

SUMMARY REPORT		ABM University Health Board			
ABMU Health Board		Date of Meeting: 30th March 2017 Agenda item: 5viii			
Subject	Swansea Bay City Region Deal				
Prepared by	Peter Mannion ARCH Portfolio Manager				
Approved by	Hamish Laing Executive Medical Director and Chief Information Officer, ABMU				
Presented by	Hamish Laing Executive Medical Director and Chief Information Officer, ABMU				
Purpose					
To advise the Health Board that the Swansea Bay City Region City Deal has been agreed with Welsh Government and UK Government and was signed by the Prime Minister and First Minister on the 20 th March 2017. In the in the presence of Secretary of State for Wales and the Welsh Government Cabinet Secretary for Finance.				Decision	
				Approval	
				Information	X
				Other	
Corporate Objectives					
Excellent Population Health	Excellent Population Outcomes	Sustainable & Accessible Service	Strong Partnerships	Excellent People	Effective Governance
X	X	X	X	X	X
Executive Summary					

The City Deal is a 15 – 20 year deal and is the biggest investment for South West Wales in a generation, worth more than £1.3billion. The investment package aims to transform the economic landscape of the area with high-spec digital infrastructure and world-class facilities in the fields of health and life science innovation, energy and smart manufacturing.

The City Deal is expected to deliver nearly 10,000 new jobs and increase the value of goods and services produced in the region by £1.8billion.

ARCH has been represented on the City Region Board through Professor Davies (chairman). Professor Laing and Professor Clement co-chaired the Health & Wellbeing Strand of the City Deal bid and members of the ARCH Portfolio Board and ARCH Programme Office were instrumental in developing and securing the Swansea Bay Region City deal.

The City Deal provides the means to accelerate and deliver a number of projects described in the ARCH Portfolio.

The successful agreement of the Swansea Bay City Region Deal is to be celebrated. The ARCH Portfolio Management Office (PMO) have worked closely with the ABMU Communications Team to communicate the successful completion of the deal to ABMU staff and patients.

Key Recommendations

The Health Board is asked to note the agreement of the Swansea Bay City Region Deal and the positive implications for key elements of the ARCH portfolio.

Main Report		ABM University Health Board
ABMU Health Board		Date 30th March 2017 Agenda item 5vii
Subject	Swansea Bay City Region Deal	
Prepared by	Peter Mannion ARCH Portfolio Manager	
Approved by	Hamish Laing, Medical Director and Co-chair City Deal (Health & Wellbeing)	
Presented by	Hamish Laing, Medical Director and Co-chair City Deal (Health & Wellbeing)	

PURPOSE

To advise the Health Board that the Swansea Bay City Region City Deal has been agreed with Welsh Government and UK Government and was signed by the Prime Minister and First Minister on the 20th March 2017 in the presence of Secretary of State for Wales and the Welsh Government Cabinet Secretary for Finance.

The City Deal is a 15–20 year deal and is the biggest investment for South West Wales in a generation; worth more than £1.3billion. The investment package aims to transform the economic landscape of the area with high-spec digital infrastructure and world-class facilities in the fields of health and life science innovation, energy and smart manufacturing. The City Deal is expected to deliver nearly 10,000 new jobs and increase the value of goods and services produced (GVA) in the region by £1.8billion.

INTRODUCTION

The Swansea Bay City Region comprises the local authority areas of Carmarthenshire, Swansea, Pembrokeshire and Neath Port Talbot and includes Abertawe Bro Morgannwg and Hywel Dda University Health Boards, Swansea University and the University of Wales Trinity St David's and private sector partners in its catchment. ARCH has been represented on the City Region Board by Professor Andrew Davies, Chairman.

The Health Board have been kept informed regularly of significant work being committed by these partners to develop the Swansea Bay Region City Deal during 2016 and early 2017. As the Board are aware, ARCH was formed to tackle some of the major challenges the facing our health and care services through improving Skills, Wellbeing, Innovation and economic opportunity. Projects developed for the ARCH portfolio form the health and wellbeing strand of the City Deal.

Governance

In agreement with both Governments, The City Region and the City Deal will be governed through a Joint Committee comprising the elected Leaders of the four Local Authorities. The structures beneath the Joint Committee are under discussion but it is likely that there will be representation of the two Health Boards and Universities as well as industry partners within them. There will be a requirement to determine how the Swansea Bay City Region governance will relate to the ARCH governance arrangements once these are clear. This will form the basis of a future report to the Health Board.

Swansea Bay City Region Deal and ARCH

Members of the ARCH Portfolio Board have been instrumental in developing and securing the Swansea Bay City deal. Two Board members co-chaired the Health & Wellbeing sections of the Deal and it is pleasing that this theme was central to the final Deal bid which was submitted to Welsh and UK Governments by the leaders of the four Local Authorities, led by Cllr. Rob Stewart of the City and County of Swansea. Each of the eleven “business cases” within the deal (including the ARCH cases) has a local authority sponsor. **(See Appendix A).**

In addition to creating general improvement in health for our communities through greater economic prosperity, The City Deal provides the means to accelerate the delivery of a several projects in the ARCH Portfolio, specifically:

Health Campuses

The ARCH portfolio proposes a campus and village Health & Wellbeing network to support growth of the Life Sciences and Health & Wellbeing sectors. The ‘Campuses’ project, which is sponsored by the City and County of Swansea, has secured £15M and will build upon the successful Institute of Life Science (ILS) initiative, providing an integrated research and business incubator/park, secondary/tertiary clinical, research and trials environment, and skills development hubs.

A Morriston Campus, will expand research and innovation infrastructure alongside clinical delivery. Specifically maximising the current plans to develop a regional pathology service (and Laboratories) at Morriston Hospital, the Campus development will support creation of research collaboration and industry engagement facilities and research in health and bio-informatics.

In parallel, the reconfiguration of real estate will facilitate expansion of the *Singleton Campus* where a growing cluster of medical and other health technology companies/collaborations are focused. The Campus expansion will allow currently oversubscribed RD&I facilities to engage in prospective partnerships and projects attracted by the regional strengths in academic, clinical and industrial collaboration. It is anticipated that the Campuses initiative will create significant employment and additional regional Gross Value Added (GVA) contribution **(see appendix B).**

Health & Wellbeing Villages

A Health and Wellbeing village scheme contains a primary/community care facility, an ILS satellite and an education and skills development capability. This project is sponsored by Carmarthenshire County Borough Council. ARCH Partners are currently scoping potential Health & Wellbeing schemes across the region. The first will be constructed at Llanelli and £40M has been secured for the overall Llanelli scheme. The schemes will be digitally connected to the campuses and the network will drive local and regional economic activity. Other schemes currently being scoped are in Swansea City Centre (linking to the City Deal Digital District which the City and County of Swansea Local Authority is also sponsoring) and also Neath.

Additional Opportunities: Technology and Skills

The Swansea Bay City Deal also has cross-cutting skills and digital technology themes. The ARCH partners are working with other partners of the City Deal to identify how collaboration in these areas will benefit the health and life science sector; for example, accelerating the ARCH Talent Bank Project through the Skills theme and accelerating the

deployment of public-facing digital health and care technologies through the engagement of industry and different funding models.

Communication

The successful agreement of the Swansea Bay City Deal and its potential impact on our citizens is to be celebrated. The investment package of £1.3 Billion aims to significantly improve the economic landscape of the area with high-spec digital infrastructure and world-class facilities in the fields of health and life science innovation, energy and smart manufacturing. The City Deal is expected to deliver nearly 10,000 new jobs with the associated benefit to the health and wellbeing of our communities.

The ARCH Portfolio Management Office (PMO) have worked closely with the ABMU Communications Team to communicate the successful completion of the deal. This has included:

- Developing a City Deal “Frequently Asked Questions” (FAQs) resource for staff which can be found on the ABMU intranet site.
- An ARCH /City Deal video produced about the ARCH element of the deal: <https://www.youtube.com/watch?v=A9-waoJFfjM&feature=youtu.be>
- News stories have been posted on ABMU ARCH website, social media sites and also on all social media channels. These include links to the local and national coverage featured on BBC, ITV, Channel 4, SKY, Western Mail, Evening Post, Wales Online, The Wave, BBC Radio Wales and Radio Cymru as well as many other media outlets.

The ARCH PMO will continue to communicate relevant information about the City Deal at appropriate times.

CONCLUSION

The ARCH Portfolio Management Office and members of the ARCH Portfolio Board have been instrumental in developing and securing the Swansea Bay Region City deal. The successful agreement of the City Deal is to be celebrated and should lead to significant job creation, increased research in health and wellbeing and attract more people to want to work in the health and life-science economy in Swansea and in South West Wales. The funding secured through the City Deal may only be used directly to support the economic development aims within the ARCH portfolio. Therefore the ARCH portfolio Board will continue to identify a range of other funding mechanisms to take forward other projects within the ARCH portfolio.

RECOMMENDATION

The Board is asked to note the agreement of the Swansea Bay City Region Deal and the positive implications for key elements of the ARCH portfolio.

APPENDIX A

Swansea Bay City Region Deal

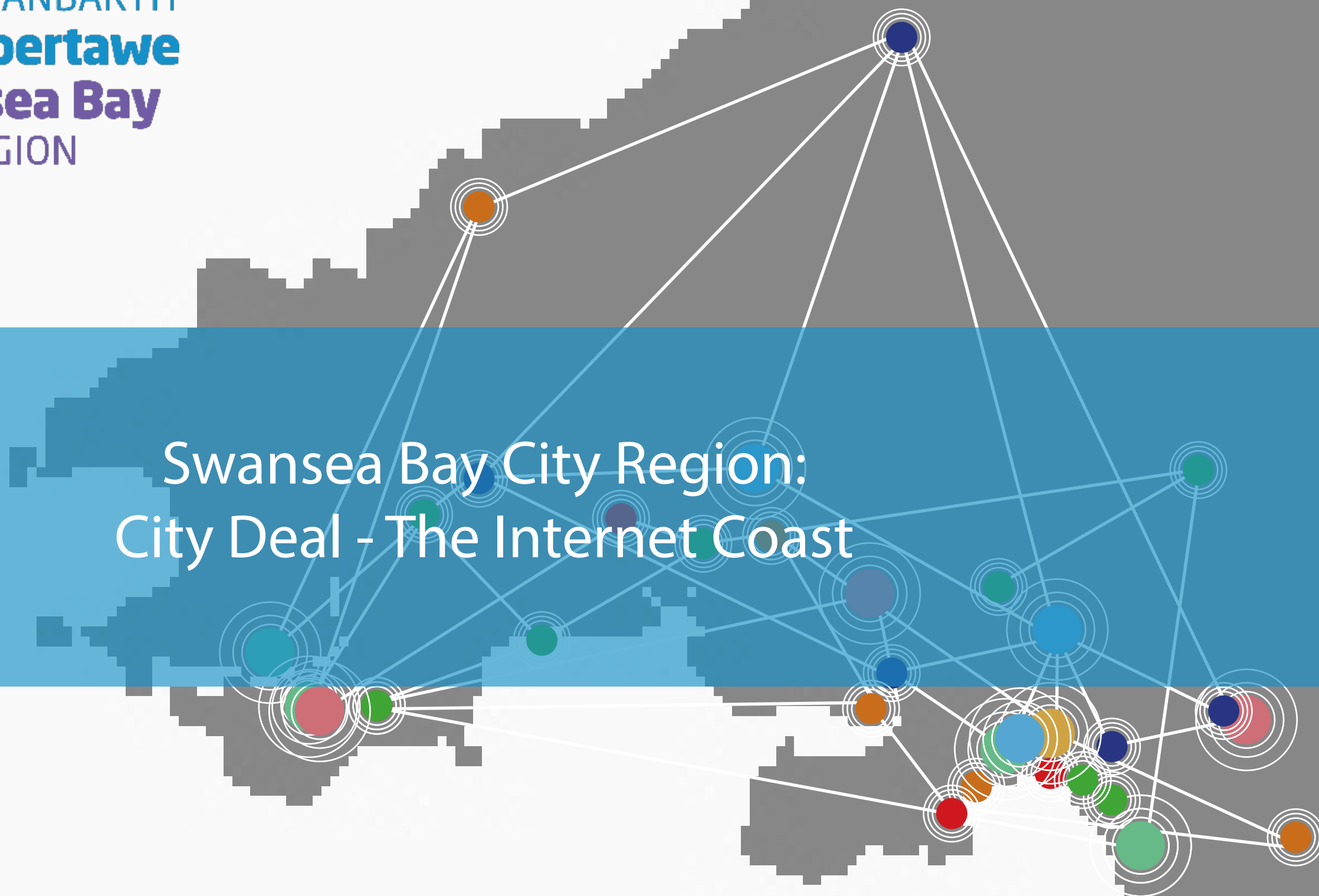
APPENDIX B

Swansea Bay City Region Impact Appraisal Document



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Swansea Bay City Region: City Deal - The Internet Coast



Executive Summary



South West Wales is taking a once in a generation opportunity to build on its unique physical and intellectual assets to further develop an open innovation ecosystem, designed to respond to global grand challenges. The multi and interdisciplinary nature of the Internet Coast will harness digital hyperconnectivity and applications, life science, smart manufacturing, and sustainable energy technologies to create ten thousand jobs, and £1.8bn additional GVA. The region has a strong history of collaboration between local authorities and partners. The in public and private sectors have a strong understanding of our economic challenge based on hard empirical evidence. We have a shared strategic approach to which we all subscribe. We must tackle a GVA gap that is widening both in terms of UK GVA and Wales GVA.

These proposals will close that gap and they will do so in a manner that avoids the potential for two decades of jobless growth. We must deal with the economic reality in our region. Our approach is coherent and comprehensive and combines transformational proposals on skills, innovation and infrastructure that will deliver sustainable growth, reduce economic dependency and make Swansea Bay an exemplar City Deal.

1. By 2035 our region will be recognised internationally as a lead innovator developing and commercialising solutions to some of the most pressing universal themes and global challenges of our time – Energy, Health, Manufacturing and the transformational economic power of data driven digital networks in both rural and urban communities. The region will be employing thousands in indigenous new businesses, established by local innovators and inward investors, and supported by innovative organisations. It will be delivering significant health and wellbeing and energy related benefits for our citizens and supplying services and products to other regions of the world.
2. In February 2016, the 'Internet Coast' City Deal proposal was agreed by the Swansea Bay City Region Board and subsequently supported by the Chancellor of the Exchequer, who announced in his March 2016 budget that he was opening discussions with the region's Board. In the Autumn statement 2016 the Chancellor recommitted the governments support for a City Deal for the Swansea Bay City Region.
3. The Internet Coast proposal aims to put the region at the forefront of the digital age and fourth industrial revolution; where value is created by knowledge extracted from vast data resources, the internet of things and communications mobility. These are the factors that will fundamentally change and enhance the way we work and live.
4. With a focus on the transformative power of next generation fixed and mobile digital networks, including 5G and its associated hyper connectivity, the proposal is based upon themes where economic opportunities exist. The region has the potential to combine and deploy assets across a range of commercialisation opportunities, such as:
 - data, hyper connectivity and commercialisation; across rural as well as urban areas
 - life sciences and health & well-being;
 - energy and low carbon technologies; and
 - advanced materials, engineering and manufacturing

5. Through the City Deal the Swansea Bay City Region will embrace a once in a generation opportunity to further consolidate its role in technological innovation, realisation and commercialisation. We will make a substantial contribution to the UK Government's forthcoming industrial strategy and harness the opportunities set out by the Welsh Government within its Innovation Strategy¹.
6. Innovation, technological and commercialisation advancement are best achieved where disciplines and sectors come together. The City Deal will stimulate activity and develop a commercial culture in a network of interconnected test beds and living laboratories, designed not only for 'proof of concept' and also 'proof of business'.
7. A strategy for securing significant economic gains underpins the entire Internet Coast City Deal proposal. The interconnected projects summarised within this document have been selected due to their combined commercial potential. Our leadership will ensure that the benefits of regional innovation is developed and exploited locally and exported to a global market. A coherent programme of interconnected activity will comprise:
 - A strong delivery vehicle, incorporating a democratically accountable Joint Cabinet Committee, commercially minded performance management arrangements, and innovation framework, all working together to drive and deliver the entire regional proposition. The committee will maintain market relevance through an observatory supplying evidence led insight. Other key functions critical to delivery will include strategic and delivery planning, individual project approval, monitoring, and impact assessment. The private sector will play a pivotal role in the governance of the City Deal and be represented on the Joint Committee and its sub-structure, ensuring connectivity to already established sectoral fora.
 - A regional Digital Infrastructure and Test Bed intervention, will give the region a unique selling proposition building upon existing regional research platforms such as the MRC funded Farr Institute and the unique SAIL databank. The Swansea Bay City Region already has a firm R&D and innovation foundation forming a unique Digital Cluster with major multinationals partners including BT, Fujitsu and DVLA. Specific interventions will include the creation of 5G regional Test Beds, enhancements to existing communications infrastructure; such as G.Fast and the development of an internationally significant Data Lake. These infrastructure investments will underpin and enable improvements in GVA, productivity and the commercialisation of the regional asset base.

