has identified five key priorities for the current year to:

- deliver more high-quality apprenticeship and traineeship opportunities and to champion and encourage participation in apprenticeships and traineeships;
- use simplified funding arrangements to fund the best-quality provision and deliver the government's policy imperatives (including the focus on English and Maths);
- provide financial assurance that the Agency can properly manage and account for over £3.7 billion of public money spent on FE and skills, including working with BIS to monitor and support the financial health of the sector;
- support employers and individuals to achieve outcomes related to employment and learning by commissioning and managing services that are based on customer needs and local priorities; and
- deliver excellent business performance through its people.

The SFA is currently in the processing of reforming the delivery of Apprenticeships and their vision for 2020 has recently been published. Putting employers in the driving seat and overhauling the way apprenticeships are funded are at the heart of the reforms. At this stage, proposed changes, which will be relevant for all employers, including those in the Smart Specialisation sectors, relate to:

- ***improving the quality and recognition of apprenticeships*** – so that all apprenticeships provide substantive professional or technical training, transferable skills and competency in English and Maths; an attractive offer that young people and adults aspire to as a high quality career; availability across all sectors and all levels, including degree; and opportunities that deliver skills, knowledge and behaviours that employers are looking for;
- ***putting employers in the driving seat*** – so that apprenticeships enable businesses to build their pipeline of skilled future staff. Measures include the establishment of the Digital Apprenticeships Service which will be easy to use and navigate; ownership of the design and content of the apprenticeship standards[26] and assessments; and responsibility for payment;
- ***improving routes into apprenticeships and work*** – through clear progression from technical and professional education into skilled employment and apprenticeships and adequate preparation and awareness raising by employers and apprentices;
- ***building the long-term apprenticeship system –*** though the establishment of the Institute for Apprenticeships responsible for overseeing quality; employer-designed standards; and training providers who are responsive to meet the evolving needs of businesses; and
- ***funding apprenticeships*** – employers will choose and pay for training through the Digital service; the funding system will support the commitment to increase the quality and

[26] These standards are currently being created by groups of employers 'trailblazers' across a range of sectors, with the aim that all standards will be employer led by 2017.

quantity of apprenticeships; and funding will be placed on a sustainable footing through the introduction of a 0.5% levy on businesses that have a payroll in excess of £3m per annum.

As the Government reforms are rolled out, it will be particularly important that any interventions to support businesses in the Smart Specialisation sectors are developed in line with new government policy, programmes and funding, and add value to the proposed changes – particularly in relation to the new standards and levy that will be introduced from April 2017.

4.3 Existing skills delivery

An assessment of education and skills provision within C&IoS demonstrates that there is a range of provision in place at all levels from Level 1 through to Level 8+ (Postgraduate Studies), which includes a mixture of classroom, work-based, and research-based provision, funded from a combination of the sources outlined earlier in Table 4.1. A brief overview of provision that supports skills for the Smart Specialisation sectors is set out in the following sections.

4.3.1 STEM support and careers advice

Developing a pipeline of talent to support the Smart Specialisation Sectors in C&IoS is a key priority for the LEP and its partner agencies, to ensure that businesses have the skills they need to take advantage of the new market opportunities arising. At a national level, the government has also recognised that science and research are major contributors to the prosperity of the UK and for the country to remain a world leader in research and technology, it will need a future generation that is passionate about, and skilled in, science, technology, engineering and maths (STEM). In order to inspire students to study science, technology, engineering and mathematics the government has provided funding for initiatives such as:

- 'Your Life' - a 3 year initiative to help young adults in the UK to get the maths and science skills needed to succeed in the current competitive global economy, by inspiring young people to study maths and physics as an opening to exciting and wide-ranging careers and helping employers recruit and keep talent, particularly women;
- STEMNET - a UK wide organisation set up to inspire young people to take an interest in science, technology, engineering and mathematics. The organisation currently runs three national programmes, delivered through local organisations such as the Education Business Partnership South West (EBP-SW, managed by Careers SW) which is the contract holder for Cornwall:
    - STEM ambassadors – there are currently 28,000 volunteers who provide a free resource for teachers by helping them to provide the STEM curriculum in fresh and innovative ways;
    - STEM clubs network - that allow children to explore, investigate and discover STEM subjects outside of the school timetable and curriculum; and

  - schools STEM advisory network – delivered by 45 organisations across the country that offer impartial advice to schools on how they can help get students into further STEM education, training and employment;

- The National Science and Engineering Competition - which is open to all 11 to 18 year-olds living in the UK and in full-time education. The aim of the competition is to recognise and reward young people's achievements in all areas of STEM and encourage others to become interested in STEM subjects. The British Science Association coordinates the competition in partnership with The Big Bang Fair and Young Engineers; and
- The Big Bang Fair – which is the largest celebration of STEM for young people in the UK, aimed at showing 7 to 19 year-olds just how many exciting and rewarding opportunities there are for people interested in STEM subjects.

At the same time, the government also supports the National Science Learning Network, which coordinates the National STEM Learning Centre, 50 Science Learning Partnerships (including Careers SW) and resources to promote Continuous Professional Development for STEM teachers.

Within Cornwall, there are a number of projects that include STEM Ambassadors outlined below - for example: Nurturing Excellence which seeks to promote opportunities within the Food, Agriculture and Horticulture sector; the Plymouth Manufacturing and Marine Challenge Fund project[27] which aims to provide youth people mechanisms to understand and plan for a career in manufacturing and the marine industry; and the national Bloodhound SSC Ambassador programme which is designed to inform, advise and enthuse teachers, students and the general public about the project and ensure that Bloodhound SSC its mission – to create a national surge in the popularity of STEM subjects.

Nurturing excellence

Duchy College is the largest provider of food, agricultural, horticultural and land-based education and training to learners, students and farmers in Devon. Its Rural Business School has worked with thousands of farmers over the whole of the South West, running many events for the industry, and the College currently has rural development contracts in excess of £14m.

The Nurturing Excellence project is funded through The Prince's Countryside Fund, Industry Partners and Duchy College and aims to engage over 1,300 young people in activities designed to lead towards local sustainable jobs within the food and farming industry. The project is being delivered by leading employers from the food and farming sector across Devon and Cornwall, working in partnership with Duchy College.

It comprises four industry-focused programmes designed to equip young people with the skills, aptitudes and ambitions to meet local employer needs, contributing to the sustainability of the rural community:

- Apprenticeships - increasing the number of apprenticeships within the sector through employer engagement. The partners will explore new models of delivery, including employer mentoring, to increase the relevance of apprenticeships for the rural economy;

[27] Funded as part of the Plymouth and Peninsula City Deal

- STEM Ambassador Programme - building on an existing programme through recruitment of volunteers from the food and farming sector to inspire young about the possibilities of STEM subjects and careers;
- Internships - an A level/post-16 food and farming bursary with internship offered to students who successfully complete a selection process. Short placements in food and drink companies will provide academically gifted students with the opportunity to engage with the industry, and give businesses the chance to identify potential new entrants; and
- Level 3 Food Technology & Management Diploma - an industry supported vocational route into the sector. The project will also support the introduction of an industry work placement into the programme with employers acting as mentors for learners

Plymouth Manufacturers and Marine Challenge

As part of the Plymouth and South West Peninsula City Deal, both the Cornwall Manufacturers Group (CMG) and Cornwall Marine Network (CMN) have secured resources from the Manufacturers and Marine Challenge Fund to deliver projects that provide mechanisms for young people to understand and/or plan for careers in manufacturing and the marine industry by overcoming challenges to planning of activities (both by manufacturers and schools/colleges/youth groups) and by establishing activities that make young people more employable. The CMG project is working with six schools initially to establish links with employers, provide CPD for teachers, develop collaborative projects that can be embedded into the curriculum and overcome bureaucracy of Health and Safety attached to school visits to employer sites, while CMN has created a team of STEM focused ambassadors to promote marine careers to young people across all 32 secondary schools in Cornwall and providing links and referrals to the STEM Ambassador Network.

Careers Advice

In addition to the various STEM ambassador programmes, there are a number of other mechanisms for promoting the potential career opportunities arising within the Smart Specialisation sectors, which are currently being developed and delivered by Cornwall Council, the LEP and its partner agencies, for example:

- Cornwall Marine Academy – engages with young people aged 14-24 years to promote marine careers, provide vocational work experience and improve employability skills. In addition to the team of 69 marine ambassadors, 51 businesses provide vocational work experience, with some leisure marine businesses using participation with water sports to improve planning, team work, problem solving and communication skills;
- the development of a 'Cornwall Careers Offer' as part of Cornwall's Devolution Deal, which will seek to co-ordinate and join up CEIAG activity including the roll out of the National Careers Company Enterprise Adviser programme and the National Career Service Inspiration agenda which aims to recruit volunteers across a range of sectors to go into schools to inspire young people about their careers;
- provision of IAG services by Interserve who work with schools across the region to raise awareness of apprenticeships and traineeships on behalf of the National Apprenticeship

Service (NAS) providing information on progression routes and higher level apprenticeships; and

- your future careers events – organised by Cornwall Chamber, which will be focused on specific sectors, with the exception of the Apprenticeship Event which will coincide with National Apprenticeship week 2016.

4.3.2 Further Education (FE) Provision

There are two FE Colleges within Cornwall, 14 secondary schools with sixth form provision and a range of other private and voluntary sector companies that are responsible for delivering post 16 education and training in Cornwall and the Isles of Scilly. The Learning Partnership for C&IoS was established in 1999 to achieve a culture of lifelong learning which would assist economic regeneration and underpin social inclusion by fostering collaborative approaches to education and training. The organisation develops projects (with European and mainstream funding) that provide training and skills to the people of Cornwall on behalf of its partner organisations, which include colleges & other training providers, voluntary & community organisations, business organisations and the statutory sector. In addition to the Learning Partnership however, there are also a number of other private and voluntary sector training providers and agencies who manage and distribute funding to smaller sub-contractors.

The two Colleges deliver a range of courses that include A-levels, NVQs, Apprenticeships, Diplomas and Degrees (Higher Education).

The Cornwall College Group

The Cornwall College group is the county's largest education and training provider with over 35,000 learners of all ages each year, of which 2,000 are currently studying at University level. The college has supported 10,000 apprenticeships over the last 10 years becoming the most successful provider of apprenticeships in the South West. The College has campus operations at 10 locations across the South West, which include the Duchy College, Falmouth Marine School, and the Engineering Skills Centre, all of which provide specialist support for a number of the Smart Specialisation sectors.

In 2013/14 the college had 17,770 enrolments of which 1,670 (9.4%) were for HE, and a further 16,100 for FE in classroom and work-based learning. In total 12% of the FE starters were for work-based apprenticeships and at least 25% of all enrolments were in subjects relevant to the broader Smart Specialisation sectors (including 1,020 science and maths; 1,500 agriculture, horticulture, animal care; 1,180 engineering and manufacturing technologies; and 440 ICT) as shown in Table 4.2 below.

The College provides training courses for 16-18 yr. olds, adults, businesses, leisure, apprenticeships, and University level students.

In addition to the sector focused support provided at the Duchy College (Agriculture, Horticulture, Food Manufacturing and Technology, Land Based Engineering and Construction, Animal Management and Veterinary Nursing); Falmouth Marine School (Boat Building, Leisure and Watersports, Marine Engineering, Marine Science and Biology) and the Engineering Skills

Centre, the college works pro-actively with other sector networks and individual companies to provide tailored, demand led provision. Examples include:

- joint work with Software Cornwall and one of its members to co-design a new training framework that combines software engineering skills with design and creativity;
- active involvement with the Nurturing Excellence programme and current work on the establishment of a significant capital Research and Development project 'Future Farm' which will see the establishment of a Dairy Unit that will offer applied research and teaching incorporating new technologies from around the world for the benefit of the farming communities across the region;
- the development and design of new curriculum for the Cornwall Manufacturing Forum as part of their UKCES Employer Ownership of Skills pilot project; and
- the establishment of a formal Memorandum of Understanding (MOU) with Cornwall Marine Network to define their growing relationship of collaborative working, which includes joint delivery of Marine Engineering Apprenticeship training between Falmouth Marine School and CMN.

Truro and Penwith College

Truro and Penwith College was established in 2008 (following the merger between the two colleges) and now offers a range of educational choices, supported by a range of resources and purpose-built facilities from campuses in Truro and Penzance.

During 2014/15 the College enrolled approximately 16,000 students of which 93% were retained. A breakdown of the students by sector for the year is set out in Table 4.2 below. Of the total enrolments in 2014/15, 83% (13,500) were 16-18 year olds and over half of these students were studying A and AS level courses, with particular strengths in Science and Maths subjects.

In total, the college provides:

- 223 further education courses for 16-18 yr olds;
- 52 higher education/university course from foundation through to postgraduate;
- 55 apprenticeship programmes;
- 368 part time courses; and
- 200 business training options.

Like Cornwall, Truro and Penwith College also work with employers to ensure that provision meets industry requirements. For example, the College worked with NextGen to develop a Level 3 BTEC course in Games Development and worked with BT to establish a Computing Academy offering an extended diploma. The College has similarly worked with Cornwall Manufacturing Forum to design short courses suitable for up-skilling adults and existing businesses, and they also house the Assisted Living for Independence e-health project funded by BT and Cornwall Council.

A breakdown of the number of enrolments for each college by sector is shown in Table 4.2. This highlights a significant number of students studying subjects relevant for the Smart Specialisation Sectors.

Table 4.2: Further Education Provision at Cornwall and Truro and Penwith Colleges by Sector

Sector	Cornwall College 2013/14 starts	Truro and Penwith College 2014-15 leavers
Health Public Services and Care	1610	873
Science and Mathematics	1020	3,441
Agriculture, Horticulture and Animal Care	1500	-
Engineer & Manufacturing Technologies	1180	383
Construction and Built Environment	950	257
ICT	440	548
Retail and Commercial	1480	500
Leisure and Tourism	620	625
Arts and Media	940	2,342
History, Philosophy and Theology	80	544
Social Science	130	1,024
Languages, Literature and Culture	770	1,910
Education and Training	180	-
Preparation for Life and Work	3230	1,982
Business Admin and Law	900	989
SSA X	120	
A-levels	950	Included above
Total	**16,100**	**15,418**

Cornwall Apprenticeship Agency (CAA)

The Cornwall Apprenticeship Agency was established in March 2013 by Cornwall Marine Network, with significant investment from the UKCES (£818k) as part of the Growth Innovation Fund pilot. The agency, which is the only approved Apprenticeship Training Agency (ATA) in England that focuses entirely on creating apprenticeships in SMEs, offers a new, alternative approach for companies wanting to recruit apprentices. The company provides a range of solutions which offer particular benefits for SMEs, including:

- a low risk solution – by matching the right apprentice to the business and employing them on behalf of the company;

- specialist expertise – whereby the company pays the wages and the agency takes care of the payroll, tax, national insurance and paperwork, allowing businesses to focus on growth;
- personalised service – through the provision of assistance to shortlist, interview, and support the apprentice along their pathway;
- a fast and efficient service – by responding quickly to business' needs and delivering a high quality service;
- a package of grants – with up to £1,500 per apprentice plus funded training; and
- a range of Apprenticeships – through their partnerships with a number of colleges which enable them to offer a varied menu of vocations to choose from.

Since the CAA was established and started trading in March 2013, they have assisted more than 5,000 SME employers across a wide range of business sectors, placing more than 1000 new apprenticeships all of whom are aged 16-24 years, contrary to recent national growth of apprenticeships for over 25 year olds.

The CAA now trades nationally, and crucial to its success, are the independent Skills Brokers who work with the companies to develop training plans and appropriate solutions for their workforce. Furthermore the pilot demonstrated that SMEs were willing to invest directly in workforce skills development.

4.3.3 Higher Education (HE) Provision

Combined Universities in Cornwall

Combined Universities in Cornwall (CUC) is a partnership that comprises the two Colleges (referred to earlier) and three Universities working together to give more people the chance to study in Cornwall, and to use university level education to help local businesses and communities to thrive. The partners in CUC are:

- Cornwall College;
- Truro and Penwith College;
- Falmouth University;
- University of Exeter; and
- Plymouth University.

Each of the partners brings something different to the CUC, which means more choice for the people and businesses of Cornwall - which it is hoped will prevent young people leaving the area because it was not possible for them to study their choice of course; and meet the huge demand for part-time or work-based university-level courses from potential mature students in Cornwall who want to enhance their career prospects or pursue their subject interests.

The partners offer a range of full-time and part-time university level courses, short courses, distance learning and online courses, student and graduate work placements, research and

development, specialist facilities and room hire, access to academic expertise and a wide range of other services to support businesses – both small and large.

CUC is playing a key role in the transformation of Cornwall's economy and it is hoped that in the future, the combined effect of a larger graduate workforce, expertise for local businesses and the creation of new businesses through academic research will play a major part in the development of the Smart Specialisation sectors and create the kind of knowledge-based economy that will ensure Cornwall's future prosperity. This will include further expansion of the business collaborations that were developed by the CUC members as part of the ESF funded research programme which provided assistance for post graduate teaching and research during the Convergence programme.