¹Innovation Wales (2014) Llywodraeth Cymru/Welsh Government

²Cisco (2015) The Internet of Everything: Unlocking the opportunity for UK startups

Executive Summary

- Skills and Talent Initiative, delivered through the collaborative Regional Learning and Skills Partnership, made up of private and public sector members, which will ensure the creation, attraction and retention of a workforce equipped to deliver each of the City Deal strands, alongside contributing to a broader uplift in productivity across the wider economy.
- Swansea City and Waterfront Digital District. The district will capitalise on the next generation connectivity available within the region, developing a vibrant and prosperous City Centre that facilitates the growth of high value ICT and digitally enabled sectors, and acts as a key driver for the regional economy. The district will include: incubation space and co-working areas for start-ups and small businesses, alongside global enterprise; a new City Centre Business District and a Digital Square and Arena. This infrastructure will deliver a vibrant community where people live, work and play.
- Creative Digital Clusters. Wales is becoming a key destination for global digital film makers. Swansea City Region is already recognised as the home for major international film production. This capability will be extended across the region through a number of digital creative clusters, the first of which will be Yr Egin in Carmarthen. Yr Egin will provide next generation digital infrastructure, business accelerator facilities and incubation space.
- Centre for Excellence in Next Generation Digital Services (CENGs) will provide a data analytics capability to turn world class data sourced innovation into commercial systems and solutions, establishing a leadership position for Wales and the UK. Initially focused on the Internet of Health and Wellbeing, Internet of Energy, and Smart Manufacturing, the core objective is to translate 'ideas' into private sector job creation and wealth generation.
- Life Science and Health Campuses, and Life Science and Wellbeing Village Network, to support the growth of the life science sector and healthcare innovation. Life science/health innovation hubs and satellite sites will be created across the region, in hospital and primary care settings. This will strengthen the region's capacity to commercialise research, attract additional inward investment, and further increase the export of high value services and goods, such as medical devices.
- Homes as Power Stations. Creating a new industry based around innovative and sustainable energy generation, combined with storage and efficiency. New technologies developed and applied within the region are allowing homes and buildings to generate, store, and release their own energy. This will create entirely new value chains stretching from world-leading research to strategic applications for heavy industry. It also demonstrates great potential to address the fuel poverty, which remains a persistent challenge for many communities across the region.

- The project will involve the development of a marine energy test area utilising the deep port of Milford Haven, an energy engineering centre of excellence, and a wave energy demonstration zone. By creating a cluster of resources, knowledge, and capabilities, Pembroke Marine will accelerate technology development, enhancing the sector's success and ensuring continued investment and development in other test sites on a regional, Welsh and UK scale
- Factory of the Future Initiative. The Swansea Bay City Region is home to a strong and diverse base of multinational and specialist SME manufacturers; including Port Talbot Steelworks, SONY, Ford and 3M. These companies are connected to a supply chain which reach regionally across the UK and globally. This initiative will support inward investment in leading edge technologies and harness the opportunities associated with a digital manufacturing revolution. Informed by industry 4.0 principles, and supported by world class industrial innovators, this initiative will put the region and its enterprises at the forefront of this digital and data based manufacturing movement creating a regional integrated manufacturing ecosystem.
- Steel Science Centre. The Centre will address the current and future challenges of sustaining primary steel-making capacity in the region and the UK, building upon the region's centres of excellence and industrial capabilities. In doing so it will place the region at the cutting edge of low carbon production and the utilisation of locally generated waste products such as chemical and raw materials feedstock. Steel technologists will be co-located with academic and research staff from Swansea and key UK partner universities supporting knowledge flow. This is a model that could be exported to all developed economies ensuring a vibrant, sustainable and profitable steel sector with regional and national product specialisms.

8. All business cases have passed the rigorous regional test measured against the following criteria (further evidence is provided within full business cases):

- GVA Impact;
- job creation and skills readiness;
- private sector engagement and investment;
- impact on UK Plc. / idea exportability;
- readiness (5-year context); and
- regional spread of activity.

9. The appraisal of business cases against the first two criteria has been underpinned by an economic analysis led by Swansea University economists and demonstrates that taken together the proposals are projected to provide in excess of 10,000 gross direct jobs in the sectors and the supply chain, and £1.8bn GVA contribution, with over £1.5bn of further thematic benefits identified.

10. The Leadership of all four local authorities commends the submission of the City Deal proposal to Welsh and UK Governments. They also commit to establishing a Joint Regional Committee with representation from the two Universities, Swansea University, UWTSD, both University Health Boards and the private sector. The JRC will be charged with ensuring that the ambitious proposals for economic acceleration within the region are realised.

Vision

A Super Smart Innovation Region

The vision is of an outward-looking region with the innovation capacity and infrastructure to inform and advance solutions to grand challenges that are both real locally and exist in almost every region of the world. A region of interconnected testbeds and living laboratories, designed not only for ‘proof of concept’ but also for ‘proof of business’. Innovation and technological advancement is best achieved where disciplines and sectors collide, and such multidisciplinary collaborations and environments have been a defining feature of the region.

This distinctive and integrated proposition will ensure that by 2035, the Swansea Bay City Region is recognised internationally as a lead innovator developing solutions to some of the most pressing universal themes and global challenges of our time – energy, health, manufacturing and the transformational economic power of digital networks. The region will be employing thousands of indigenous businesses, established by local innovators and inward investors, and supported by cutting edge innovation organisations. It will be delivering significant health and wellbeing benefits for its citizens and exporting its knowledge and products to other regions of the world with similar challenges.

We present a vision that has the requisite scale to attract international investor interest. One that remains citizen-focused and grounded in the geography and assets of Swansea Bay. In addition to creating 10,000 new jobs and delivering £2bn GVA impact the Internet Coast will realise broader social benefits ranging from the alleviation of fuel poverty to the de-carbonisation of the energy supply, and enhancing social inclusion and mobility. Our aim is to accelerate growth in the entire region; for the benefit of Wales and the wider United Kingdom.



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Context

There are some enlightened parts of the world that recognise that the combination of various technology revolutions particularly those around health, digital, energy and manufacturing are moving towards what the Japanese call a Super Smart Society. Such a society is underpinned by a user-centric Open Innovation approach which draws upon multi-sector and interdisciplinary collaborative working. Clearly this approach presents considerable innovation challenges but in return offers enormous economic and citizen well-being benefits.

The Swansea Bay City Region has already made significant inroads to justify the label of an emergent innovation region and its leadership are confident that this proposal will meet the Treasury and Welsh Government's approval through demonstrating a distinctive and sustainable offer. It also aligns harmonisously with Welsh and UK Government industrial policy, including *Innovate Wales* and the forthcoming strategy for a fourth industrial revolution announced by the Chancellor Philip Hammond in October 2016.

The foundations of a regional Open Innovation Ecosystem have already been laid through regional collaborative working, Welsh Government policy and significant EU Structural Funds investment. This City Deal proposal seeks to build upon the knowledge economy momentum already established in the Swansea Bay City Region following a strategy, and aligned investment that focuses on specific commercial sectors. This approach will, over time, create a confident Region that sustains an economy creating wealth and a quality of life for its communities and citizens that compares favourably with the very best.

The Swansea Bay City Region has unique and globally recognised science and knowledge based assets that have been established through very significant investment from public and private sources following significant peer review and due diligence. A conservative estimate places the total amount of funds invested in this knowledge based infrastructure a little short of £350million. Funders include:

- Government; UK Government through Departments such as BEIS. and Welsh Government through the Department of Health, Sport & Wellbeing; Department of the Economy, Science & Transport
- The EU, through Structural Funds and competitive research awards such as Horizon 2020
- Research Councils UK, including MRC, ESRC, EPSRC
- Other funding bodies including Wellcome Trust and other national charities, and;
- The private sector including major investments by Rolls Royce, Tata, Fujitsu, Sony and many more

Unique Regional Assets

The Region is home to a number of invaluable natural resources and infrastructure which include:

- Milford Haven, one of the finest natural harbours in the world through which flows 35% of the UK's natural gas needs,
- The second largest tidal range in the world spawning a growing tidal energy industrial sector
- Natural resources and weather patterns ideal for renewable energy generation.
- A quality of life that attracts global talent to locate in the region.

In addition to these, the region is home to a range of major employers in key, aligned and strategic sectors including:

- Port Talbot Steel Works which supplies the Trostre Tinplate Works and other associated sectors in the region and across the UK
- Other manufacturers employing thousands in advanced manufacturing including Ford and Sony.
- The Driver and Vehicle Licensing Agency (DVLA) holding over 47 million driver records and over 39 million vehicle records, collecting around £5.6 billion a year in Vehicle Excise Duty (VED), and driving an ICT innovation agenda for UK Government.
- ARCH ecosystem of Life Sciences and Health & Wellbeing employing over 30,000 people within the two University Health Boards.
- Four local authorities who have come together to oversee the Economic Development Strategy for the region including the City Deal.

All of these assets underpinned by a mobilised HE and FE sector including:

- Swansea University, a research led institution with industry and commerce at the heart of its strategic vision and the home of world-leading research departments in Engineering, Science, Medicine, Management and Leadership
- The UWTSD Group – a new dual sector educational provider including 3 Universities and 2 Colleges across the region, committed to educating and up-skilling students of all ages and backgrounds, and stimulating economic development in the region.
- A regionally distributed and coherent FE sector with initiatives such as the College University Skills Partnership creating innovative partnerships responding to the skills needs of Wales

Proposal Overview

This proposal has been developed to build upon momentum established in defined sectors but recognising that combining disparate threads into one coherent strategy addresses the challenges of an age that often requires collaborative and multidisciplinary solutions. To realise this vision this City Deal proposal has four interconnected strands, all unified by the Internet of economic acceleration which recognizes the transformative power of digital networks and innovation systems.

An Internet Coast that will establish the Swansea Bay City Region as a globally significant actor where a culture of Open Innovation accelerates a vibrant sustainable and diverse economy. Delivering jobs and investment whilst also benefitting its population and addressing the determinants inequality for current and future generations.

The four strands are coherent in their own right, however together they fuse to form an economic development strategy where the sum is greater than the individual parts:

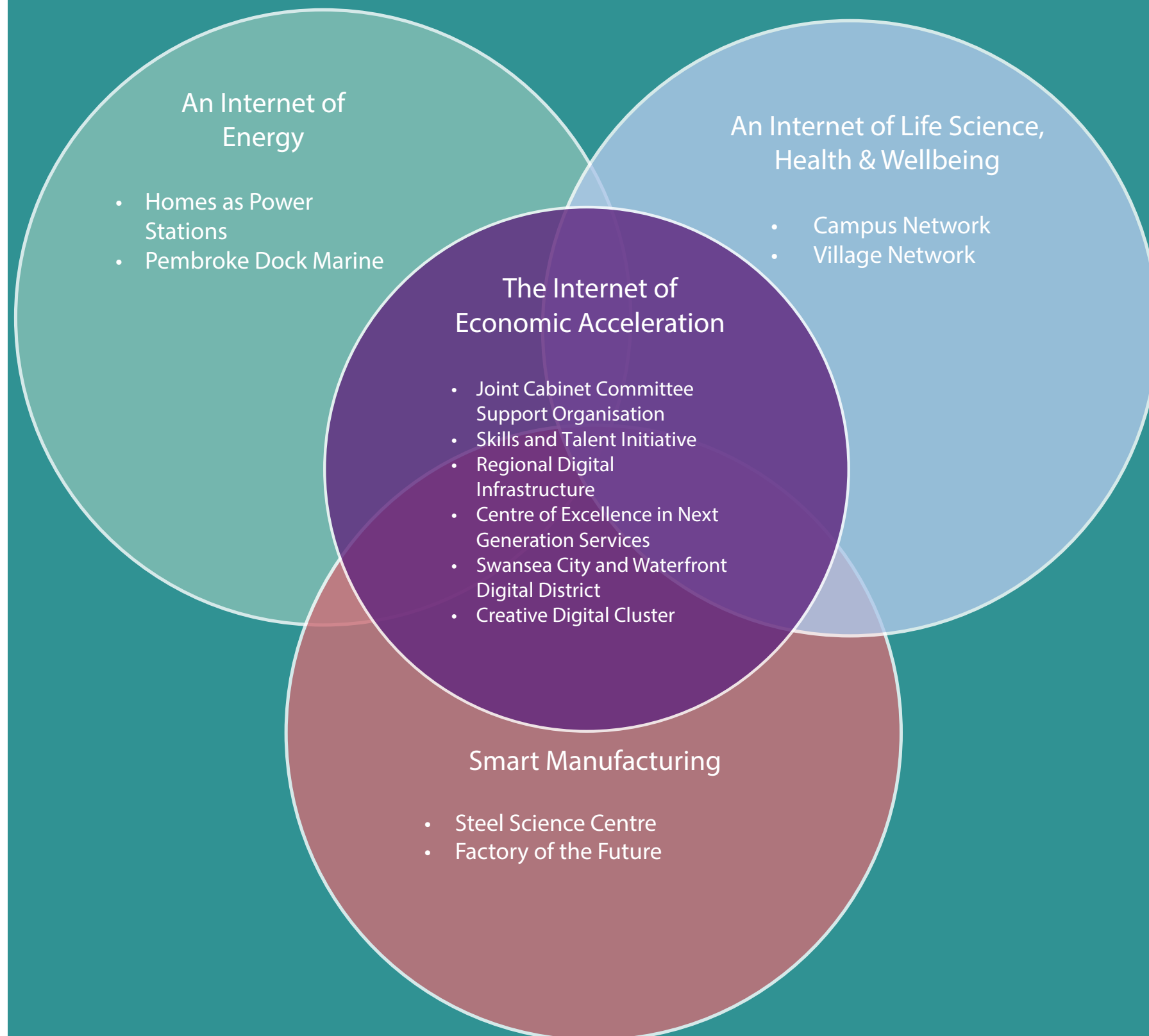
$$1+1+1+1 > 4$$

Together they will embrace the whole region in an interconnected knowledge network designed to create a sustainable Super Smart Innovation Region.

The adjacent diagram describes the strategy of the Internet Coast proposal and notes the projects to be included in the first phase of development. This document is structured around the diagram and quantifies the impact of individual projects and the combined economic benefit of the strategic approach taken.

The Internet Coast will also position SBCR to harness further transformative developments for the region and UK as a whole. This includes the proposed Swansea Bay Tidal Lagoon and Jupiter Connection. These initiatives would be able to harness the capacities and capabilities of the Internet Themes, together with major impact across construction and wider sectors.

Swansea Bay City Region A Super-Smart Innovation Region:



The Internet Coast - Governance

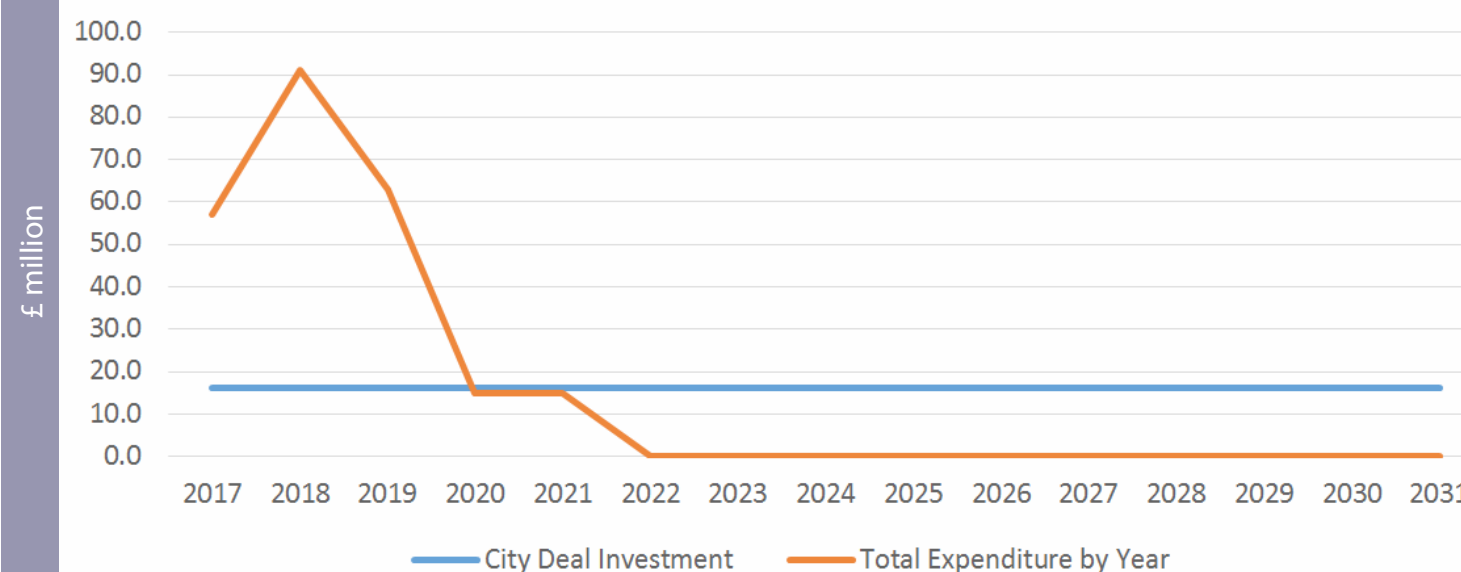
The Swansea Bay City Region City Deal is a partnership between 8 organisations. The 4 local authorities (City and County of Swansea, Pembrokeshire County Borough Council, Carmarthenshire County Council, Neath Port Talbot County Borough Council) define the region and have democratic accountability. The 4 local authorities recognise that in order to deliver the vision, they have to collaborate with each other and the other 4 partners, namely: Abertawe Bro Morgannwg University Health Board, Swansea University, Hywel Dda University Health Board and the University of Wales Trinity Saint David Group.

It is understood that the financial flows from Government for this City Deal will be in equal tranches over a fifteen year period totalling £241million. The investment will flow in equal measure from Welsh Government and UK Government investing £16.1million per annum over the period. The spend profile for the plans outlined is however front-end loaded to deliver the vision and maximise benefit. Plans indicate that a profiled funding deficit of £163million in year 3 of the programme will need to be addressed. The local authorities have agreed to use their borrowing powers to address this £163million deficit in order to enable the Internet Coast to proceed as planned. The capital borrowing will be repaid as Government funds are received. The interest repayment will be generated from the revenue activities of the individual projects but underwritten by the relevant local authority.