Enrolments at the CUC Partner Universities

In 2014/15, the three Universities within the CUC enrolled over 50,000 students from across the UK and overseas, as set out in Table 4.3 below, of which 7,820 (15%) were postgraduates and 42,910 (85%) were undergraduates. The total number of enrolments has increased in both Falmouth and Exeter but declined in Plymouth, which has seen the total number of enrolments decline year on year since 2009/10.

Table 4.3: Higher Education Enrolments in the CUC Partner Universities 2013/14 – 2014/15

University	Postgraduate		Undergraduate		Total	
	2013/14	2014/15	2013/14	2014/15	2013/14	2014/15
Falmouth	300	270	3,715	4,010	4,015	4,280
Plymouth	3,345	3,170	23,585	22,725	26,930	25,895
Exeter	4,470	4,380	15,050	16,175	19,520	20,555
Total	8,115	7,820	42,350	42,910	50,465	50,730

The overall decline in student numbers in Plymouth follows the national trend as shown in the table below, which on closer analysis of the figures is accounted for by declining numbers of undergraduate enrolments and part-time enrolments.

Table 4.4: National Higher Education Enrolments 2009/10-2014/15

Year	Total No of Student Enrolments
2009/10	2,493,420
2010/11	2,501,295
2011/12	2,496,645
2012/13	2,340,275
2013/14	2,299,355
2014/15	2,266,075

Source: HESA

While the overall number of enrolments has declined in Plymouth in recent years, the number of students enrolled in Science and Engineering has been increasing. In 2009/10 there were 5,101 students enrolled in the Faculty of Science and Engineering compared with 6,036 in 2013/14 an increase from 15% to 22% of all students enrolled. Similarly in Exeter, there has also been an increase in the number of STEM students (but a slight decrease as a percentage of all students) from 5,765 in 2009/10 to 6,833 in 2013/14. This provides a significant pool of potential labour for businesses within the Smart Specialisation sectors.

Higher Education Students in Cornwall and the Isles of Scilly

Within C&IoS there were approximately 15,000 HE students (15,115) living in the area in 2012/13. Over half of these students were either studying online (10.3% - Open University) or locally within one of the 3 CUC partner universities, 32% at Plymouth, 4.5% at Exeter, and 4.2% at Falmouth. If we assume that 21% of the students studying at Plymouth and 32% of the students studying at Exeter are studying STEM subjects, in line the overall percentage of STEM students at both Universities, this would equate to just under 1700 students or potential recruits for the businesses in the Smart Specialisation sectors.

A key issue therefore relates to graduate retention and developing interventions to retain both local domiciled students and other students who have moved into the area to study at one of the CUC Universities. Two examples of initiatives that have been delivered successfully in Cornwall to date, include Unlocking Cornish Potential and Knowledge Transfer Partnerships, as described below.

Unlocking Cornish Potential

Unlocking Cornish Potential (UCP) was a European-funded programme operating with Cornwall that aimed to:

- increase demand for graduate employment in Cornwall; and
- help Cornish graduates access those opportunities.

The main aim was to stimulate demand for graduate employment by incorporating a range of measures to help employers work out what skills they needed to grow their businesses and to recruit and train graduate employees. Key elements of the offer included:

- business development placements – with a financial subsidy and a mentoring and training budget for new recruits;
- GradCornwall - a website designed to support graduates looking for jobs in Cornwall and a resource for businesses looking to recruit staff;
- 'stand out from the crowd' - an intensive two-week employability programme designed solely for graduates living in Cornwall. Site visits and information about local employment opportunities were provided to familiarise graduate jobseekers with the local jobs market; and
- graduate start-up support – for individuals interested in setting up their own businesses;

This project been running successfully for over 10 years and is expected to continue with funding from the new ESIF programme.

Knowledge Transfer Partnerships

KTPs bring a university, a business and a graduate together to work on a specific project to facilitate the transfer of knowledge, technology and skills in order for the business to realise a strategic objective. The project usually lasts between one and three years with the graduate being supervised by the university partner. While they are not specifically designed (or funded) to promote graduate retention, they will do so if the initiative partners local businesses with local HEIs and local graduates. There are currently 56 KTPs in the South West, a number of which are being delivered by the CUC partners.

4.3.4 Cornwall Works

Cornwall Work and Inspiring Work deliver the economic inclusion objectives of Inclusion Cornwall. It was established to co-ordinate the wide range of activity taking place in Cornwall and the Isles of Scilly to reduce worklessness and raise employment rates. It has brought together local projects, programmes and public services to establish a new way of partnership working. This includes trialing new services and new ways of delivering them, encouraging changes in organisational behaviour where this is a barrier to helping people. The aim of the strategy is to help more people to start work, stay in work and progress in work thereby helping them to achieve their full employment potential. This includes access to employability skills and training for individuals outside the labour market.

The key players in Cornwall Works are the public, private and voluntary and community sectors of Cornwall and the Isles of Scilly, with the strategic lead being provided by Jobcentre Plus, who champion its use in both guiding mainstream and European welfare to work investment.

The Cornwall Works Hub (CWH) links and coordinates welfare to work provision in Cornwall. It aims to assist unemployed individuals and organisations that support them to access the right help at the right time to 'find work, stay in work and progress in work'. As CWH is part of Inclusion Cornwall, it is able to access their wider networks and partnerships to address a number of the barriers that prevent people moving into employment in the first instance. The team offers advice and on how and where to access support services, capacity building through multi agency training and adapts priorities to address gaps in provision.

5 Smart Specialisation - skills framework

5.1 Introduction

This section sets out the Smart Specialisation Skills Framework for C&IoS. The framework has been prepared to guide future support for skills in the Smart Specialisation sectors. Its development has been informed by the analysis summarised in the preceding sections (i.e. previous research; the projected demand for, and supply of, skills; existing provision and funding) and feedback from consultations. The suggested actions under each theme seek to build on existing strengths and address the key challenges that will have an impact on future growth of the Smart Specialisation sectors in C&IoS.

5.2 Key strengths and challenges

A number of key stakeholders and businesses have been consulted in preparing the evidence base to support both the Smart Specialisation Research and Development and Innovation Framework and this review of skills requirements. The following list of key strengths and challenges summarise findings from the desk based review and the consultation process, and have been used to develop the framework for support presented in the next section.

Strengths

- Consensus among stakeholders of the key skills issues that will impact on the Smart Specialisation sectors:
  - Residents skilled at NVQ Level 4+ significantly lower than the national average
  - Up-skilling required across all sectors – as a result of the new technologies arising and in response to the ageing workforce
  - Technicians; engineers; ICT programmers and applications required
- High quality education and skills infrastructure to serve the emerging Smart Markets:
  - Enterprise academy; STEM ambassadors
  - Cornwall and Truro and Penwith FE Colleges – with specialisms (vocational and academic) and both offering higher level provision (foundation degrees)
  - Specialist provision for marine and agriculture
  - Three HE institutions working together under CUC (Combined Universities Cornwall) - Exeter; Falmouth; Plymouth Universities
  - Cornwall Apprenticeship Agency – providing apprenticeship solutions specifically for SMEs
- Provision at all levels – from promotion of STEM at school through to higher level qualifications (Masters research and PhDs)
- Some collaboration among employers in the relevant sectors, existing networks (for example Cornwall Marine Network; Software Cornwall; Cornwall Manufacturers Group) and best practice models to build on
- Good level of employer engagement among colleges/businesses, some among schools/businesses but less developed collaboration among businesses/HE institutions

- Devolution deal and changes to apprenticeships – provide significant opportunities post 2017 and flexibility to target the Smart Specialisation sectors

Challenges

- Demand for higher level qualifications (Level 3 and 4+) and ensuring provision is in line with industry needs as the Smart Specialisation Sectors evolve
- Skills needs relevant to all Smart Specialisation sectors – technical, engineering, creativity, application of ICT, management and leadership
- Targeting different cohorts to ensure there is a pipeline of talent – e.g. attracting younger people to stay in the area (e.g. graduate retention); attracting new entrants into the sectors, some of whom may be outside the labour market, and upskill the existing workforce;
- Greater integration among existing providers and provision of routeways from school through to higher education and employment
- Better promotion of apprenticeships and vocational routeways into jobs as an alternative to the academic route
- Collaboration among employers - variable across the Smart Specialisation sectors
- Lack of current demand from some sectors, and therefore a need to invest in provision in anticipation of the projected growth (which poses a risk for some training providers)
- Training for teachers/trainers - ensuring trainers have up-to-date industry relevant expertise
- Up to date intelligence to ensure provision remains relevant – skills requirements; gaps in provision
- Overcoming other barriers to education and training e.g. access - travel to work and college

5.3 Underlying principles

A set of key principles are outlined below, which are applicable to all strands of support within the framework. They stress the need for:

- ***Flexible delivery –*** through, for example, modular provision or blended learning so that individuals can tailor training to suit their circumstances and can dictate the pace at which the training is carried out. Flexibility will also be required in terms of funding, particularly where eligibility criteria are restrictive.
- ***Accessible, demand-led provision*** - given the nature of the area it will be particularly important that there is adequate outreach provision, online training, and new innovative models of delivery which encourage collaborative ventures (such as shared apprenticeships) among businesses in the Smart Specialisation sectors and joint training which will promote greater networking and closer collaboration with training providers and reduce the risk and costs incurred by smaller businesses.
- ***Business involvement*** at all stages of the process from design of the curriculum, through to delivery and then marketing and promotion of the benefits of the skills training and the 'real' job and career opportunities that are available within Cornwall and the Isles of Scilly.
- ***Ongoing monitoring*** and provision of up to date intelligence will be essential to ensure continued relevance of provision, particularly in light of rapid technological changes within

these industries and new market opportunities arising, which will in turn have implications for the design of future training courses and mode of delivery. Ongoing monitoring will also be particularly important to ensure that there is sufficient provision to meet the growing demand, expected within the sectors.