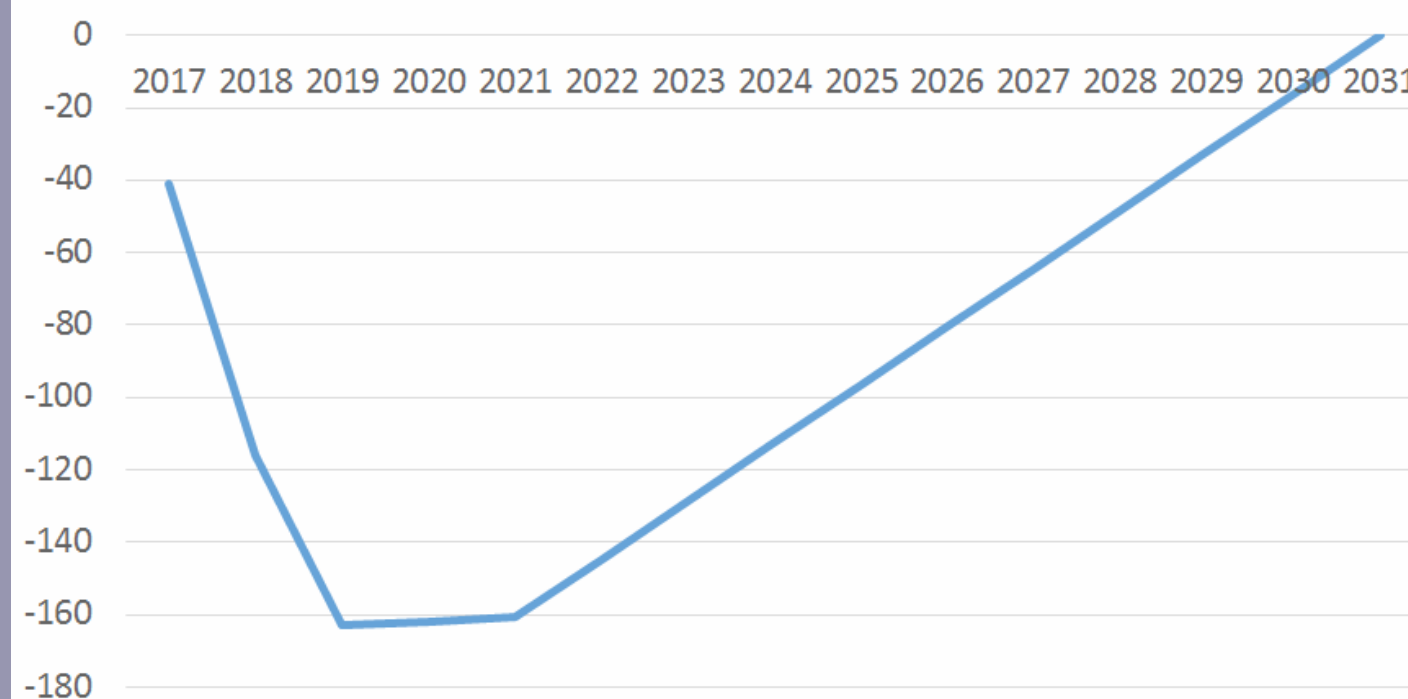
Joint Committee

In order to govern the City Deal appropriately, a Joint Committee will be established with representation from all 8 partners. However, it is recognised that the partners will carry different responsibilities and obligations and the Committee's meetings will be structured to reflect this. There will be different voting rights allocated to local authorities for certain matters, reflecting their role since it is only they that have the democratic accountability and statutory responsibility. It is proposed that the work of the Joint Committee is overseen by the appointment of an independent chair. The Joint Committee will be responsible for establishing and maintaining an Open Innovation Framework and other key functions critical to delivery, such as performance management, strategic communications, monitoring and reporting of impact.

Intenet Coast - Investment and Capital Expenditure by Year



Finance Requirement



The Internet Coast - Delivery

Delivery Team

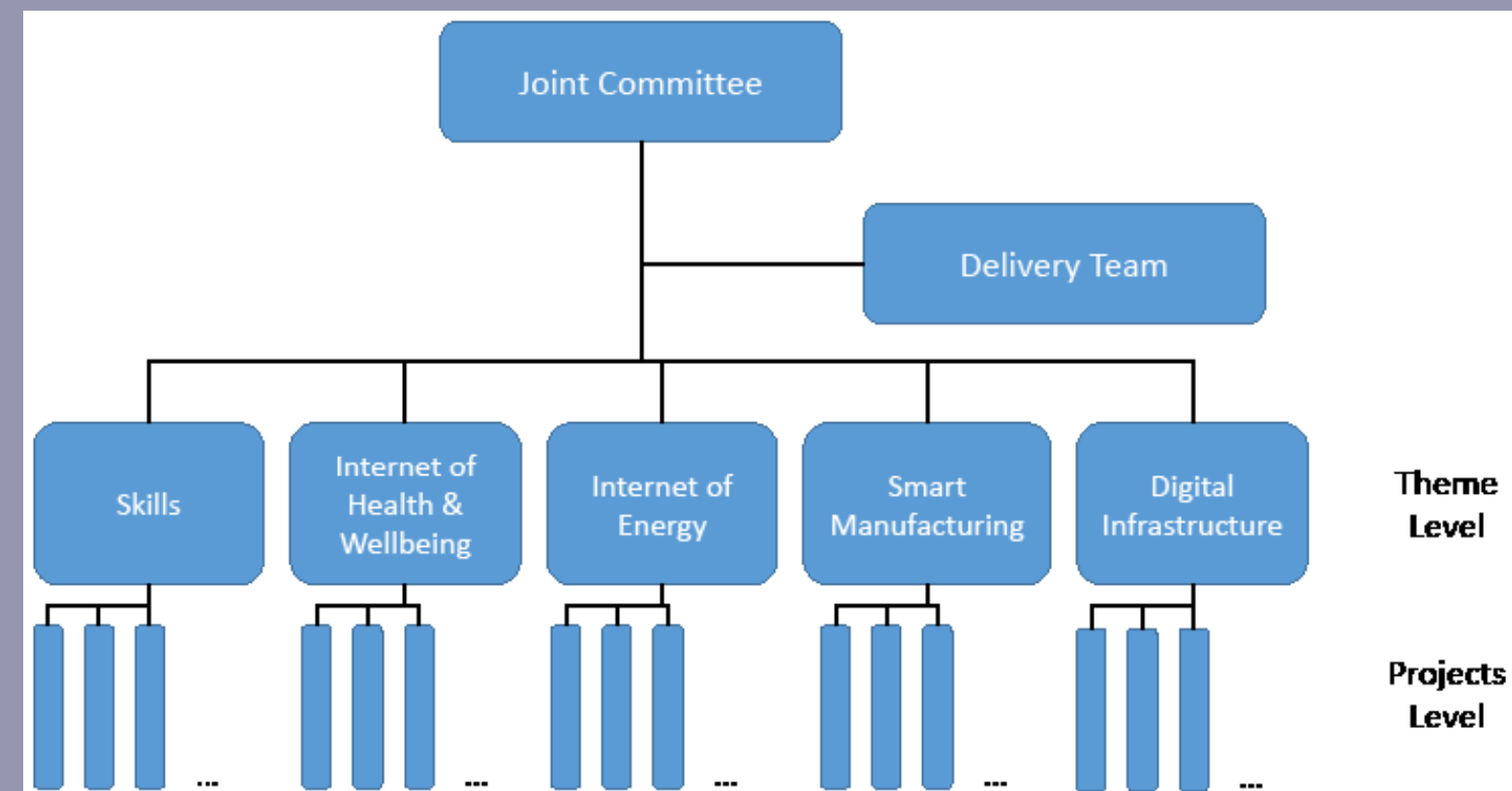
Beneath the Joint Committee, individual themes will have their own governance boards with chairs and representation selected to reflect the skills and experience required to oversee delivery and impact. The private sector will play an a prominent and meaningful role at all levels of governance.

The Internet Coast Delivery Team

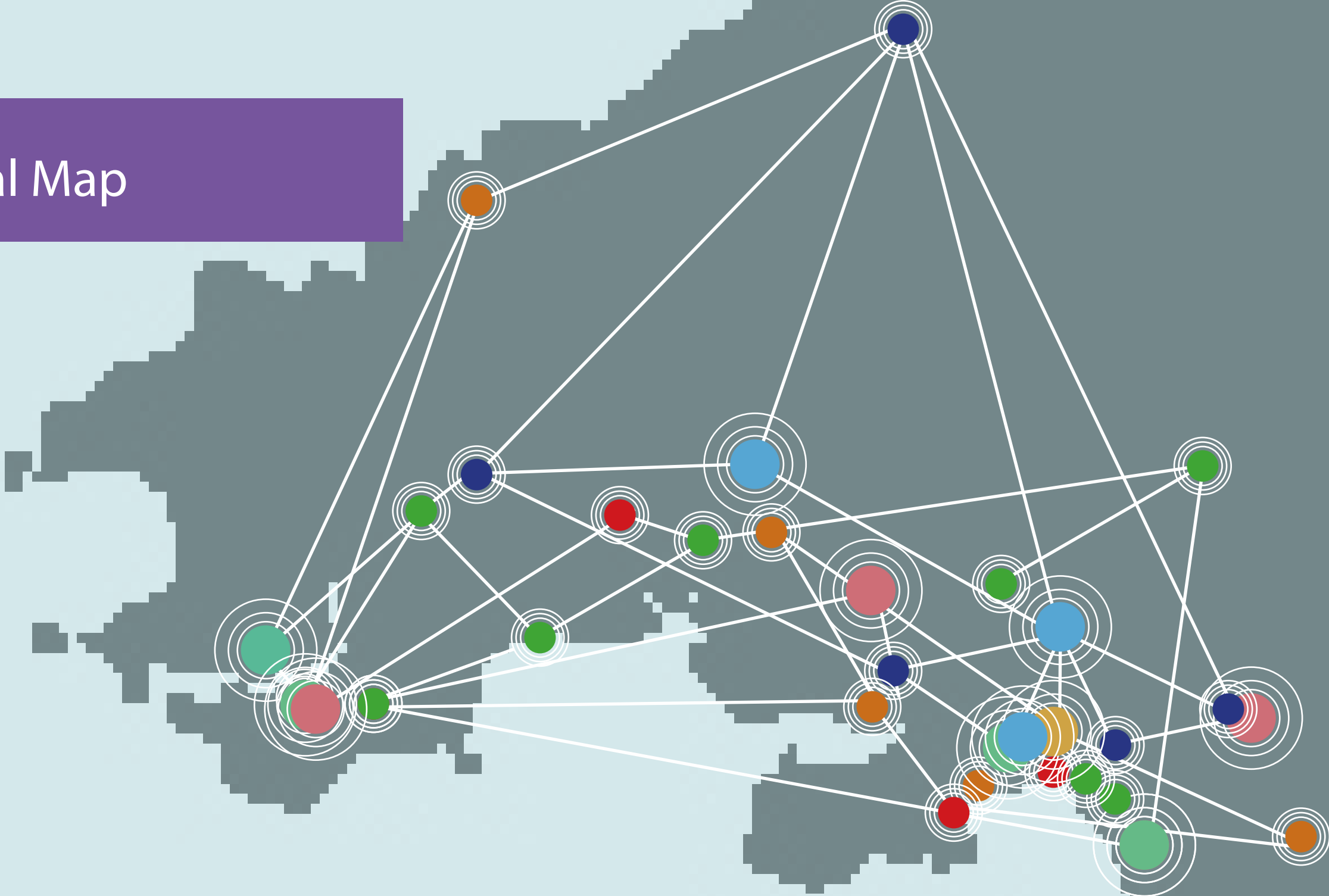
A delivery team will be appointed reporting directly to the Joint Committee and its chair through a Director. Ensuring the level and timeliness of benefits received The delivery team will be responsible for:

- Joint Committee enablement; the Delivery Team will be responsible for supporting and enabling the Joint Committee to function effectively
- Planning; the Delivery Team will monitor planning at the project and theme level and produce a consolidated Internet Coast plan on an annual basis for the consideration and approval of the Joint Committee,
- Monitoring; the Delivery Team will define the relevant KPI's harvest data on a quarterly basis and report progress and impact to the Joint Committee
- Financial; the Delivery Team will receive quarterly financial reports from projects and themes and produce a consolidated financial analysis for the consideration of the Joint Committee. It will have the skills and experience necessary to consider new funding approaches and propose these for consideration,
- Legal and Audit; the Delivery Team will design fit for purpose legal infrastructure for the Internet Coast and support projects and themes in matters of a legal nature. The team will also oversee internal and external audit functions,
- Economic Development; the Delivery Team will lead on overarching economic development initiatives including, for example, discussions with potential foreign direct investment,
- Intervention; the Delivery Team will intervene if individual projects are in need of support to ensure the overall vision is delivered,
- Communications; the Delivery Team will develop a strategic communications plan and brand management strategy and support individual project in communicating their message to appropriate stakeholders and citizens of the region.

Joint Committee and Delivery Team



Integrated Regional Map



Section 1:

The Internet of Economic Acceleration



Vision

A coherent connected region with dynamic and committed leadership focused on delivering economic benefits for all citizens, ensuring the ongoing relevance and development of the City Deal initiative, maintaining critical infrastructure fit for purpose for the 21st Century digital age and measuring and demonstrating impact to all stakeholder communities.

The Internet of Economic Acceleration will lead and deliver a coherent integrated economic development strategy for the region. The political leadership of the region will collaborate to give this theme impetus, validity, credibility and accountability ensuring that it remains true to its intended purpose and vision. There are three critical aspects to the work of this theme. Firstly it will be responsible for enabling the leadership and core management of the entire City Deal. Secondly, it will oversee the creation of a next generation hyper-connected digital ecosystem. Thirdly it will be responsible for defining the skills and talent needs, which will be delivered by public and private partners.

The Five-Year Aims

To establish the Joint Cabinet Committee Support Organisation and associated innovation infrastructure. To place the region at the forefront of digital innovation, building upon firm foundations of partnership to embed aspects of the vision, achieved through the following objectives;

- To launch the Swansea City & Waterfront Digital District and co-locate innovative digital enterprises founded by local innovators and inward investors at the heart of the City.
- To establish the creative digital cluster – Yr Egin – in Carmarthenshire. Building on the decision by S4C, the Welsh language broadcaster, to establish a significant presence in Carmarthenshire, Yr Egin will create a new creative digital cluster to attract SMEs to start up or expand through providing next generation infrastructure, business accelerator facilities, and networking opportunities.
- To launch a Centre of Excellence in Next Generation Services, which acts as a system and solutions hub for the Internet Coast. The Centre will bridge the gap between research and innovation and the ability to launch, develop and grow commercial opportunities.

To coordinate the definition of the City Deal's skill needs and to work with public and private providers to develop a strategy to be delivered through the Regional Learning and Skills Partnership.

The Ten-Year Aims

A mature and dynamic Joint Cabinet Committee supported by its leadership and management capacity, capable and comfortable with reviewing and refreshing its strategy and delivery mechanisms, following assessment against evidence based performance and agreed KPIs

To build capacity and drive forward further and greater inward investment accelerating economic growth, regeneration and job creation, achieved through the following objectives;

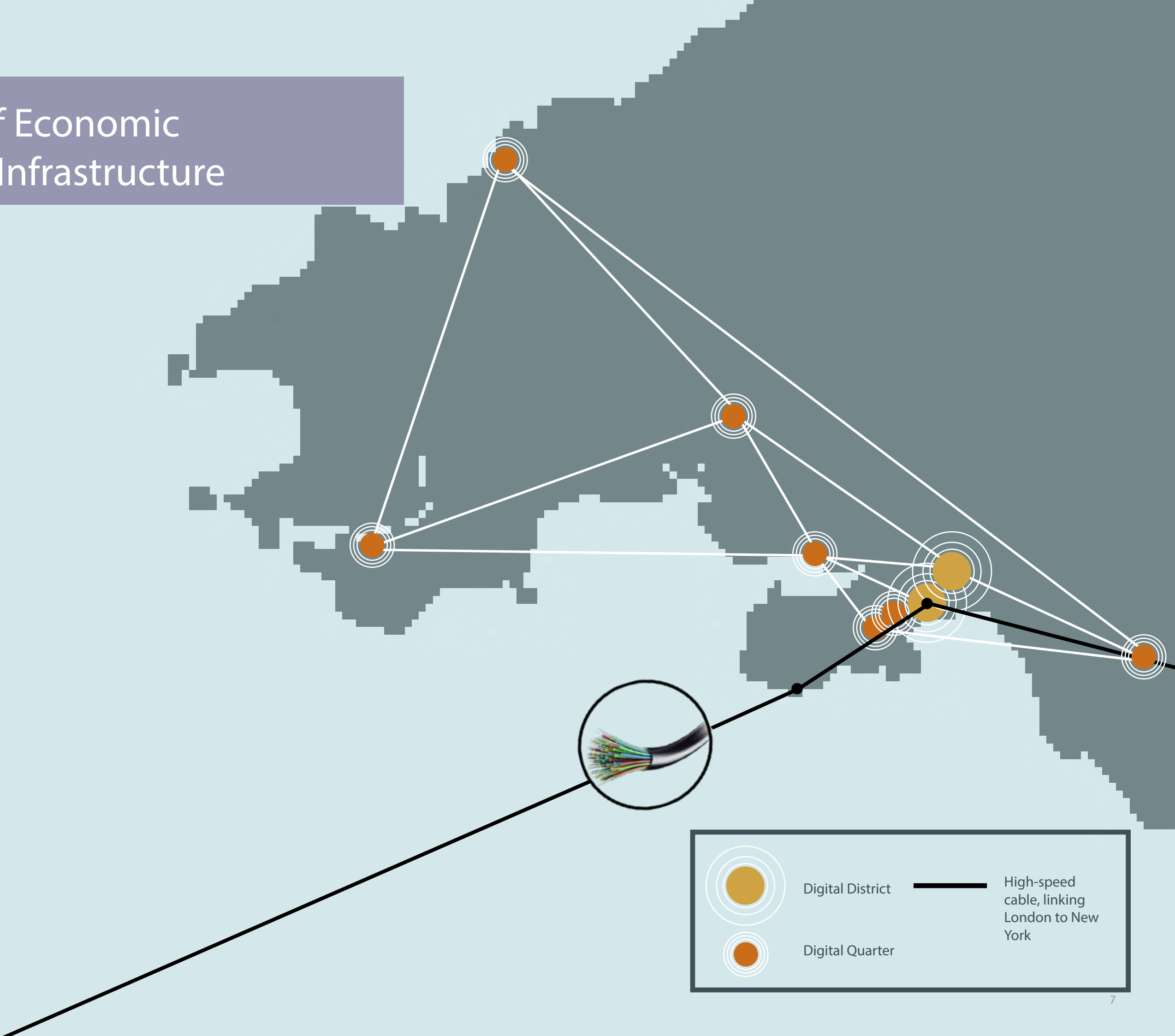
- To embed and expand the Swansea City & Waterfront Digital District delivering a vibrant and dynamic culture at the heart of the regenerating City Centre.
- To further develop Yr Egin to increase the number of creative SMEs and grow those businesses established during the first five years.
- To increase the number of commercial propositions identified and supported to market by the Centre of Excellence in Next Generation Services
- Future cohorts of learners will be benefiting from education and skills that continues to evolve to meet the need of indigenous and new businesses within the region, with confidence that it will lead to improved employment prospects and quality of life.

The Fifteen-Year Aim

Building on the digital infrastructure and growing reputation we will maintain and build momentum by constantly seeking new markets and investors from around the world and promote the region as an active international partner.

The region will sustain its own economy and contribute meaningfully to the economy of Wales and the United Kingdom

The Internet of Economic Acceleration - Infrastructure



The Internet of Economic Acceleration

A Unique Digital Cluster

Swansea Bay City Region provides a unique opportunity for knowledge-based ICT-led enterprise across a range of sectors. Major multinationals including BT, IBM and Fujitsu, a vibrant SME base and a growing community of early stage ventures such as those within TechHub provide a firm foundation for an unique Digital Cluster. Building on this platform this deal will enable the creation of the City & Waterfront Digital District (C²D) located in the Swansea City Centre. The C²D will stimulate the regeneration of the city making it a unique digitally connected environment, a vibrant community, where people live, work and play. The C²D is at the heart of a connected network of regional Digital Quarters.

The Computational Foundry is a fully invested initiative building upon the industry focused research base such as the BT 21st Century Network. This is bolstered by regional research platforms as part of UK/National initiatives including the MRC funded Farr Institute Health Informatics platform.

The region is also home to the unique SAIL databank as a big data resource for health and social innovation. The DVLA located at the heart of the region is a major centre for UK government ICT innovation. The region therefore provides both breadth and depth for the R&D and innovation necessary for the development of next generation services.

An Internet of economic acceleration will enable the creation of a hyper-connectivity infrastructure, which will underpin productivity gains across all sectors and support the development of a number of ICT-focused developments.

Proposed First stage Projects

Digital Infrastructure

A regional state of the art digital infrastructure will be designed and implemented to support the delivery of all City Deal strategy themes and projects and fundamentally underpin improvements in GVA and productivity. The infrastructure, designed to specifically underpin the defined sectors of regional excellence, will give the region a unique selling proposition. The region will be characterised by 'hyper connectivity', with 100% coverage and access to next generation broadband services. Specific interventions will include the;

- creation of a digital super-hub backbone and architecture, in which Gigabit fibre and next generation wireless networks support future world leading networks that will enable the innovation and entrepreneurship necessary to drive the whole economy.
- creation of test-Beds, with a particular focus on 5G and the integration of next generation wireless network technologies including The Internet of Things.
- expansion of the provision of 4G and WiFi capabilities to benefit the entire region and regional economy.
- development of digital infrastructure for key sectors including energy, life science and health, and manufacturing.

Investment requested from City Deal: £25 million

The Internet of Economic Acceleration

A Unique Digital Cluster

Skills and Talent Initiative.

An initiative, driven by the Regional Learning and Skills Partnership (RLSP), to ensure the creation, attraction and retention of a workforce equipped to deliver the Internet Coast vision, in direct response to evidence based market analysis and demand. The entire strategy will be both developed and co-delivered with the private sector at all levels of intervention. Contributing to broader uplift in productivity across the wider economy the key interventions include:

- Advanced STEM skills including Engineering Doctorates (EngD) and Science Doctorates (SciD) leading innovation within and across the Internet Coast themes (NQF 7-8);
- Enhanced multi- and interdisciplinary provision at under and postgraduate levels providing talent flows that increase productivity (NQF 4-6);
- Further/Higher Education: delivering skills for new roles within the theme sectors, including blended learning approaches (incl. Foundation Degree/ Apprenticeships) (NQF 1-5);
- Continuing Professional Development: ensuring the region's skills across the Themes remains at the forefront of practice;
- Talent Banks dedicated to the specific Internet Coast themes, co-funded by industry and supporting the development of new emerging skills/roles;
- Schools engagement strategy to influence curriculum development and delivery; and
- Careers engagement strategy driven by the private sector to enthuse young people and influence career decisions.

Investment requested from City Deal: £10 million
Match funding from other sources - £20 million

Swansea City & Waterfront Digital District (C²D)

The Swansea City & Waterfront Digital District project aims to create a vibrant and sustainable City Centre that facilitates the growth of higher value activities (particularly tech businesses) and acts as a key driver for the regional economy. The Swansea City & Waterfront Digital District builds upon a critical mass of ICT and associated knowledge-based enterprise already developed across the City.

The District will include:

- 100,000 sq ft of flexible and affordable accommodation
- A Digital Square and Arena
- 28,000sq ft Box Village and 64,600sq ft Innovation Precinct providing incubation space and co-working areas for start-ups and small businesses.

Investment requested from City Deal - £50million
Match funding from other sources - £118.2 million

The Centre of Excellence of Next Generation Digital Services

CENGs will provide a data analytics capability to turn world class data sourced innovation into commercial systems and solutions establishing a leadership position for Wales and the UK. Initially focused on the domain of Internet of Health and Wellbeing and Internet of Energy, the core objective is to transition 'ideas' to private sector job creation and wealth generation.

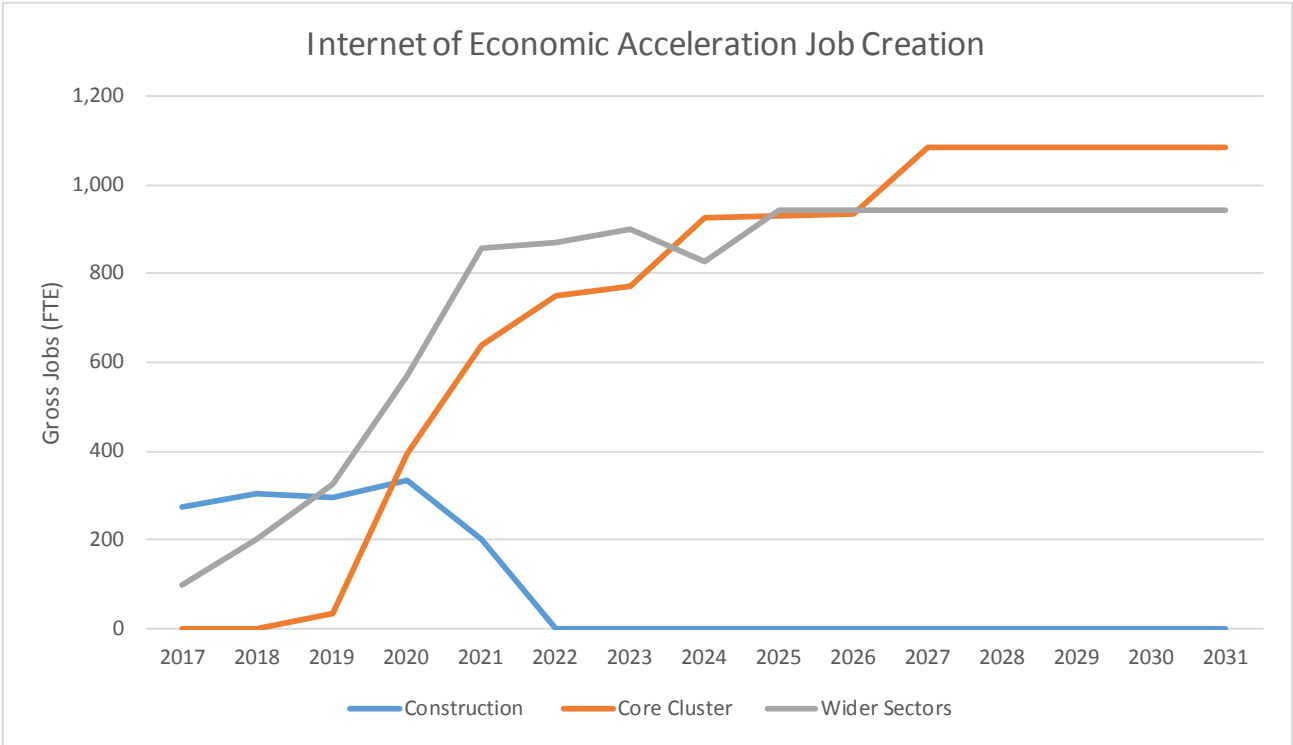
Investment requested from City Deal - £23 million
Match funding from other sources - £22 million

Creative Digital Cluster

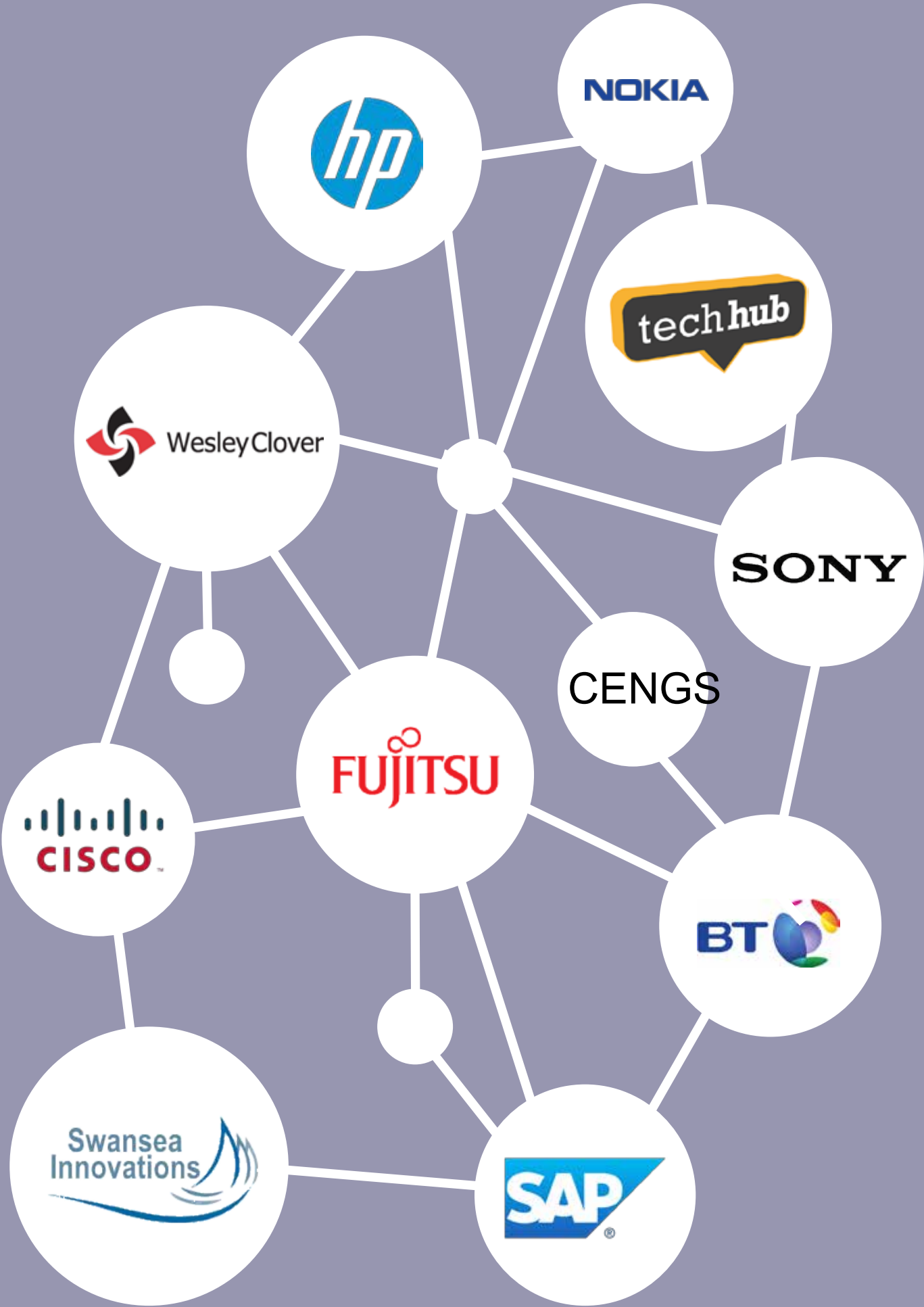
The first project, Yr Egin, involves the construction of a creative and digital hub within the Carmarthenshire region. Yr Egin will create a new Digital Creative Industry Cluster to further support the economic regeneration of the City Region building on a decision by S4C, the Welsh language broadcaster, to establish a significant presence in Carmarthen as the anchor tenant in the building. SMEs will be engaged as tenants who will, along with S4C, enable real, tangible economic growth and job creation in the area. A further cluster opportunity will be created in the Digital District in Swansea.

Investment requested from City Deal - £5 million
Match funding from other sources - £19.3 million

Impact - Jobs and GVA



	Direct and Multiplier Impact: Base Scenarios By Time Horizon	
Internet of Digital Innovation	10Yr	15Yr
• City & Waterfront Digital District	1,176 Gross Jobs, (823 net with multiplier), £190m GVA B/C Ratio: 4.59	1,323 Gross Jobs, (926 net with multiplier), £318m GVA B/C Ratio: 7.04
• Yr Egin	203 Gross Jobs, (143 net with multiplier), £51m GVA B/C Ratio: 7.69	203 Gross Jobs, (143 net with multiplier), £91m GVA B/C Ratio: 11.43
• CENGs	500 Gross Jobs, (300 net with multiplier), £104m GVA B/C Ratio: 5.98	500 Gross Jobs, (300 net with multiplier), £154m GVA B/C Ratio: 8.09
Combined First Phase IoDI	1,879 Gross Jobs, 1,266 net with multiplier, £345m GVA	2,026 Gross Jobs, 1,369 net with multiplier, £563m GVA



Section 2

An Internet of Life Science, Health & Wellbeing

Vision

An Internet of Life Science, Health & Wellbeing that will establish the Swansea Bay City Region as a globally significant actor where a culture of open innovation accelerates a vibrant sustainable and diverse economy. Delivering jobs and investment whilst also benefiting the wellbeing of its population and addressing the determinants of health and inequality for current and future generations.

The Five-Year Aim

To place the region at the forefront of life science & health innovation, building upon firm foundations of partnership to embed aspects of the vision, achieved through the following objectives;

- Launch the first phase of the Life Science & Health Campus network
- Launch the first phase of the Life Science & Wellbeing Village network
- Create a regional open access open innovation test bed for life science, health & wellbeing

The Ten-Year Aim

To attract significant inward investment through growing the Village and Campus network, driving economic growth and local regeneration through direct job creation and employment in vibrant innovation clusters. Specific objectives are;

- Expand the Life Science & Health Campuses network across the region
- Expand the Life Science & Wellbeing Villages network across the region
- Grow a portfolio of activity across the regional open access open innovation test bed delivering economic and health benefit

The Fifteen-Year Aim

To realise an economically sustainable region recognised as a destination of choice for global investment and enterprise in life sciences and health & wellbeing where resilience, equality and cohesion underpin a culture of innovation and collaborative working. Specific objectives are;

- Integrated and connected Campus & Village network in place and productive
- A significant and measurable impact on the science, innovation, economy and health of the region, Wales and the UK, and a leading model for global regions confronted with similar challenges
- A culture that enables the region to maintain its dynamism and continue at the frontier of innovation in life science, health & wellbeing.

An Internet of Life Science, Health & Wellbeing



An Internet of Life Science, Health & Wellbeing

A Unique Cluster

During the first decade of implementation the Life Sciences Strategy has established the Institute of Life Science, securing significant funding from the private sector, government and European Structural Funds. In the 2014 Research Excellence Framework, the ILS, the Research and Innovation arm of Swansea University Medical School was rated 2nd of 95 centres in the UK in its unit of assessment, with particular recognition for Impact and Environment, rated 1st in the UK. Over 50 new companies have been created, some coming from academia and others from the community, 800 new jobs have contributed to improving GVA and providing diverse opportunities. The Life Sciences ecosystem attracts major global companies to both participate in the clinical research environment created and collaborate with small innovative companies and entrepreneurs.