Given the diverse range of agencies that will be involved in delivering the strategy, the Employment and Skills Board of the LEP will play a key role in providing oversight of activities and ensuring that the key principles described earlier are adhered to.

5.4 The skills framework

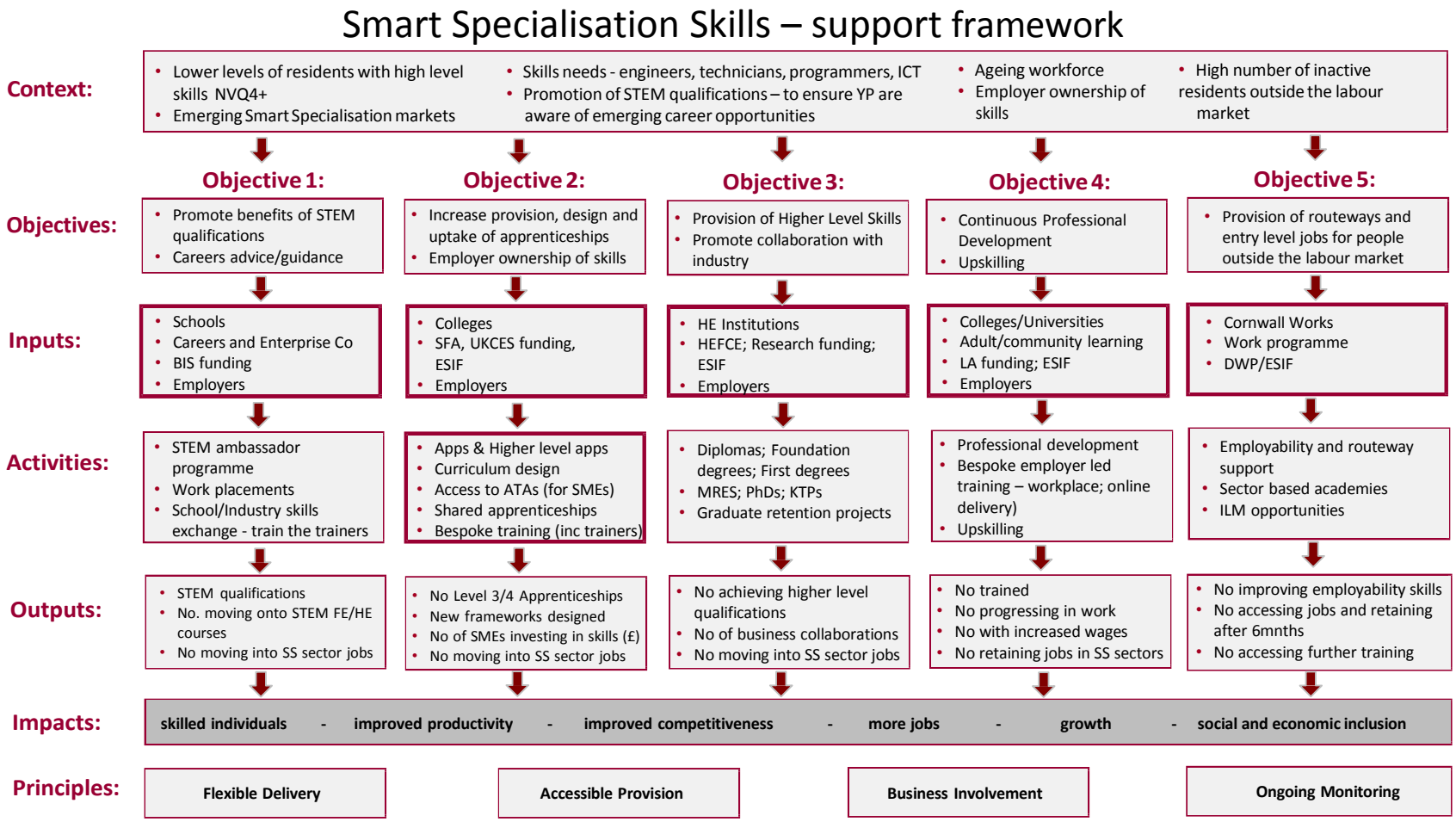
A high-level framework to guide future support for promoting the STEM agenda and assisting skills development for individuals wanting to move into the Smart Specialisation sectors and the businesses working within them, is set out in Figure 5.1.

5.4.1 Objectives

Five key objectives that provide the thematic structure for the Framework have been identified to guide future support. These are to:

- ***raise aspirations*** of young people by embedding the importance of STEM subjects from an early age and promoting the potential career options arising within the Smart Specialisation sectors within C&IoS;
- ***support employer-led provision*** to ensure that training providers are responsive and deliver courses required by industry that will enable them to fill skills gaps and skill shortages. This will include provision that encompasses delivery in the workplace and industry placements;
- ***ensure sufficient higher level skills provision*** including advanced apprenticeships, undergraduate courses (including foundation degrees) and postgraduate studies, including masters and PhDs. Attracting and retaining students after their studies, and attracting students back to C&IoS who may have studied elsewhere, are key issues that need to be addressed through the provision of graduate placement initiatives and other enterprise support programmes to retain talent and skills in the local area;
- ***up-skill the existing workforce*** to improve productivity through continuous professional development and career progression. Ensuring workers have the expertise to adapt to new working practices and advanced product design will become increasingly important as the Smart Specialisation sectors develop. This will apply for businesses throughout the supply chains, and its importance as a result of the ageing workforce in the area; and
- ***provide routeways*** for new entrants into the Smart Specialisation sectors, including individuals currently outside the labour market, and disadvantaged groups who may need intensive support to get back into employment.

Figure 5.1: Smart Specialisation Skills framework for support



5.4.2 Target groups

Interventions will involve targeting the following groups:

- **young people** - to ensure that the potential job and career opportunities arising within the Smart Specialisation sectors within Cornwall and the Isles of Scilly are promoted at the earliest opportunity;
- **employers** – including those providing vocational/work experience routes into employment;
- **post-graduates and potential graduates** capable of achieving higher level qualifications;
- **the existing workforce** who will require up-skilling as new technological developments and processes are introduced into the workplace, and employees wanting to progress in the workplace through continuous professional development; and
- **residents** who are currently outside the labour market but want to return to employment and economic activity – such as women returners – and those who are members of disadvantaged groups.

In delivering support to the various target groups, there will be a need to integrate working among providers, employer and sector organisations and other key stakeholders to provide seamless progression routes for individuals and a coherent skills offer for employers to maximise growth.

5.4.3 Activities

Details of the types of activities that could be supported under each framework objective or theme are presented below.

1. Early intervention and raising aspirations

This theme is focused on raising aspirations and awareness of the potential job and career opportunities associated with the Smart Specialisation sectors among school children and young people in C&IoS. This will include educating both parents and teachers, and securing the active involvement of local businesses and or business representative groups in promoting the benefits of the job opportunities emerging in the identified growth sectors. It will require the provision of high quality careers advice and a more coordinated approach with joint working between the SW Careers Service, Careers and Enterprise Company enterprise advisors, STEM ambassadors, and other local school/business partnerships. Support will need to build on best practice[28], and may also involve using the findings of pilot initiatives to change mainstream delivery.