However, this is just the beginning and the original partners have established ARCH (A Regional Collaboration for Health) to build on the foundations and develop the region into a globally relevant ecosystem for integrated Open Innovation in Health and Wellbeing. ARCH defines a triple helix of Economic Development, Wellbeing, and Skills & Talent in an integrated innovative approach to addressing the challenges and realising the opportunities offered by Health & Wellbeing in a regional, national and global context. It builds on the region's success to date, aligns completely with the aspirations of the UK Government City Deal within a unique ecosystem embracing the skills and tools existing in the region.

The City Deal will allow the Life Sciences Strategy to both accelerate and expand in scope. It would connect the region via a network of Campuses & Villages, and through their local ecosystem reach every citizen. It would create a living laboratory which would allow close to a million people to participate in clinical research and trials offering a unique capability to global companies and indigenous enterprises. Creating new products and services adding significantly and sustainably to GVA, and above all else delivering the original vision of linking health and wealth.

Life Science & Health Campus Network

The Campuses initiative, and broader regional MediPark are built upon an "Open Access Open Innovation" philosophy, attracting a plurality of investors, technology firms, clinical groups and other stakeholders to engage in multi and interdisciplinary collaborations. The Phase 1 project will create expanded infrastructure with wider capabilities allowing more and larger opportunities to be captured, ranging from major inward-investment opportunities to HE/NHS commercialisation activities. A Morriston Campus, will expand research and innovation infrastructure in the field of genomics and proteomics alongside world-leading clinical delivery. In parallel, the reconfiguration of real estate will facilitate expansion of the Singleton Campus where a growing cluster of medical and other health technology companies/collaborations are focused. The Project will create significant new employment within high GVA sectors, the Campuses will have complementary foci of technology and clinical innovation, supporting development across a broad range of technology readiness levels.

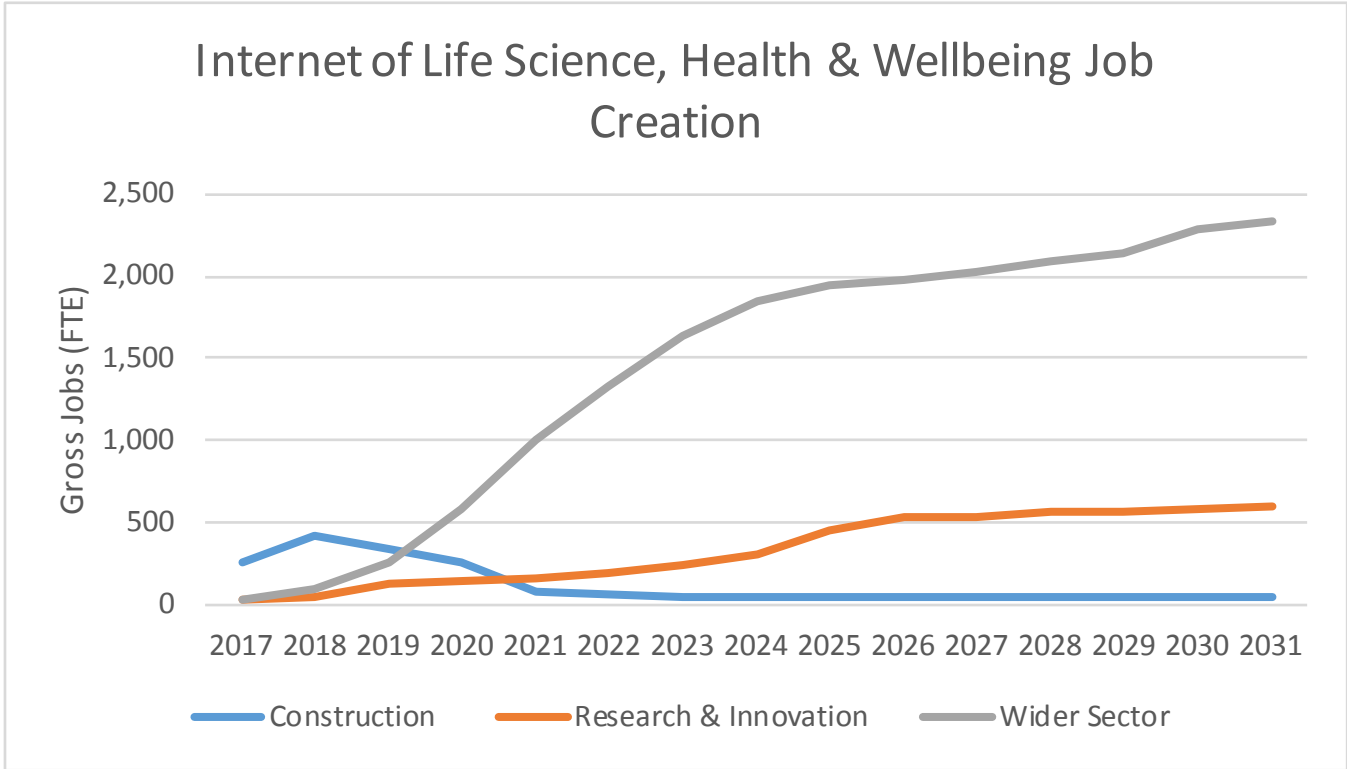
Investment requested from City Deal: £15 million
Match funding from other sources: £30 million

Life Science & Wellbeing Village Network

A Health & Wellbeing village network will be constructed and operational during the first five-year period of the programme, with a first Village in Llanelli. The village will contain a primary/community care facility, an ILS satellite, an education and skills development capability, and leisure and tourism facilities. The villages will be digitally connected to the campuses through the Internet of Digital Innovation capability and the network will drive local and regional economic activity. The Llanelli Health and Wellbeing Village aims to deliver transformational social and economic benefits through delivering the full scope of the Health and Wellbeing Village definition, namely the integration of business development, education, wellness initiatives, research and development and healthcare initiatives. The project is a partnership between Carmarthenshire County Council, Swansea University, Hywel Dda University Health Board and Abertawe Bro Morgannwg (ABM) University Health Board.

Investment requested from City Deal: £40 million
Match funding from other sources: £95.5 million

Strategic and Co-investing Partners



	Direct and Multiplier Impact: Base Scenarios By Time Horizon	
Internet of Life Science, Health & Wellbeing	10Yr	15Yr
H&W Campus Network Phase 1	710 Gross Jobs, 497 net with multiplier £61m GVA B/C Ratio: 2.25	1,120 Gross Jobs, 784 net with multiplier £153m GVA B/C Ratio: 5.23
H&W Village Network Phase 1	1,853 Gross Jobs, 1,297 net with multiplier £286m GVA B/C Ratio: 9.45	1,853 Gross Jobs, 1,297 net with multiplier £467m GVA B/C Ratio: 14.13
Combined First Phase IoHW	2,563 Gross Jobs, 1,794 net with multiplier £347m GVA	2,973 Gross Jobs, 2,081 net with multiplier £620m GVA

Companies who have indicated a serious intent to ‘co-invest’ in the City Deal initiative



Section 3

An Internet of Energy

Vision

An Internet of Energy that will establish the Swansea Bay City Region as a globally significant actor where a culture of open innovation based around energy production, storage and use accelerates a vibrant sustainable and diverse economy. Delivering jobs and investment whilst also benefiting the wellbeing of its population and addressing the challenges of fuel poverty and energy security for current and future generations.

The Five-Year Aim

To place the region at the forefront of energy innovation, building upon firm foundations of partnership to embed aspects of the vision achieved through the following objectives:

- Launch a Homes as Power Stations project, addressing fuel poverty and supporting the development of an emerging cluster, which uses a building's fabric for solar energy generation and storage, and develops new business models and routes to market; and
- Launching Pembroke Dock Marine, harnessing the port infrastructure to develop a marine energy test area, energy engineering centre of excellence, and wave energy demonstration zone.

The Ten-Year Aim

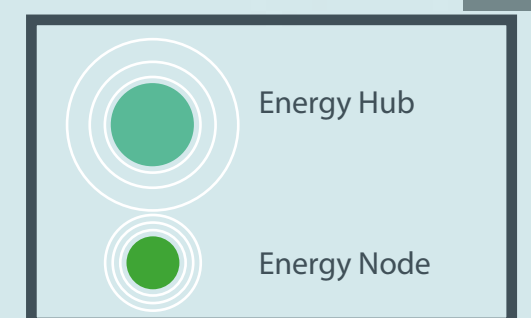
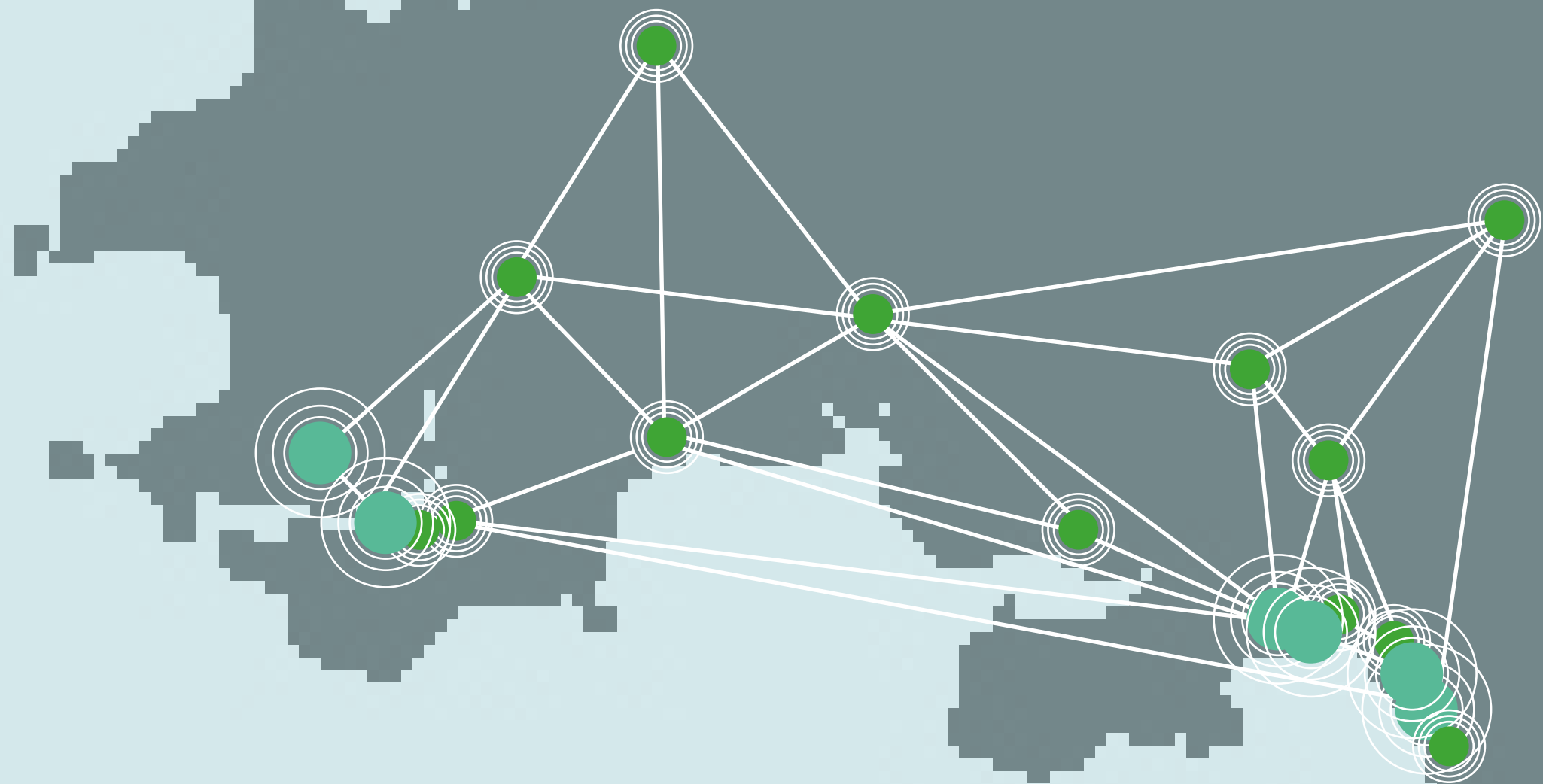
To attract significant inward investment through growing the Internet of Energy, driving economic growth and local generation through direct job creation and employment in vibrant innovation clusters. Specific objectives, include:

- Expansion of the Homes as Power Stations project across the region, and exporting related low/zero-carbon technologies and products to the rest of the UK;
- Exporting the emerging innovations from the Pembroke Dock Marine activities to the other parts of the UK and beyond;
- Developing a second wave of new and growing indigenous and inward-investing Energy sector ventures, including initiatives in the field of Smart Grid technologies.

The Fifteen-Year Aim

To realise an economically sustainable region recognised as a destination of choice for global investment and enterprise in energy innovation, where excellence, sustainability and integration underpin a culture of innovation and collaborative working.

An Internet of Energy



An Internet of Energy

A Unique Cluster

The Swansea Bay City Region has a significant and diverse energy asset base, in both conventional and renewable energy production and storage; from gas power stations and biomass plants to wind and solar farms, fresh water micro generation and marine energy projects. These include the strategic UK energy hub at Milford Haven, major industrial sites such as the Port Talbot steelworks, and transformative activities such as the energy cluster emerging from the SPECIFIC initiative.

Energy production and importation for regional and national use has been a long-standing activity within the region, with a significant proportion of UK LNG and petrochemical refining based in south west Wales. This activity extends from Milford Haven at the west of the region through to Port Talbot and the Baglan Energy Park in the east. This has created an environment and ecosystem where both energy intensive industries and sustainable technologies are developed, applied and generates significant employment and economic benefit.

The region also has world-leading tidal research facilities and, if the Swansea Bay Tidal Lagoon is confirmed, a world-first tidal energy source. This will bring the economic benefits associated with the location of two centres of excellence within the region: a purpose built turbine manufacturing plant; and the heavy fabrication of steel components.

World-leading research expertise in materials engineering and energy systems has created an emerging cluster which combined with advances in conversion and storage, form a unique energy cluster. The full spectrum of challenges and opportunities at 'personal', 'societal' and 'industrial' scale provides a unique opportunity for the development, testing and deployment of technologies across all segments of the industry. Core to this is connectivity, interoperability, integration and control.

An Internet of Energy provides a unique environment for innovation which not only creates jobs and drives investment, but also helps address wider societal challenges of fuel poverty and energy security. The Swansea Bay City Region wants to digitally connect these assets and create a unique 'future energy system' test bed, designed to attract technology developers and researchers focused on creating new command, control and conservation systems for the energy industry and business and domestic end users.

The projects to be advanced under the City Deal, look to capitalise on two unique and differentiated opportunities to shape the future energy supply and demand within the region.

Homes as Power Stations

Creating a new industry based around innovative and sustainable energy generation, combined with storage and efficiency. New technologies developed and/or applied within the region are allowing homes and buildings to generate, store, and release their own energy. This is creating entirely new value chains stretching from world-leading research to applications for strategic heavy industry. It also demonstrates great potential to address the fuel poverty, which remains a persistent challenge for many communities across the region. The project will initially develop a cluster in Neath Port Talbot to catalyse a supply and value chain, which will deliver jobs with the construction supply chain, from new build and retro-fit activities and developing inward-investing and spin-out opportunities. The initiative will then progress across the region.

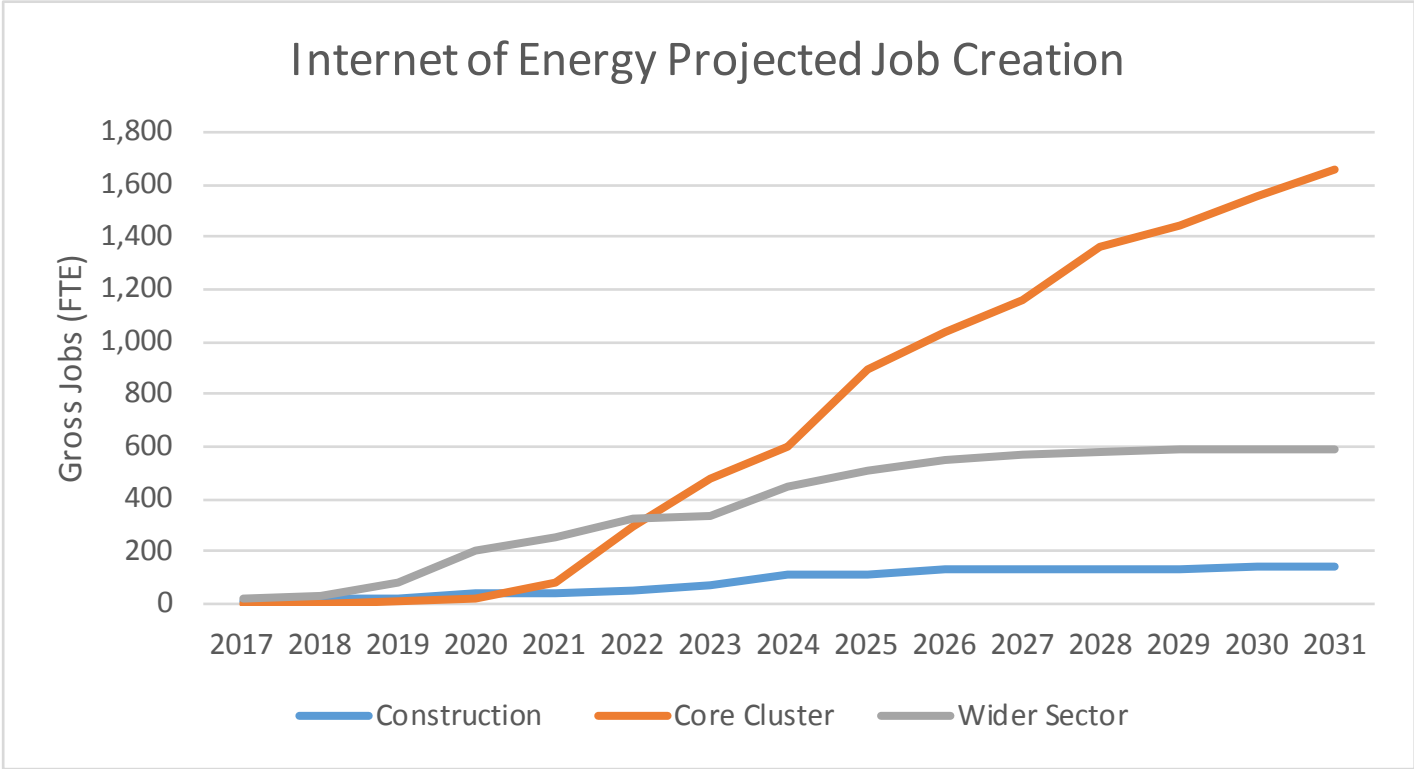
Investment requested from City Deal: £15 million
Match funding from other sources: £60 million

Pembroke Dock Marine

This project harnesses the unique opportunity associated with the region's natural resources, including one of the largest tidal ranges in the UK and the significant wave swell associated with being situated on the South West approaches. The project will involve the development of a marine energy test area utilising the deep port of Milford Haven, an energy engineering centre of excellence, and a wave energy demonstration zone. By creating a cluster of resources, knowledge, and capabilities, Pembroke Marine will accelerate technology development, enhancing the sector's success and ensuring continued investment and development in other test sites on a regional, Welsh and UK scale.