Investment priorities/activities should include:

[28] Examples of Cornwall Projects can be found in section 4.3.1 and include the Cornwall Manufacturing Forum pilot; Bloodhound Initiative at the Aerohub; Nurturing Excellence; Cornwall Marine Academy

- Smart Specialisation sector groups/agencies to work with or act as STEM ambassadors in promoting the benefits and careers available within the knowledge economy and the new market opportunities arising. These ambassadors will aim to raise aspirations, in line with 'real' demand and employment opportunities with local employers;
- employers and the Smart Specialisation Sector groups to work with the Council/LEP and the Careers and Enterprise Company and SW Careers on the development of the 'Careers offer' to ensure that high quality advice and guidance is provided for school leavers and families regarding the potential routeways to employment in the Smart Specialisation sectors, including both vocational and academic routes;
- co-ordination of work placement opportunities for young people in the Smart Specialisation Sectors – as part of the 'Careers Offer' - and 'holiday camps' that enable students to gain experience in the workplace building on best practice such as Software Cornwall coding camps;
- schools and college/industry skills exchange, for example, secondments, teacher training in the workplace; and
- investment in activities that engage young people and help them to progress on pathways into the Smart Specialisation sectors.

2. Employer led provision and additional apprenticeships

Engaging businesses operating in the Smart Specialisation sectors will be essential to inform the delivery of training that meets industry needs, fills gaps in existing provision and addresses skills shortages in the workplace. As the Smart Specialisation sectors grow and new market opportunities arise the demand for training will change, so provision of timely, up-to-date intelligence will be essential to enable training providers to respond to changing business requirements. Involving businesses, either individually or collectively, in the design of new curricula and methods of delivery will improve the responsiveness of training providers from the outset. Improving collaboration between businesses and providers will also facilitate employer ownership of skills, increased investment and the provision of more workplace training opportunities.

Securing the active involvement of businesses is however often time consuming and particularly difficult for SMEs. Provision of a coherent 'skills offer' and independent 'skills brokerage'[29] for businesses in the Smart Specialisation sectors will be important in order to engage these businesses from the outset. It is envisaged that this support could form part of a wider package of business assistance to be offered from the Skills/Growth Hub.

Investment priorities/activities should include:

- development of a 'skills offer' and the use of independent 'skills brokers' to identify skills needs, develop a tailored skills action plan and provide assistance to co-ordinate recruitment of trainees (including apprentices), access to training at all levels and the promotion of existing schemes (e.g. AGE grant, graduate retention and knowledge transfer partnerships);

[29] building on the successful skills brokerage model at the heart of the CAA

- provision of accurate, up to date intelligence to inform curriculum design and planning – with input from employers where possible;
- development of bespoke training (including new standards) for employers or groups of employers (either classroom or work based); and
- piloting shared apprenticeship or employer pool/agency schemes. These can help overcome the barriers often faced by small businesses that may lack the capacity and expertise to provide the full range of support required to support apprenticeships and other training provision.

3. Focus on higher level skills

As businesses in the Smart Specialisation sectors grow and increase their levels of Research and Development and Innovation, the requirement for higher level skills (Level 4+) is set to increase (as set out in Section 3 earlier). Between now and 2022 there will be a recruitment requirement equivalent to 250 individuals per annum qualified to Level 4 + in the Smart Specialisation sectors. At the same time, Universities and Higher Education Institutions are under increasing pressure to attract and maintain student enrollments, as tuition fees continue to increase and there is growing competition from Further Education Colleges. Competition to recruit individuals with higher level skills is also forecast to increase from other sectors.

Greater collaboration will be required between the Smart Specialisation Sector employers and the HE establishments to ensure that higher level courses are designed to take advantage of growing markets[30]. If courses are linked to real demand within the labour market and the economy, this will in turn attract students. In addition, greater collaboration will help encourage more industry placements, the development of degree level apprenticeships, the design of bespoke higher level technical and specialist courses, and knowledge transfer partnerships. The provision of facilities (for example incubation space for HE spin outs) and initiatives to encourage graduate retention will also be particularly important in trying to reverse the net migration out of the area for the 20-24 age group in C&IoS.

Investment priorities/activities should include:

- promotion of the potential job and career opportunities arising with the Smart Specialisation Sectors and the HE routeways into employment;
- bursaries/grants to encourage higher level post graduate research studies (research masters, PhDs);
- Knowledge Transfer Partnerships – with employers in the Smart Specialisation Sectors; and
- graduate retention facilities and placement programmes with businesses in the sectors.

4. Up-skilling the existing workforce

Building productivity is a key priority for the UK and particularly so within C&IoS, as the LEP area has the lowest rate across England. Upskilling the existing workforce will also be critical for the

[30] The introduction of the BA in Digital Games by Falmouth University provides a good example of HE responding to a growing market.

Smart Specialisation sectors, with their focus on new technology, and should be cascaded throughout the supply chain. The importance of up-skilling and continuous professional development will become increasingly important within Cornwall as the proportion of the working age population continues to shift towards an older cohort of residents and lower percentage of young people. Assisting individuals to progress in the workplace will also ensure that there is a pool of workers able to meet the normal churn or replacement demand described earlier in Section 3.

Investment priorities/activities to include:

- the development of bespoke and joint training among businesses in the Smart Specialisation sectors, including tailored short courses delivered for the workforce at their place of work;
- provision of support to enable businesses to access and utilise external and mainstream funding alongside their own investment in skills in the workforce; and
- greater collaboration between employers, FE colleges and HE institutions to provide seamless opportunities for individuals to work and learn throughout their careers.

5. Provision of routeways

Within C&IoS, there are currently just under 10,000 unemployed residents and a further 68,000 individuals who are economically inactive. Given the changing demographic profile of C&IoS, it will be imperative to assist as many working age residents who want to get back into the labour market as possible. This will often require the provision of intensive person centred support tailored to overcoming particular barriers to employment and assistance from a range of different agencies. Inclusion Cornwall was established over ten years ago to join up such support and provide the seamless co-ordination required to assist people outside the labour market. As a result of the focus on upskilling, it is envisaged that entry level jobs will also be created within the Smart Specialisation sectors, not least to meet the projected replacement demand.

Investment priorities/activities should include:

- further pooling of resources to provide employability support and assistance to remove barriers to employment, in conjunction with sector based support. For example, the development of sector-based academies that combine work tasters, pre-recruitment training, and guaranteed interviews for candidates taking part. These academies could be designed and delivered in partnership with the Smart Specialisation sector businesses and the network organisations[31];
- intermediate labour market interventions and supported employment to assist the transition back into the labour market, and the provision of post recruitment support;
- provision of funding to address barriers to skills development and employment. This may include flexibility with regard to eligibility criteria or access issues that require the

[31] Cornwall Marine Academy and CMN provide a model which combines engagement, work experience and the development of employability skills for unemployed people by pooling resources from a range of sources (mainstream adult skills, foundation learning, big lottery talent match work hubs and NEET funding)

development of alternative models of delivery – for example online training, outreach provision, or transport support; and

- working with Level 4+ providers develop access routes to Level 4 provision for target groups.

6 Conclusions and recommendations

6.1 Conclusions

The foregoing assessment of the projected demand for and supply of skills within the Smart Specialisation sectors and the current education and training infrastructure available, suggests that it is unlikely that there will be a shortfall in provision to meet the needs of employers. However the report has highlighted a number of key issues that will potentially impact on the provision of skilled individuals to work in the Smart Specialisation sectors across Cornwall and the Isles of Scilly. If not addressed they will have implications for business growth. They include:

- an ageing workforce;
- a need to retain graduates through the provision of relevant work opportunities and support for new enterprise development;
- a lack of awareness regarding potential employment and career opportunities in the sectors;
- poor quality advice about the various routeways into the industries;
- imperfect information amongst training providers particularly in relation to the skills required by employers;
- a need for greater flexibility of skills and in training delivery;
- barriers to participation – including access to learning, an understanding of and access to the various sources of funding available for skills development; and
- insufficient collaboration between employers and training and education providers.

The following recommendations build on the underlying principles outlined in Section 5.1 and set out suggested responsibilities for the key stakeholders involved in managing and delivering future support for skills in the sectors.

6.2 Recommendations

Smart Sector Employers (working through their coordination bodies or a sector champion) to:

- establish a pool of STEM ambassadors to go into schools to promote the potential employment and career opportunities in their sectors;
- have an input into the Cornwall Careers Offer, particularly in terms of the eight IAG benchmarks, including a commitment to provide workplace experience for year 11 students;
- feed industry intelligence into the LEP Employment and Skills Board, agencies such as the Cornwall Training Providers network, and other mechanisms that reach the smaller private and voluntary sector training providers, on a regular basis regarding skills and training

needs arising within their industries, particularly given the rapid changes expected over the coming years;

- work with training providers to develop new programmes and curriculum for the Smart Specialisation Sectors where these are required, particularly in relation to higher level apprenticeships, to encourage greater take-up of the vocational route into employment in the sectors;
- participate in trialling new innovative models of training delivery (for example, sharing apprentices among employers in their sector);
- provide entry level employment and training opportunities for unemployed individuals and people outside the labour market, including supported employment and intermediate labour market opportunities; and
- invest both in new talent and in training their existing workforce.

Local authorities, the Local Enterprise Partnership and partner agencies (particularly Careers) to:

- build on the best practice projects being delivered across the region and ensure that the lessons learnt (for example in terms of embedding STEM; providing CPD for STEM teachers; and the provision of work experience) are shared across all 271 schools;
- finalise the development of the 'Careers offer' in conjunction with the Smart Specialisation Sector bodies;
- develop a 'skills offer' for employers, particularly SMEs, in the Smart Specialisation sectors that involves skills brokers working with businesses to:
    - undertake a diagnostic session or audit of what the business needs in terms of skills and preparation of an action plan;
    - provide assistance to co-ordinate recruitment of trainees (including apprentices);
    - access training at all levels; and
    - promote the uptake of existing schemes, for example graduate retention, knowledge transfer partnerships.
- ensure that the 'skills offer' is part of a wider package of business/commercial support offered to the Smart Specialisation businesses through linkages with the Growth Hub;
- promote the use and benefits of apprenticeship training agencies among SMEs, including the option of shared apprenticeships;
- provide funding/bursaries to encourage participation in research and development in the sectors, to complement the ERDF funded provision;
- provide funding to overcome barriers to education and learning – for example travel, childcare, equipment; and

- continue to raise the profile of apprenticeships among young people, their parents, and employers in the Smart Specialisation sectors, for example through planned job/careers fairs.

Training and education providers to:

- build on work undertaken to date in promoting apprenticeships and higher level apprenticeships as a route into the Smart Specialisation Sectors;
- develop and deliver short course and joint training provision for the Smart Specialisation sectors;
- develop bespoke training for employers or groups of employers to be delivered either online, through the classroom or in the work place;
- pilot new models of delivery with Smart Specialisation sector employers, for example shared apprenticeships/graduate schemes;
- work collaboratively with employers to identify and develop opportunities for Knowledge Transfer Partnerships and other research and development projects;
- work with employers to develop employability projects to assist individuals outside the labour market become economically active, for example sector based work academies; and
- work collaboratively to provide access routes to Level 4 provision for disadvantaged groups.

Appendix 1: Policy Context

2014-2020 European Programmes

ERDF - Smart Specialisation

The European Commission's Cohesion Policy aims to reduce differences between regions to ensure growth across Europe using Structural Funds to overcome the economic crisis. To access funding from the European Regional Development Fund (ERDF) a Research and Innovation Strategy for Smart Specialisation must be in place. A Smart Specialisation Strategy for England was produced in 2014 for this purpose and to assist Local Enterprise Partnerships (LEPs) and their partners to identify opportunities that would enable them to benefit from and contribute to national policies and funding programmes supporting innovation.

AMION Consulting Ltd has recently developed a Smart Specialisation Framework and an evidence base for C&IoS to guide applications for funding in the five key Smart Specialisation sectors in which the area has a competitive advantage and key strengths. Access to an appropriately skilled workforce, represents one key aspect of the support that businesses will need to undertake more R&D&I in order to benefit from technological changes taking place within the target markets.

ESF Operational Programme

In addition to some ERDF funding which is available to support the acquisition of higher level skills to support the Smart Specialisation sectors, European Funding available to support Smart Specialisation skills will primarily come from the European Social Fund (ESF). The ESF Operational Programme is part of the European Structural and Investment Funds Growth Programme for England in 2014 – 2020, which brings together the ESF, ERDF, and part of the European Agricultural Fund for Rural Development (EAFRD) in an integrated package that will be delivered in LEP areas across England.

ESF will be used to deliver actions that promote employment, social inclusion and skills. The key objectives that the fund will seek to address relate to:

- helping more unemployed and inactive people to enter and progress in employment;
- increasing the number of young people who are in education, employment and training;
- tackling barriers to work faced by disadvantaged groups;
- helping more people improve their skills; and
- making skills provision more responsive to the needs of the local economy.

National employment and skills policy

Fixing the Foundations: Creating a more Prosperous Nation (HMT)

Raising productivity is now at the heart of the government's strategy for securing growth and raising living standards. Their approach to raising productivity is built around two pillars:

1. **Encouraging long-term investment in economic capital, including infrastructure, skills and knowledge, through:**

- competitive tax system
- rewards for saving and long term investment
- a highly skilled workforce
- world class leading universities, open to all who can benefit
- a modern transport system
- reliable, low cost carbon energy
- world-class digital infrastructure
- high quality science and innovation

2. **Promoting a dynamic economy that encourages innovation and helps resources flow to their most productive use, through:**

- planning freedom, more houses to buy
- higher pay, lower welfare society
- more people able to work and progress
- financial services that lead the world in investing in growth
- competitive markets with less regulation
- a trading nation open to international investment
- a rebalanced economy and a thriving northern powerhouse

A number of the potential investment priorities outlined in this skills framework will directly support key priorities set out within the government's productivity plan. Partners will need to ensure that they are developed in line with new programmes being introduced by the government to achieve their aspirations e.g. support for universities to collaborate with industry, particularly in relation to commercializing research; and creation of the network of Technology Institutes.

UK Commission for Employment and Skills

The UK Commission for Employment and Skills is a publicly funded, industry-led organisation that offers guidance on skills and employment issues in the UK. The Commission is responsible for giving businesses and people advice, developing employment and skills policies and helping more employers invest in skills. This year (2015/16), the organisation aims to:

- lead the debate with industry to drive better outcomes for skills, jobs and growth;
- work with industrial partnerships and wider networks to push forward employer ownership of skills;

- test 'what works' in addressing barriers to growth through people and inform industry and government policies; and
- help businesses realise the potential of their people through Investors in People.

Rigour and Responsiveness in Skills

Rigour and Responsiveness in Skills (2013) was developed jointly by the Department for Education (DfE) and the Department for Business and Skills (BIS) to accelerate reforms to the skills system in England. The government departments are currently working towards the achievement of 6 key objectives, outlined below:

- raising standards – through high quality teaching and learning;
- reforming apprenticeships by improving quality and consistency across the programme;
- creating traineeships which combine a focused period of work preparation, a high quality work placement and training in English and Maths;
- delivering meaningful qualifications: removing up to 2,500 qualifications with little or no uptake from the funding system;
- improving funding responsiveness to ensure that provision adds value; and
- providing better information by making data available to developers to create their own applications which ease access.

Vision for Apprenticeships 2020 (Skills Funding Agency)

Over the next five years the government aims to consolidate economic recovery and ensure that it benefits everyone. Raising productivity is one the Government's top priorities for achieving this, and in doing so, they are committed to increasing the quality and quantity of apprenticeships in England, reaching 3milliion starts in 2020. Their priorities are outlined under five key themes:

- ***improving the quality and recognition of apprenticeships*** – so that all apprenticeships provide substantive professional or technical training, transferable skills and competency in English and Maths; an attractive offer that young people and adults aspire to as a high quality career; availability across all sectors and all levels, including degree; and opportunities that deliver skills, knowledge and behaviours that employers are looking for;
- ***putting employers in the driving seat*** – so that apprenticeships enable businesses to build their pipeline of skilled future staff. Measures include the establishment of the Digital Apprenticeships Service which will be easy to use and navigate; ownership of the design and content of the apprenticeship standards and assessments; and responsibility for payment;
- ***improving routes into apprenticeships and work*** – through clear progression from technical and professional education into skilled employment and apprenticeships and adequate preparation and awareness raising by employers and apprentices;

- ***building the long-term apprenticeship system*** – though the establishment of the Institute for Apprenticeships responsible for overseeing quality; employer-designed standards; and training providers who are responsive to meet the evolving needs of businesses; and
- ***funding apprenticeships*** – employers will choose and pay for training through the Digital service; the funding system will support the commitment to increase the quality and quantity of apprenticeships; and funding will be placed on a sustainable footing through the introduction of a 0.5% levy on businesses that have a payroll in excess of £3m per annum.

As the Government reforms are rolled out, it will be important that the interventions to support businesses in the Smart Specialisation sectors are developed alongside government support and funding, and add value to the proposed changes – particularly in relation to the new standards and levy that will be introduced.

The Shadbolt Review of Computer Science Degree Accreditation and the Wakeham Review of STEM Degree Accreditation and Graduate Employment (Department for Business, Innovation and Skills)

Two independent reviews are currently being carried out in response to the Government's Science and Innovation Strategy, in relation to the accreditation of STEM degree courses and Computer Science degrees and improving graduate employability. The reviews are being led by Wakeham and Shadbolt and respectively in order to gain a better understanding of the skills requirements of employers, how STEM and computer science graduates' skills and knowledge relate to labour market demand, and how existing accreditation systems support this, with a view to improving graduate employability.