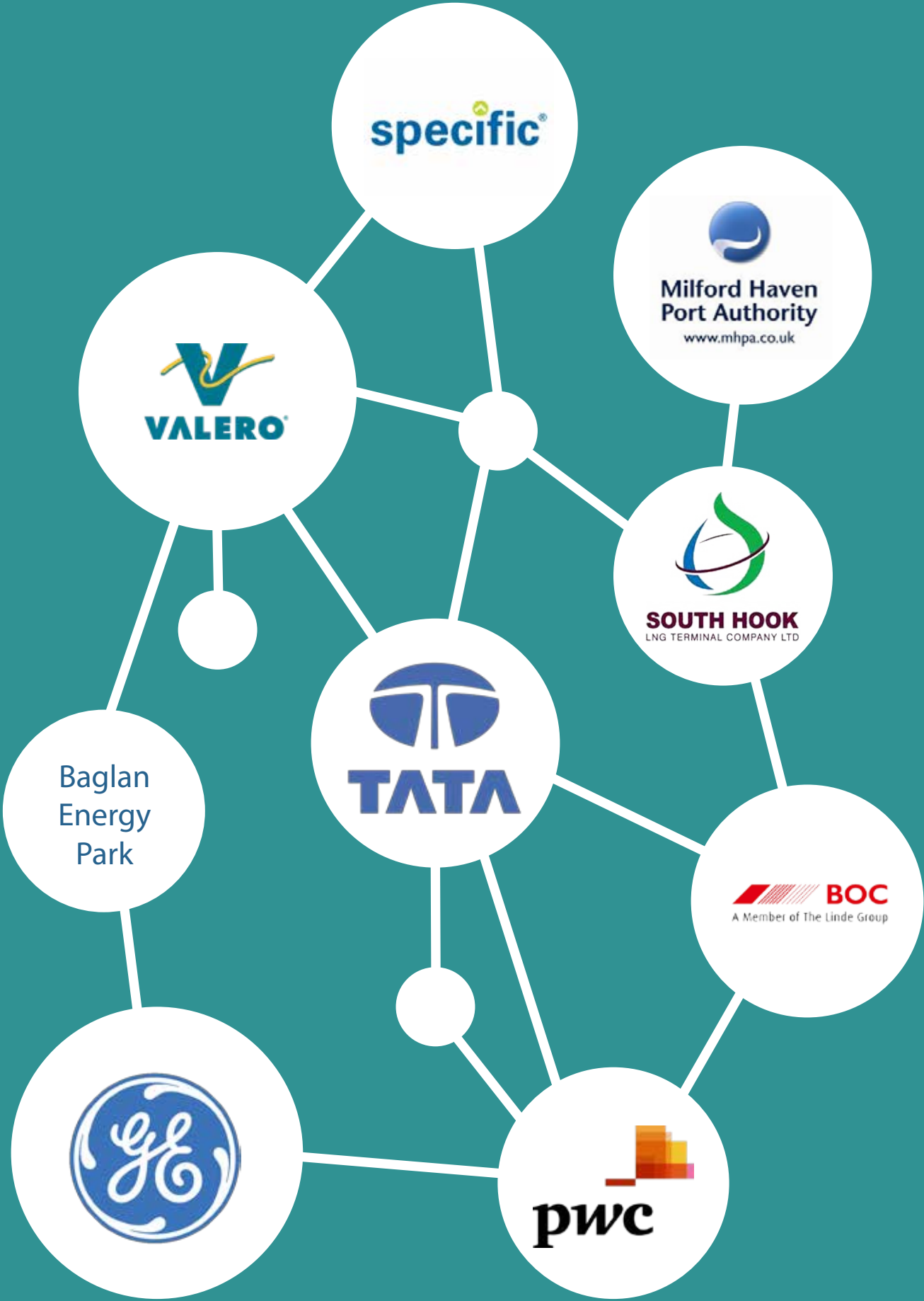
Investment requested from City Deal: £28 million
Match funding from other sources: £47.9 million

Impact - Jobs and GVA



	Direct and Multiplier Impact: Base Scenarios By Time Horizon	
Internet of Energy IoE	10Yr	15Yr
Homes as Power Stations	1,168 Gross Jobs, 818 net inc. multiplier £96m GVA B/C Ratio: 8.49	1,804 Gross Jobs, 1,263 net inc. multiplier £251m GVA ¹ B/C Ratio: 20.32 ²
Pembroke Dock Marine	553 Gross Jobs, 387 net inc. multiplier £67m GVA B/C Ratio: 3.57	595 Gross Jobs, 417 net inc. multiplier £126m GVA ³ B/C Ratio: 6.08
Combined First Phase IoE	1, 721 Gross Jobs, 1,205 net with multiplier £163m GVA	2,399 Gross Jobs, 1,680 net with multiplier £377m GVA

¹Note: This figure has worked back to net figure from Gross figures in Pembroke Marine analysis data
²Note: The maintained construction ambitions drive benefit/cost when viewed solely against CD investment.
³Note: This figure has worked back to net figure from Gross figures in Pembroke Marine analysis data



Section 4

Smart Manufacturing

Vision

By 2035 Swansea Bay City Region will be a globally significant actor in Smart Manufacturing, where a culture of Open Innovation based around the principles of industry 4.0 – a key feature of the fourth industrial revolution – accelerates a vibrant, sustainable, and diverse economy. All manufacturers within the region will be able to benefit from this new paradigm, which marries information, technology and human ingenuity to bring about a revolution in the development and application of manufacturing intelligence to every aspect of business.

The Five-Year Aim

To place the region at the fore front of Smart Manufacturing, building upon firm foundations of partnership to embed aspects of the vision, achieved through the following objectives:

- to launch the Factory of the Future Initiative, supporting SMEs to invest in leading edge technologies and harnessing the opportunities associated with the digital manufacturing revolution;
- to establish the Steel Science Centre. The Centre will address the current and future challenges of sustaining primary steel-making capacity in the region and the UK. In doing so it will place the region at the cutting edge of zero carbon production.

The Ten-Year Aim

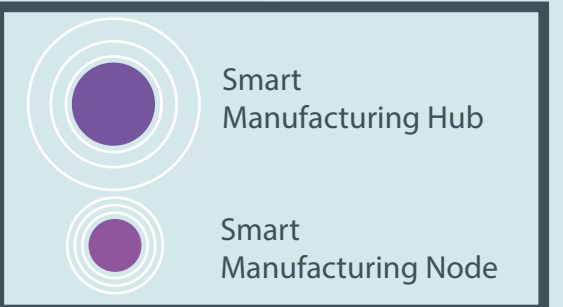
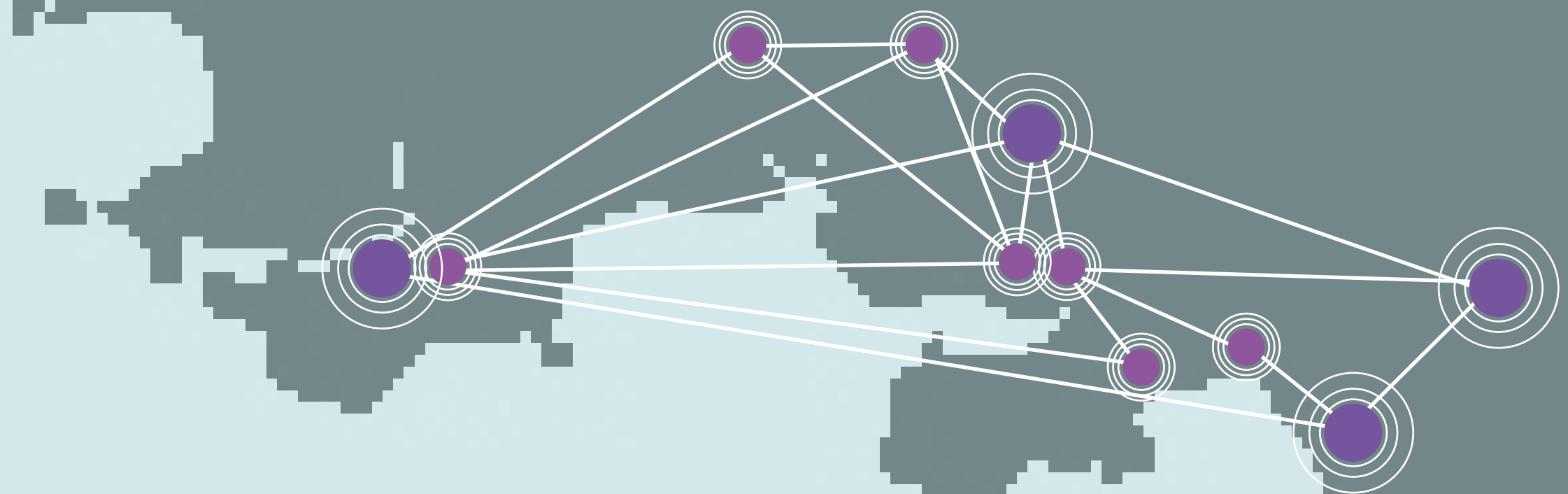
To attract significant inward investment through growing Smart Manufacturing practice, driving economic growth and local regeneration through direct job creation and employment in vibrant innovation clusters. Specific objectives are:

- the Factory of the Future Initiative is embedding Smart technologies in an increasing number of indigenous SMEs and encouraging an expansion of the number of manufacturers because of the unique opportunities and expertise within the region; and
- the Steel Science Centre has contributed to a vibrant and sustainable industry within the region and is exporting its knowledge and expertise to the developed world.

The Fifteen-Year Aim

To realise an economically sustainable region recognised as a destination of choice for global investment and enterprise in Smart manufacturing practice, where flexibility, response and capability underpin a culture of innovation and collaborative working.

Smart Manufacturing



Smart Manufacturing

A Unique Cluster

Taking a view of Manufacturing as the creation of products with added-value, it is a vital part of the private sector within the Swansea Bay City Region, representing a much larger proportion of the wealth created, retained within and brought from outside the region. Alongside creating new industries and opportunities as described elsewhere in this document, it is imperative that the existing private sectors are also supported and given full opportunity to grow further in order to increase GVA, exports and improve the profile of employment between private and public sectors. The attractiveness of the region to new investors, and a key benefit to existing business-owners, is the relatively low staffing costs versus the rest of the UK and similar economies within Europe.

The Swansea Bay City Region is home to a strong and diverse base of multinational and specialist SME manufacturers. These companies are connected to supply chain which reach regionally, across the UK and globally. Recent private sector driven regional initiatives have seen significant integration of the value chain with university spin-out concepts reaching local manufacturers. Global dynamics are leading to an increase in re-shoring of the manufacture of indigenous-developed innovative products and services.

This manufacturing capacity ranges from the heaviest of industries at the Port Talbot Steelworks through to microelectronics assembly at Sony in Pencoed. The region is home to other major manufacturers active in sectors that align with this City Deal strategy. They include Ford, Valero, Tata, 3M, who currently employ many thousands in the regional economy and companies such as Rolls Royce and Fujitsu, who are engaged in developments that could lead to further expansion of the manufacturing base.

Common to all however is the increasing integration with R&D endeavours, leading to improvement of internal processes and the development of new product/service opportunities.

The Industry 4.0 paradigm shift combines advanced manufacturing and state-of-the-art digital capability. Local industry is at the forefront of the development and implementation of this new manufacturing age. Combining 'Smart Manufacturing' with 'The Internet of Economic Acceleration' and aligning with the innovation capability offered by the other themes gives the region a unique competitive advantage.

Factory of the Future Initiative

The Factory of the Future is crucial to winning hearts and minds of existing business owners in the region and building upon its strong manufacturing base. The region will create a Smart Manufacturing network bringing together disparate sectors ranging from heavy industry to complex microelectronics assembly to consumer products and food. This industry led initiative will create an ecosystem capable of manufacturing the innovative products developed within the region and also attract inward-investing manufacturing demand from the UK and globally. Specific interventions will include:

- investing in public-private partnerships to establish Smart Manufacturing innovation centres with 'test beds' to catalyse and drive breakthroughs;
- rebalancing investments in research and development to restore equal funding for applied research; and
- preparing the region for the market altering leaps in manufacturing productivity and efficiency that Smart Manufacturing will bring about.

Factories of the Future will start by establishing collaborative networks including data sharing agreements with the aim of offering a cloud manufacturing solution to innovators. It will then use advanced computer simulation and modelling to create robust manufacturing intelligence, which will inspire new innovations in processes and products that will fulfill Smart Manufacturing's potential.

Investment requested from City Deal: £10 million
Match funding from other sources: £27 million

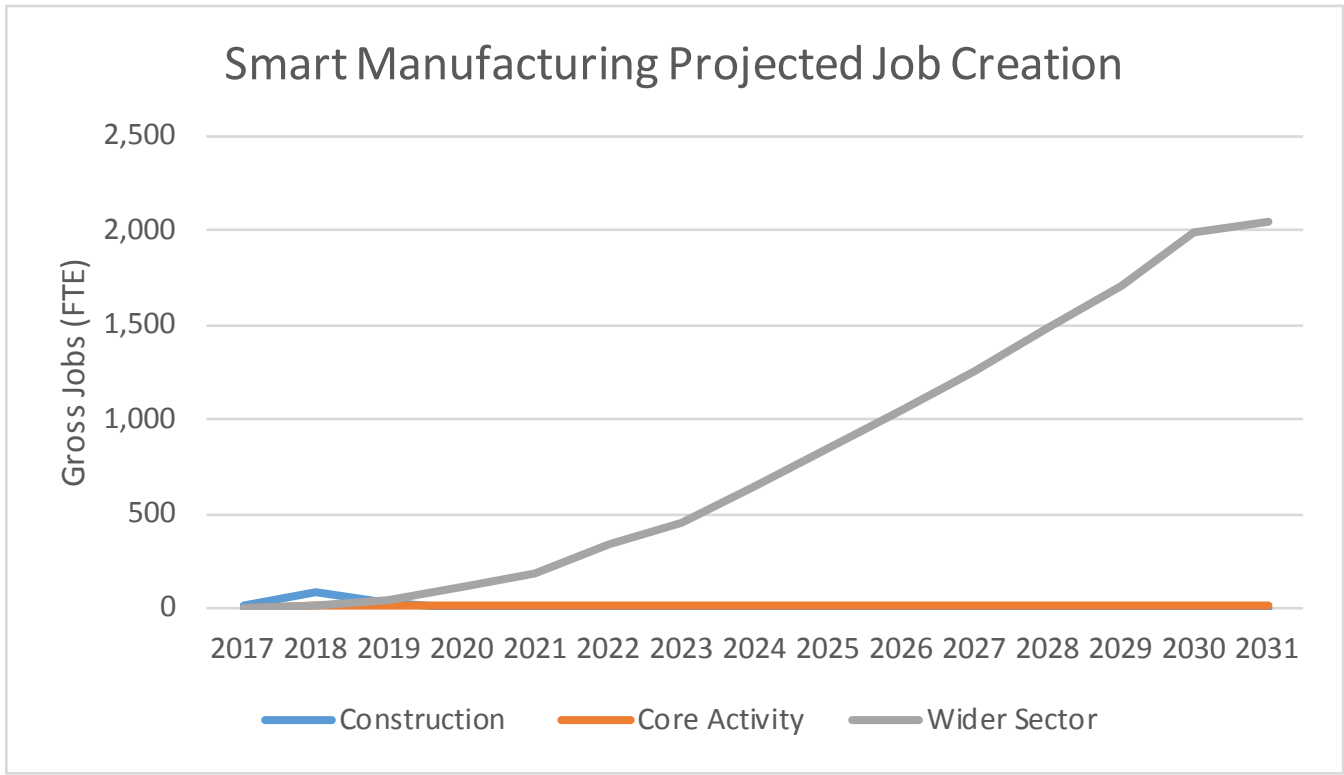
Steel Science Centre

The Centre will address the current and future challenges of sustaining primary steel-making capacity in the region and the UK. It will build upon regional centres of excellence and the industrial capabilities at Port Talbot Steel works, to establish an innovation and knowledge centre for the steel sector.