The reviews will consider the extent to which graduates might benefit from degree courses which feature increased employer engagement, more up to date course content and where appropriate increased levels of work experience. It will be particularly important that the findings from the reviews are used to develop closer working relationships among businesses in the Smart Specialisation sectors and the HE establishments in C&IoS advocated within the Smart Specialisation framework.

Cornwall and the Isles of Scilly

C&IoS LEP Employment and Skills Strategy

The Employment and Skills board of the C&IoS LEP has developed an Employment and Skills Strategy for the period 2012 – 2020. It has five key overall aims as follows:

- bringing the demand and supply of skills together more effectively;
- ensuring better jobs are created with higher salaries;
- retaining local talent;
- promoting lifelong learning; and
- promoting Cornwall and the Isles of Scilly as great places to live, work and build a career.

The Strategy includes a number of key objectives to achieve these aims which are outlined below:

- Create an aspirational and innovative enterprise culture - this will be achieved by: making it easier for businesses to access learning, enterprise and knowledge provision; encouraging the development of entrepreneurial skills and opportunities for young people; and encouraging opportunities for self-employment and entrepreneurial development;
- Improve skills and boost employment in growing global markets - this will be achieved by: developing a mechanism for employers to influence directly what is delivered; establishing coherent and effective employment and skills plans; developing targeted skills programmes; encouraging skills attainment of employees with no or low level qualifications; and encouraging increased participation and attainment of higher level and research/postgraduate skills;
- Enable those out of work to compete in the labour market - this will be achieved by: focusing on young people through the Youth Employment Strategy; better engagement with employers in identifying opportunities; better coordinating efforts; supporting those effected by redundancy; and creation of new jobs;
- Increase employer and individual investment in skills - this will be achieved by - new delivery and investment models for learning; development of apprenticeships; evidence showing business benefits of up-skilling/training; skills, training and education are part of any new economic investment; and encouraging individual investment in skills development; and
- Improve the quality of and access to information for learners - this will be achieved by: liaising with Strategic Advisory Board; encouraging engagement and providing information to employers; providing data, intelligence and opinion on the local labour market; providing personalized support to access information; and monitoring careers information; providing a joined up, strategic response to developments.

The Smart Specialisation Skills framework and suggested interventions described will sit alongside this strategy and assist in the delivery of a number of its key objectives and targets.

C&IoS Devolution

In July 2015, Cornwall's first Devolution Deal was agreed with Government which will result in more than £5billion of government funding being given to Cornwall to manage at a local level. This will include funding for transport, health and social care, property, employment and skills and European funding. In terms of employment and skills, Cornwall partners want people of all ages in Cornwall trained in skills that match current and anticipated future employer demands with local powers to direct skills funding towards:

- apprenticeship grants;
- further education funding for young adults and adult skills budgets; and
- careers education, information, advice and guidance funding.

In doing so it is expected that residents will gain better access to training and skills to enhance their employment opportunities; higher skills will result in higher salaries; and a higher skilled workforce will be able to support the growth of key industries through relevant training.

Appendix 2: Socio-Economic Context

The following provides a review of some of the key labour market statistics for C&IoS compared with the South West and national trends.

Economic Activity

The latest data from the Annual Population Survey (as set out in Cornwall Council's Economic Monitoring Update for October 2015) shows an overall improvement in the labour market. While the numbers of those economically active remained static over the last year, the proportion of economically inactive residents declined. Employment numbers have increased, particularly self-employed, with the number of both full-time and part-time workers increasing and the level of unemployment had reduced by a fifth. The latest figures for population and economic activity in Cornwall (&IoS) are as follows:

- working age population (16-64) is currently 322,600;
- over 75% are in employment 244,800;
- of those employed, 169,000 worked full-time representing 69% of those in employment with 75,100 working part-time; and
- 9,700 (3%) unemployed, and 68,100 (21%) economically inactive.

GVA

The total GVA, which measures economic output, stood at £8.4 billion in 2013 compared to £8.1 billion in 2012. GVA per head was £15,403 in 2013, which also represented an increase of 2.4% compared with 2012. Despite this however Cornwall and the Isles of Scilly LEP have the lowest GVA per head of all the LEP partnerships at 65.8% (UK=100). The main sectors contributing to this output in 2012 were:

- Wholesale, retail and motors - £1,120m (13.8%);
- Real estate - £1,019m (12.5%);
- Health £732m (9%);
- Construction £713m (9.8%); and
- Manufacturing £701m (8.6%).

Sectoral employment

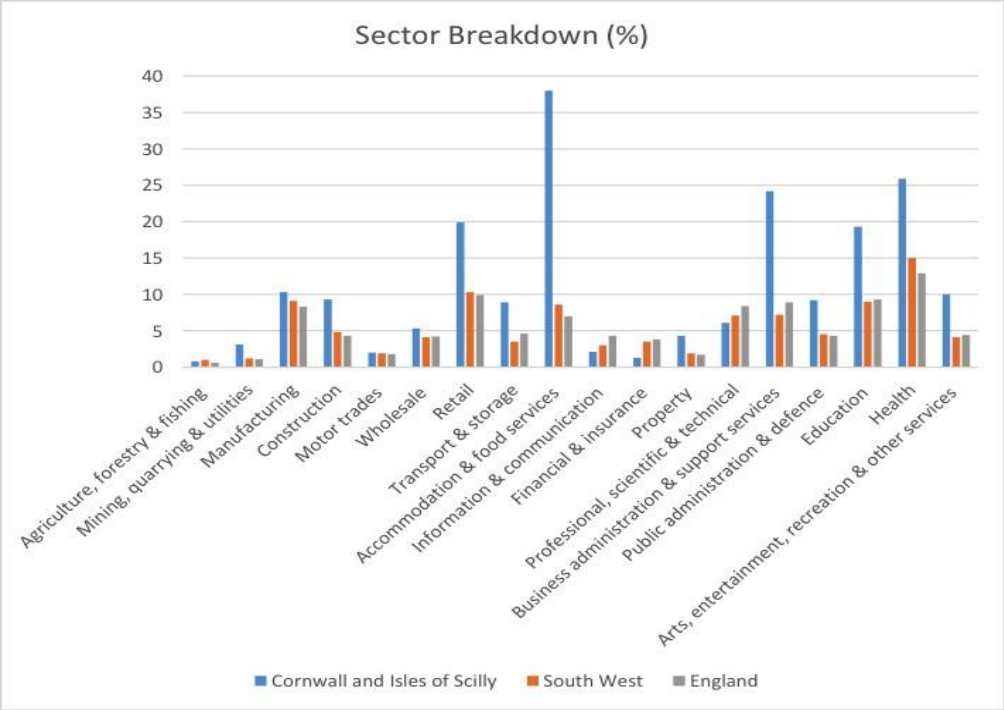
Figure 2.1 provides an insight into the sector breakdown of C&IoS compared with the South West region and the national picture. C&IoS has a higher proportion of employees in the following sectors:

- Accommodation and food service – C&IoS 38%, South West 8.6%, England 7%;
- Health – C&IoS 25.9%, South West 15%, England 12.9%;
- Business administration and support services – C&IoS 24.2%, South West 7.2%, England 8.9%;
- Retail – C&IoS 19,9%, South West 10.3%, England 9.9%;
- Education – C&IoS 19.3%, South West 9%, England 9.3%; and

- Arts, entertainment, recreation & other services – C&IoS 10%, South West 4.1%, England 4.4%.

In a number of cases these reflect its roles as an important tourist destination.

Figure 2.1: Breakdown of employment by sector 2014

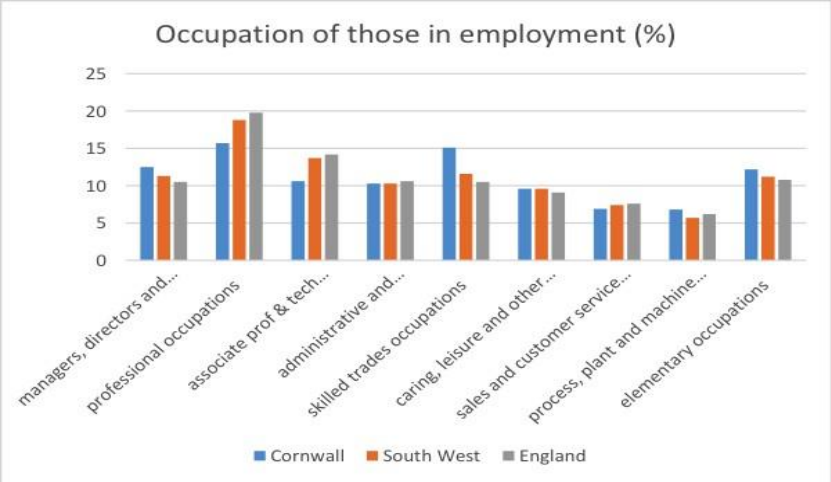


Source: Business Register and Employment Survey, 2014

Occupational breakdown

Figure 2.2 presents the occupational breakdown of those in employment in Cornwall, the South West and England. This demonstrates that the area has a higher percentage of skilled trades occupations in Cornwall (15.1%) compared with the South West (11.6%) and England (10.5%) and a lower proportion of professional occupations (15.7%) compared with the South West (18.8%) and England (19.8%).