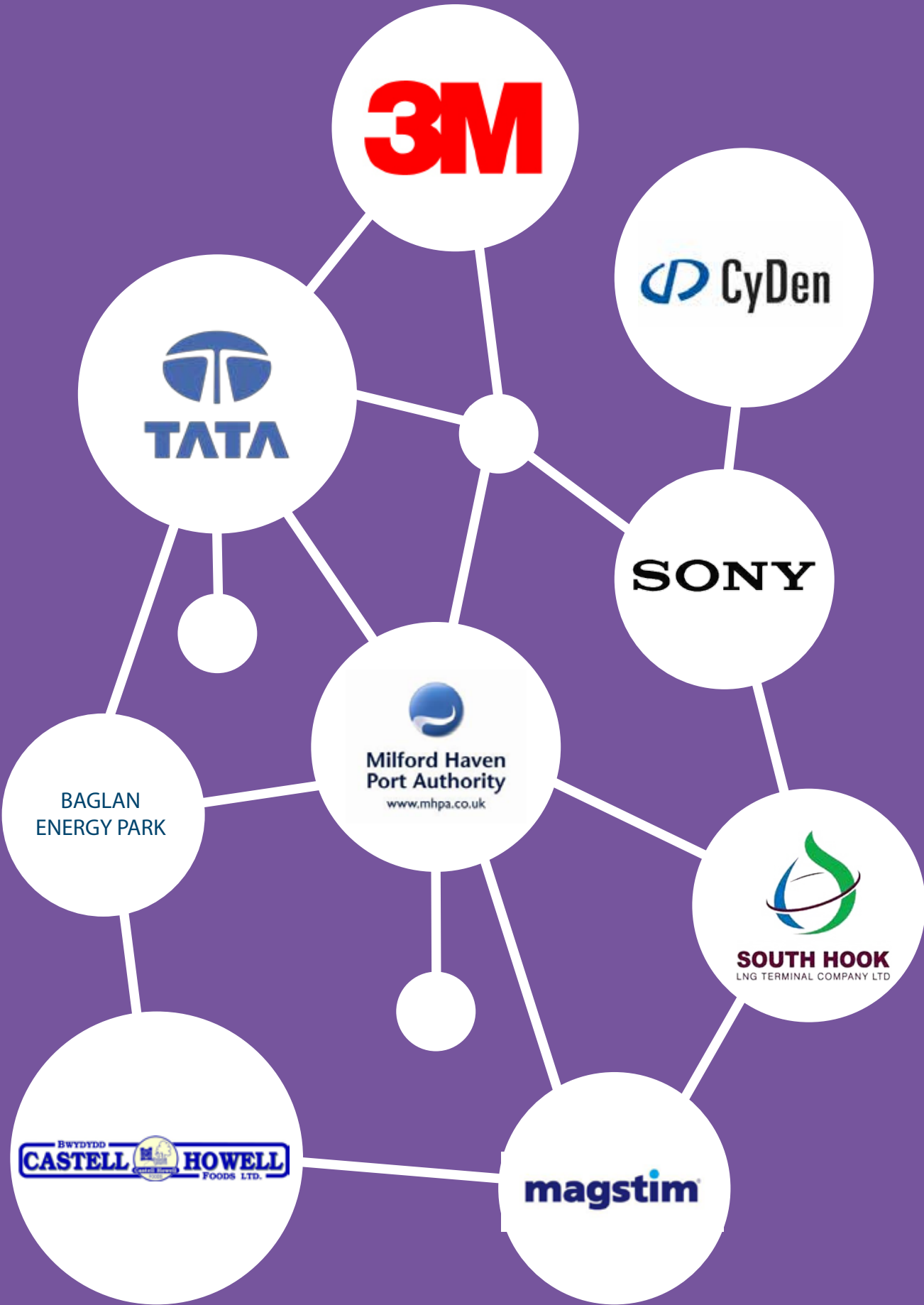
The Centre will put the steel sector within the region at the leading edge of zero carbon steel making, with carbon positive products utilising locally generated waste products such as chemical and raw materials feedstock. Once developed, this model could be exported to all developed economies ensuring a vibrant, innovative, and profitable steel sector with regional and national product specialisms. Steel technologists will be co-located with academic and research staff from Swansea and key UK partner universities (including Imperial College, Cambridge and Cardiff) supporting knowledge flow to existing Catapult centres. The Centre will connect the wider UK academic ecosystem through the four core partners and create a vibrant multidisciplinary environment equipped with state of the art research equipment that will deliver innovative solutions to industry led problems across the UK steel sector.

Investment requested from City Deal: £20 million
Match funding from other sources: £15 million

Impact - Jobs and GVA



	Direct and Multiplier Impact: Base Scenarios By Time Horizon	
Internet of Smart Manufacturing	10Yr	15Yr
• Steel Science Centre	350 Gross Jobs, 245 net with multiplier, £43m GVA B/C Ratio: 2.86	665 Gross Jobs, 466 net with multiplier, £95m GVA B/C Ratio: 5.73
• Factory of the Future Initiative	719 Gross Jobs, 388 net with multiplier, £36m GVA B/C Ratio: 4.32	1,402 Gross Jobs, 981 net with multiplier, £140m GVA B/C Ratio: 12.5
Combined First Phase IoSM	1,069 Gross Jobs, 633 net with multiplier, £79m GVA	2,066 Gross Jobs, 1,447 net with multiplier, £235m GVA



Closing Statement

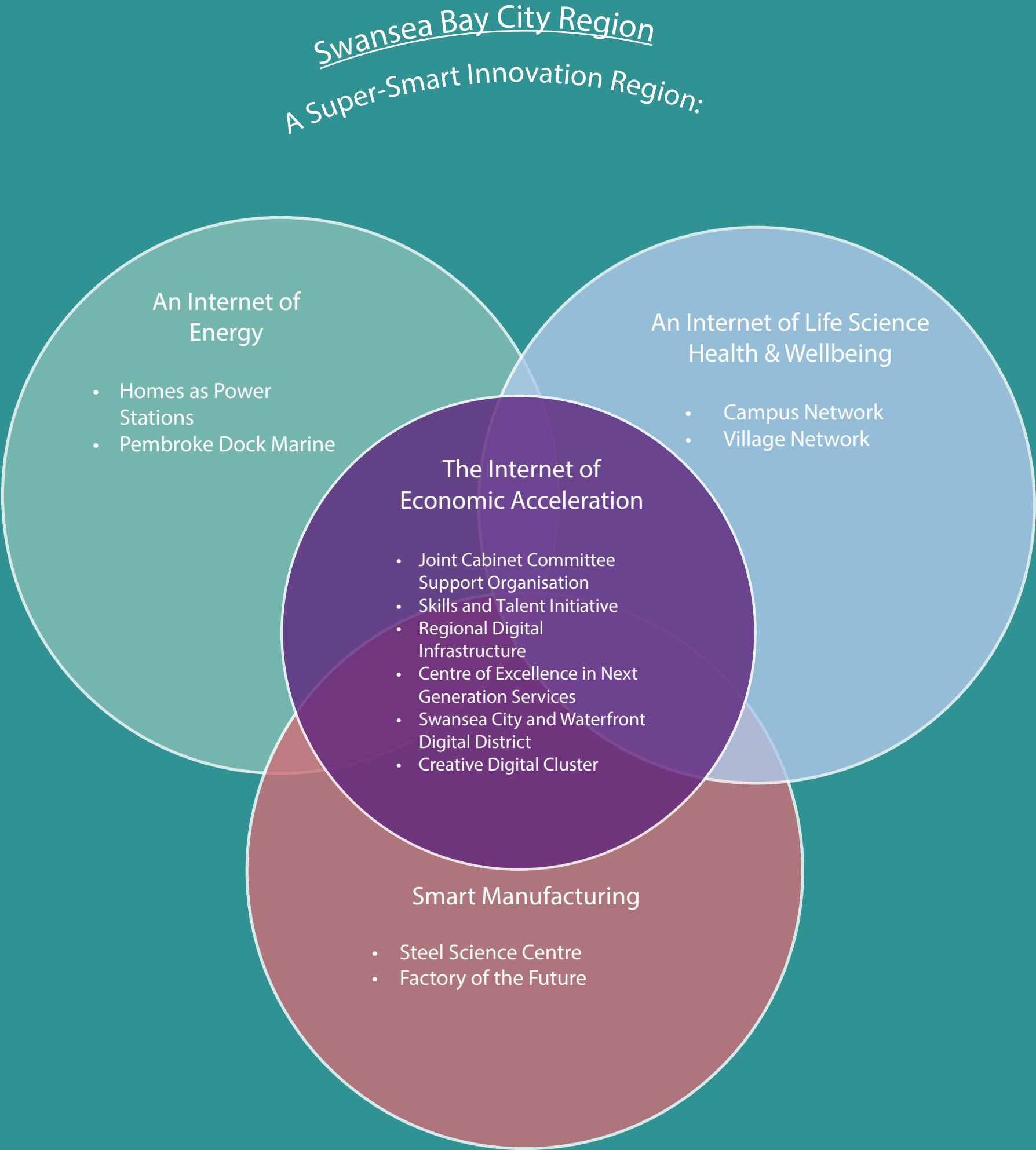
The Leadership of all four local authorities, Carmarthenshire, Swansea, Pembrokeshire, and Neath Port Talbot commends the submission of this City Deal proposal to Welsh and UK Governments.

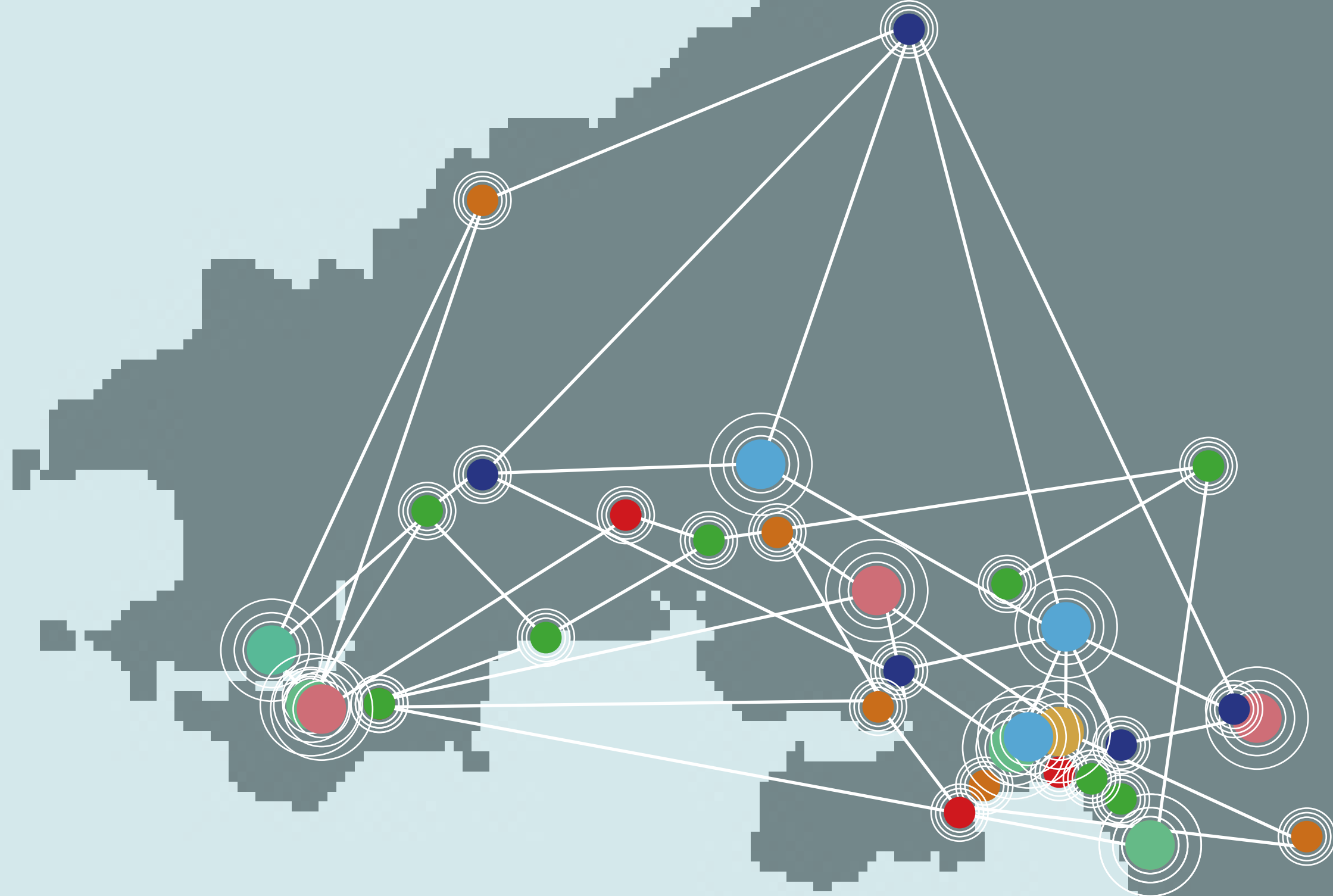
The proposals are projected to provide in excess of 10,000 gross direct jobs and £1.8bn GVA contribution, with over £1.5bn of further thematic benefits identified over the period of 15 years.

The SBCR Board and the partnership charged with delivering this City Deal has a strong understanding of the region’s economic challenge. We have a shared strategic approach to which we all subscribe. We must continue to address the GVA gap between the region and the rest of Wales and UK.

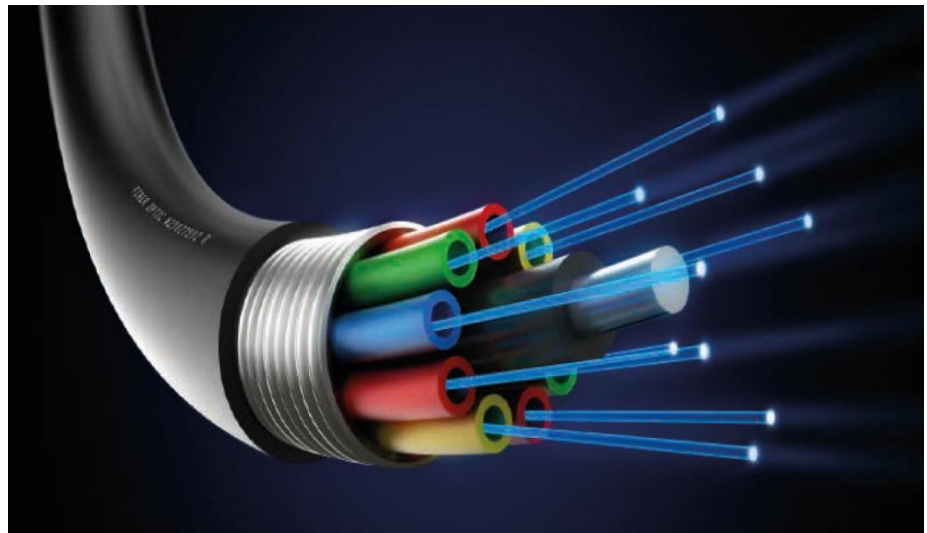
The Internet Coast will close that gap and will do so in a manner that avoids the potential for two decades of jobless growth. We must deal with the economic reality in our region. Our approach is coherent and comprehensive and combines transformational skills, innovation and infrastructure initiatives that will deliver sustainable growth, reduce economic dependency and make Swansea Bay an exemplar City Deal.

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DINAS-RANBARTH
Bae Abertawe
Swansea Bay
CITY REGION



INTERNET COAST: PHASE 1

City Deal Proposal Impact Appraisal

V1.26 – 20th February 2017

Appraisal of SBCR proposals

Swansea University
www.swansea.ac.uk

Swansea Bay City Region
City Deal Proposal Impact Appraisal: 20th February 2017

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Executive Summary

- The Swansea Bay City Region (SBCR) Deal Proposal has been built around the Concept of an 'Internet Coast' incorporating a number of sectoral 'Internet' themes of Energy, Economic Acceleration, Health & Wellbeing, and Smart Manufacturing.
- The purpose of this document is to draw together and appraise the potential impact of the Internet Coast through the integrated portfolio of Project Proposals. Applying HMT Green Book principles, this appraisal builds upon work undertaken at the individual project scoping/development phase.
- This appraisal is based upon each SBCR Project Proposal and Theme having been through a process of; justifying action; setting objectives; and appraising options.
- The project level options appraisal process has included seeking synergies with other SBCR City Deal Project Proposals, including importantly, cross-cutting elements such as Skills and Digital Infrastructure.
- *Internet of Energy* First Phase projects are projected to deliver 2,400 gross direct jobs (1,680 net including multiplier) resulting in £377m GVA, together with wider thematic benefits of £343m over the City Deal period to 2031.
- *Internet of Health & Wellbeing* First Phase projects are projected to deliver over 2,970 gross direct jobs (2,080 net including multiplier) resulting in £620m GVA, together with wider thematic benefits of £77m+ over the City Deal period.
- *Internet of Economic Acceleration* First Phase projects are projected to deliver 2,025 gross direct jobs (1,370 net including multiplier) resulting in £519m GVA, together with wider thematic benefits of £623m+ over the City Deal period. *Internet Coast Infrastructure* First Phase activity is projected to deliver 780 gross direct jobs (175 net with multiplier) resulting in £270m GVA over the City Deal period.
- *Smart Manufacturing* First Phase projects are projected to deliver 3,580 gross direct jobs (2,507 net with multiplier) resulting in £563m GVA, together with potential wider thematic benefits of £900m over the City Deal period.
- Combined First Phase Projects are projected to provide 10,245 gross direct jobs and £2bn GVA contribution, with over £1.5bn of further Thematic Benefits identified. In addition, the Internet Coast proposes potential land value uplift upwards of £123m (gross), or £40-80m when factored for additionality.
- First Phase Projects request of City Deal support totalling £241m (£197m discounted). This represents a potential 10:1 Benefit Cost ration across the Internet Coast over the SBCR period.