Figure 2.2: Occupational breakdown of employment



Source: Annual Population Survey 2014/15

Education

The proportion of pupils achieving 5+ GCSEs grades A* - C in Cornwall in 2014/15 was 64.8% which was a slight improvement on 64.5% in 2013/14. Despite GCSE attainment being lower than the South West average of 66.4% in 2014/15 it was higher than the national average which fell from 65.5% in 2013/14 to 64.2% in 2014/15 (Department for Education).

NVQ qualifications

The NVQ profile for residents in C&IoS is set out in Figure 2.3, with regional and national comparisons. This demonstrates that while Cornwall exceeds the national averages for NVQ levels 1 – 3, the area is lagging behind in terms of higher qualifications. Despite this however there have been an additional 48,700 residents achieving a NVQ4 and above since 2010.

Figure 2.3: Highest qualifications of residents in Cornwall 2014

Source: ONS, Annual Population Survey

The figures from the 2014 Annual Population Survey show that for residents aged 16 – 64 in Cornwall:

- 19,700 (6%) have no qualifications;
- 40,500 (12.4%) have NVQ1 only;
- 64,800 (19.8%) have NVQ2 only;
- 62,100 (19%) have NVQ3 only and;
- 106,400 (32.6%) have NVQ4 and above.

Skill Shortages

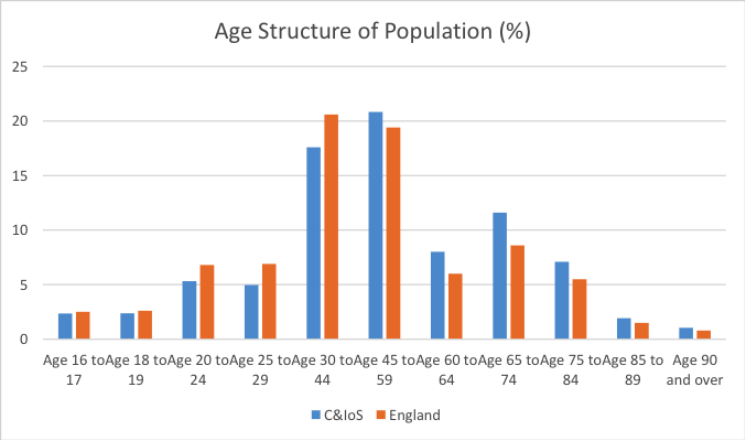
The UK Commission for Employment and Skills (UKCES) Employer Skills Survey found that 14% of all establishments in Cornwall identified a skill gap in 2013, and 3% of establishments had a skill-shortage vacancy. This is slightly lower than the national average of 15% (skills gap) and 4% (skill-shortage) respectively.

Skills shortage vacancies vary by occupation in Cornwall with a greater shortage in skilled trade occupations (16.08%), caring, leisure and other services staff (16.19%) and elementary staff (18.29%). This differs from the national average, which sees greater shortages in professional vacancies (19.27%), associate professionals (18.79%) and caring, leisure and other services staff (18.63%).

Population

C&IoS has an ageing population with 30% of the population over 60, compared to the national average of 22.4%. There is also an increasing proportion of the population over 75 (10% of the population in Cornwall, 10.7% on the Isles of Scilly) this is higher than the national average of 7.8% which is likely to have an impact on local health and social care services and workforce planning. As Figure 2.4 illustrates, above the age of 45, C&IoS has a higher proportion of the population in each age group thereafter and correspondingly lower levels of younger adults particularly those aged 20 to 44, which will impact on the working age population in the future.

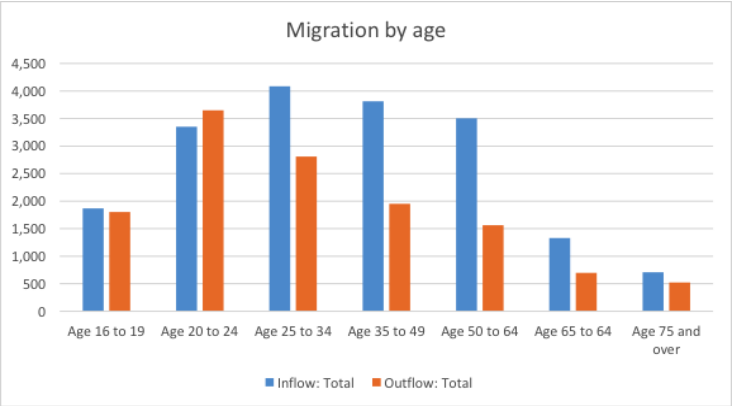
Figure 2.4: Age structure of the population



Source: 2011 Census

Figure 2.5 sets out migration figures for C&IoS. On the whole, there are more people moving into the area than migrating out, with the exception of those aged 20 to 24, where we can see a larger number of people leaving the area. This would suggest that young adults and students are moving out of the area on completion of their higher education studies and other training. Coupled with an ageing population, this is likely to pose challenges to the future workforce, and reinforces the need to firstly attract students and young people to the area and retain them on completion of their courses, and secondly, to up-skill and retrain older workers in the area.

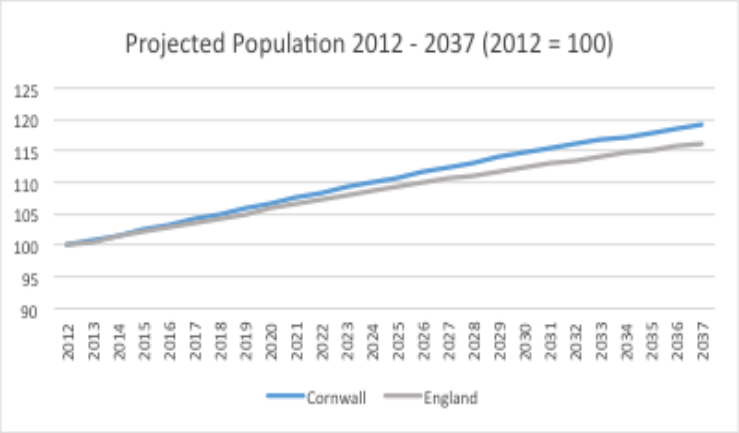
Figure 2.5: Migration in and out of Cornwall by age



Source: 2011 Census

The population projections for C&IoS as shown in Figures 2.6 and 2.7 reinforce this message and show the widening gap in the working age population over the next 25 years. This is particularly marked as the overall population of C&IoS is projected to grow more than the national average by 2037.

Figure 2.6 Population Projections for C&IoS up to 2037

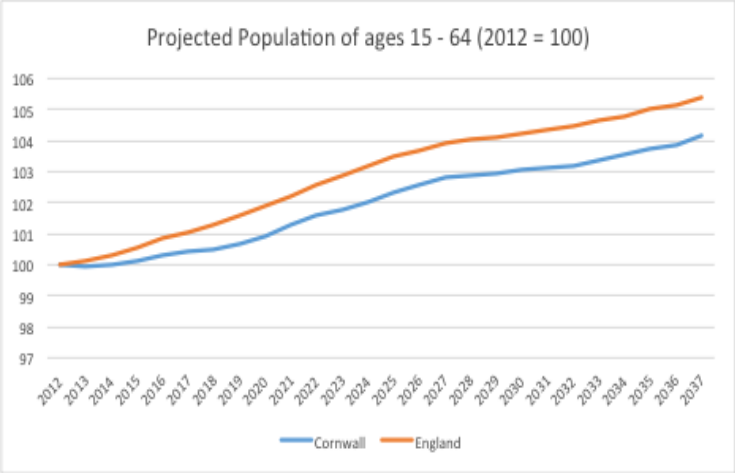


Source: ONS Population Projections

However, while the overall population is growing faster than the national average the gap between England and Cornwall is widening, year on year. By 2037, the projections indicate that by 2037 Cornwall is expected to have a working age population of 345,600 which represents 54% of its overall population compared with 59% for England. The proportion of older people is

expected to be 30% compared with the national figure of 24% and the proportion of children up to the age of 15 is expected to be marginally lower at 16% compared with 17% nationally. This emphasizes the need to ensure that graduate retention remains a key priority, in conjunction with engaging people outside the labour market who want to become economically active and continuous professional development and up-skilling the existing workforce.

Figure 2.7: Working Age Population Projections for C&IoS up to 2037



Source: ONS Population Projections