Introduction

The Swansea Bay City Region (SBCR) Deal Proposal has been built around the Concept of an 'Internet Coast' incorporating a number of sectoral 'Internet' themes. This work has drawn upon regional analysis undertaken by SQW, which has demonstrated both the challenge and potential¹ for SBCR to improve economic performance, along with sector-specific reviews such as the Regional Learning Partnership review of the Life Sciences sector².

Drawing upon identified regional strengths and opportunities in *Economic Acceleration*, *Energy*, *Health & Wellbeing*, and *Smart Manufacturing*, the development process has involved scoping of potential interventions, underpinned by development of ICT infrastructure, to develop these high-growth potential sectors.

The purpose of this document is to draw together and appraise the potential impact of the Internet Coast through the integrated portfolio of Project Proposals. Applying HMT Green Book principles, this appraisal builds upon work undertaken at the individual project scoping/development phase. It is based upon each SBCR Project Proposal and Theme having been through a process of; justifying action; setting objectives; and appraising options. The project level options appraisal process has included seeking synergies with other SBCR City Deal Project Proposals, including importantly, cross-cutting elements such as Skills and Digital Infrastructure.

The model presented on the following shows how the benefits and impacts stemming from the City Deal Project Proposals portfolio have been examined together to appraise the following;

- Direct Job Creation and GVA Impacts through development of targeted industries within the region for each Project Proposal, together with supply chain and wider economic benefits
- Thematic from each 'Internet' quantified where possible, including UK strategic and social impacts
- Combined Potential Impact of Internet Coast

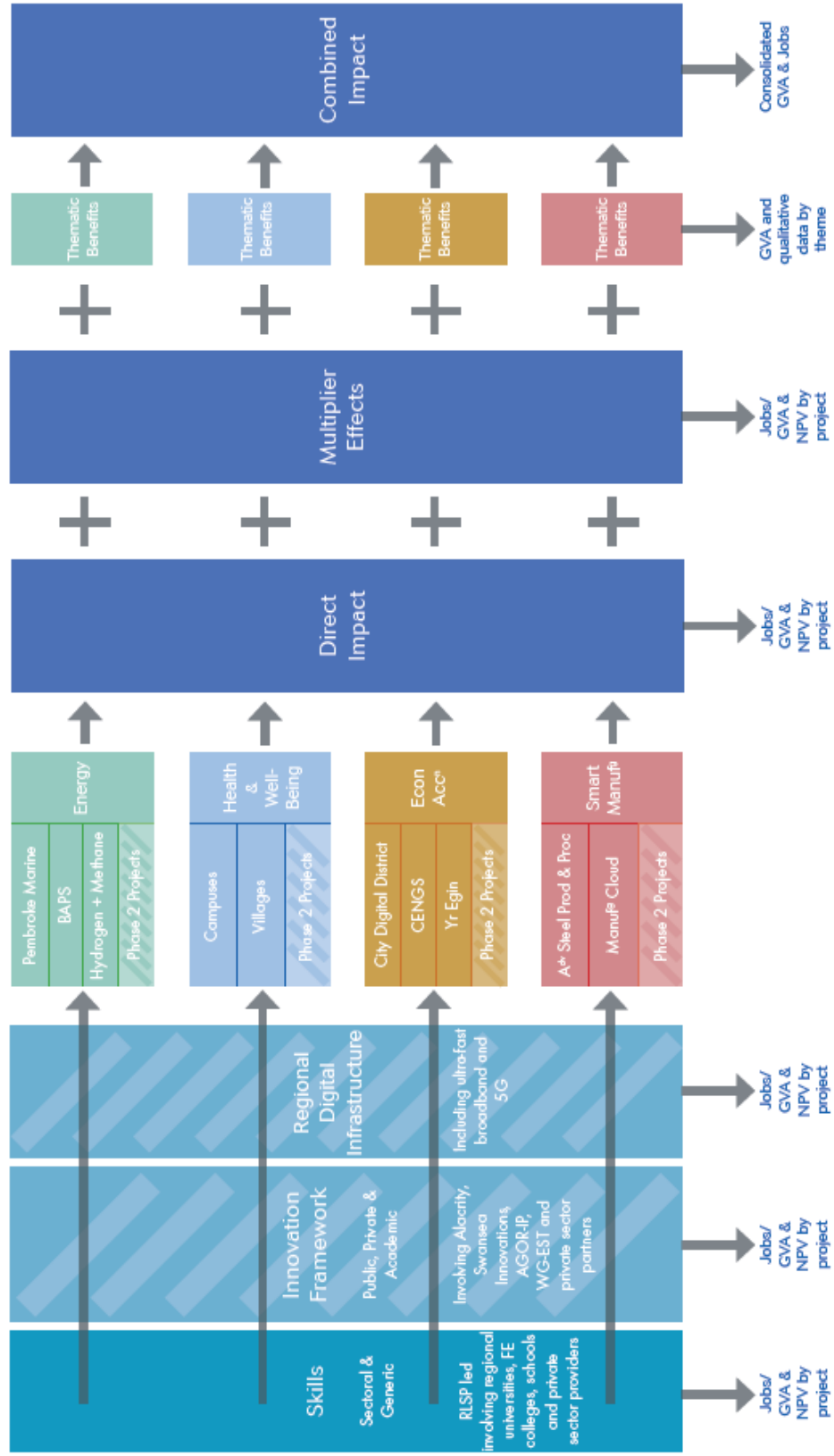
Sensitivity analyses have been included for each stage of the model to optimism bias, risks and to test Project Proposals and the integrated Internet Coast for a range in levels of additionality. This economic appraisal has been produced by a team which includes;

- *Prof. D Blackaby*, an internationally renowned expert in labour economics who has advised national and regional governments on economic labour market issues
- *Prof. N Rich*, has advised governments and private sector in the UK and US specialising global supply chain, lean manufacturing, and operations management ranging from automotive to healthcare
- *Prof. M Sullivan*, internationally recognised expert in public policy analysis and formerly Special Advisor to the First Minister of Wales
- *Prof. M.D. Williams* has an international and industrial background profile for his research on the digital society and innovation, and has worked on policy evaluation/formulation at regional level in the UK/EU
- *Dr. G Davies*, has co-ordinated this work and has wide experience in innovation management and analysis including working with Welsh and international governments

¹ Swansea Bay City Region Economic Context; Update to the Swansea Bay City Region Economic Strategy, January 2016

² Life Science Skills for Life; Report of the Regional Learning & Skills Partnership South West & Mid Wales, October 2013

Swansea Bay Region - City Deal Economic Impact Appraisal Approach V1.4



The following section provides a summary describing how benefits and impacts relating to each component of the model have been appraised.

Proposed Projects: Direct Impacts and Multiplier Effects

Each Project Proposal has been developed in support of new and growing industry sectors, with the aim of delivering new jobs and increased GVA. Projections for each proposal have been developed through use of robust baseline data from previous projects within the region and sector³, together with clear evidence of market demand applied through the business case logic model.

To avoid double counting of benefits and in turn their impact, the appraisal model has focused on the core metric of direct relevant sector employment growth, with further benefits such as skills improvements in the wider sector considered separately.

Sensitivity analysis at the individual Project Proposal level is provided through consideration of three Scenarios; Base; Pessimistic and Optimistic. The Base Scenario adopts parameters for additionality and indirect effects suggested from baseline data and prior project experience. Pessimistic and Optimistic scenarios test lower and higher levels of additionality, catering for uncertainty regarding levels of deadweight, substitution or displacement which may be involved. Each Project Proposal includes specific consideration of these factors, though due to the integrated nature of the Internet Coast these have been addressed with consistent parameters across all Projects/Themes.

Consideration of potential delay or advance in achieving benefits is factored separately through further sensitivity analysis for Theme/Combined Internets at the project level.

Thematic Benefits

Alongside the Direct Employment and Multiplier Impacts, each Internet Theme aims to deliver a range of 'Thematic Benefits'. These include not only further direct and indirect contributions to regional and national GVA, but also wider strategic and societal benefits, ranging from health outcomes to energy security. Recently this has also included emphasis on land value uplift which is included in later sections.

This recognises the broader intended impact of the Internet Coast, both at local level such as regeneration, and national level such as contribution to achieving greenhouse gas emission reduction targets. The component therefore captures a broad range of impacts from new and enhanced infrastructure or real estate, through to wider valuable though often intangible benefits.

These Thematic Benefits clearly differ by Theme, and provide impact both regionally and nationally. Appraisal of these benefits draws upon relevant sector-specific current published guidance such as for Health⁴ and Energy⁵, noting both quantitative and qualitative impacts. Within the Welsh Government context, this also gives consideration to delivery against the ambitions of the Well-being of Future Generations (Wales) Act 2015⁶.

Where possible these are quantified for their contribution to GVA and are accompanied by supporting by reference to relevant independent analysis and evidence. As many of these benefits involve wider

³ This includes Low Carbon Research Institute (LCRI), Institute of Life Science (ILS2), Mott McDonald and SQW Reports as noted in the Appendix

⁴ Policy Appraisal and Health, Department of Health, UK Government.

⁵ Valuation of energy use and greenhouse gas (GHG) emission, Department of Energy and Climate Change, UK Government

⁶ Well-being of Future Generations (Wales) Act 2015

dependencies, sensitivity analysis has been incorporated providing Base; Pessimistic and Optimistic scenarios. This provides for 75%, 50% and 100% of targeted benefits respectively.

Skills

A major component of the Internet Coast proposal is the development of skills across the region. The Skills and Talent intervention has been developed to assist in the Skills supply for employment growth within the four Internet Themes, along with improving productivity existing employment within the sectors. Clearly the supply of skills and talent is critical for the employment growth and GVA contribution targeted by the Proposed Projects within each Theme. This creates potential overlap in the appraisal of skills development activity and the other projects/themes.

Therefore, to avoid duplication of benefits and subsequent impact with that delivered through the employees captured in other City Deal Proposed Projects, appraisal of the Skills and Talent intervention includes solely the benefits to the existing sector.

Innovation Organisations

Further cross-cutting intervention within the City Deal is the Innovation Organisation which will be established to support commercialisation through entrepreneurship and inward investment. Again, to avoid the risk of double-counting benefits and impacts appraised within the Theme Project Proposals this appraisal considers Innovation Framework activities and impacts outside the scope of the Project Proposals. This includes 'Technology Push' from initiatives such as AgorIP (the Open Access Open Innovation HE/NHS IP Commercialisation initiative) and graduate start-ups such as those supported by Alacrity.

Digital Infrastructure

Improved digital infrastructure, including increased availability of broadband connectivity for businesses has been shown to be a powerful driver of productivity. The Internet Coast aims to deliver significant improvements to both fixed line and mobile connectivity, including through rollout of next generation 5G technology.

At this stage, appraisal is limited to the broad potential of the technology across the region, though impact will clearly be defined by the pace, extent and uptake of the rollout. As these factors together with the associated costs are still being defined, this appraisal can only offer an illustrative range of Base: Pessimistic and Optimistic scenarios against varying levels of access and uptake within the region, assuming availability across the region at the mid-point of the City Deal time horizon.

Construction Phase Impact

The Internet Coast will involve significant infrastructure construction/redevelopment. This has been captured in the appraisal through projected employment within the sector during this phase, together with consideration (where possible) of uplift in facility/land values realised. Therefore, while meaningful, the jobs created are not included in the figures for ongoing roles in each Internet theme.

Combined Impact

The combined Internet Coast Impact draws together the four Internet Themes, including both Direct & Multiplier Effect Impacts and Thematic Benefits. Further sensitivity analysis appraises the response of the proposal to potential delay in delivering benefits, by individual and all Themes.

Key Parameters, Assumptions and Limitations

This appraisal is focused on the First Phase Project Proposals (five year) as identified by the SBCR Oversight Group on 14th October 2016. The time horizon used for analysis is 15 the year planning period, which is co-terminus with the SBCR Economic Vision. Project Proposals are those forwarded from the initial meeting of the SBCR City Deal Oversight Group, including those harmonised/integrated following the SU/SBCR Secretariat meeting.

The 'Base' scenario incorporates the *Preferred Option* from each Project Proposal using mid-range parameters for additionality and indirect effects. This is the primary scenario presented throughout the document.

Project summaries, job creation projections, costs, and other data are drawn from proposal documents. The Project Proposal versions used are as noted in the Contents page, with notes on quality of data and other baselines in the conclusions and appendices.

While each project and theme will manifest its additionality in different ways, the integrated nature of the proposal has taken an overarching approach to factoring deadweight, substitution, displacement and leakage. This has been done in line with factors for another regional knowledge-based regeneration targeting the same sector, in the form of the recent ERDF programme. As the SBCR is targeting benefit within the wider UK this provides a conservative position. The appraisal applies 50%, 40% and 60% additionality for Base, Pessimistic and Optimistic scenarios respectively.

The above range of scenarios provide a level of sensitivity analysis to address potential optimism bias and inherent uncertainty across complex long-term projects. Further sensitivity analysis (to follow for individual Project Proposals) presents the effect of variation in timing of benefits realisation along with other factors such as delays in delivery.

A discount rate of 3.5% has been applied to all costs and benefits.

GVA by hour worked by sector is taken using the latest available regional ONS data as referenced.

Other parameters and assumptions are as included in individual Project Proposal/Theme sections and the Appendices.

Summary: Internet of Energy

Direct and Multiplier Impact: Base Scenarios By Time Horizon			Thematic Benefits
Internet of Energy IoE	10Yr	15Yr	
- Homes as Power Stations	1,168 Gross Jobs , 818 net inc. multiplier £96m GVA B/C Ratio: 8.49	1,804 Gross Jobs , 1,263 net inc. multiplier £251m GVA ⁷ B/C Ratio: 20.32 ⁸	Reduced greenhouse gas emissions and fossil fuel dependence, improved grid performance, and increased fuel security/independence, together with; - £140m of new facilities realised through the core activities. - £85.6m uplift in housing value from retrofit activities - Fuel poverty reduction potential £117m benefit to the NHS over the period to 2031
- Pembroke Dock Marine	553 Gross Jobs , 387 net inc. multiplier £67m GVA B/C Ratio: 3.57	595 Gross Jobs , 417 net inc. multiplier £126m GVA ⁹ B/C Ratio: 6.08	- Regeneration: Pembroke Marine will support the redevelopment of a strategic UK fossil fuels energy hub into a centre for renewable energy industry. This will protect both the region and UK in terms of energy security, economy and inclusivity while also working towards achieving decarbonisation targets. - Skills: Development of new skills and repurposing of existing engineering and marine skills will ensure the growth and sustainability of UK as a leader in an important export market.
Combined First Phase IoE	1,721 Gross Jobs , 1,205 net with multiplier £163m GVA	2,399 Gross Jobs , 1,680 net with multiplier £377m GVA	

⁷ Note: This figure has worked back to net figure from Gross figures in Pembroke Marine analysis data

⁸ Note: The maintained construction ambitions drive benefit/cost when viewed solely against CD investment.

⁹ Note: This figure has worked back to net figure from Gross figures in Pembroke Marine analysis data

Summary: Internet of Life Science, Health & Wellbeing

	Direct and Multiplier Impact: Base Scenarios By Time Horizon		Thematic Benefits
<i>Internet of Health & Wellbeing</i>	10Yr	15Yr	
- <i>H&W Campuses Phases 1</i>	710 Gross Jobs , 497 net with multiplier £61m GVA B/C Ratio: 2.25	1,120 Gross Jobs , 784 net with multiplier £153m GVA B/C Ratio: 5.23	- ~£75m facilities and land value uplift benefit - <i>Improved diagnostics and treatment</i> through Expertise and resource developed and drawn into the region will support patient care and subsequent outcomes. - Significant export opportunities for specialist services, medical devices and other high value goods. - Service Efficiencies by concentration of specialist services with ICT-technology allowing reach across the region and beyond - <i>ARCH Programme Delivery</i>, allowing parallel reconfiguration of services initiating the broader ARCH capital programme.
- <i>Health & Wellbeing Village Network Phase 1</i>	1,853 Gross Jobs , 1,297 net with multiplier £286m GVA B/C Ratio: 9.45	1,853 Gross Jobs , 1,297 net with multiplier £467m GVA B/C Ratio: 14.13	- Both commercial and residential assets would benefit helping address current market failure and providing a foundation to raise the values of supporting assets. Based on ~50 acres with ~£100k/acre and 40% uplift provides for £2m
Combined First Phase IoH	2,563 Gross Jobs , 1,794 net with multiplier £347m GVA	2,973 Gross Jobs , 2,081 net with multiplier £620m GVA	

Summary: Internet of Economic Acceleration

Direct and Multiplier Impact: Base Scenarios By Time Horizon		Thematic Benefits	
<i>Internet of Economic Acceleration</i>	10Yr	15Yr	
- Swansea City and Waterfront Digital Business District	1,176 Gross Jobs , (823 net with multiplier), £190m GVA B/C Ratio: 4.59	1,323 Gross Jobs , (926 net with multiplier), £318m GVA B/C Ratio: 7.04	- Significant construction employment prior to ongoing jobs in a range of sectors - £135m improved built environment with enhanced rateable values - Potential further £488m GVA contribution through wider Arena impact, involving 250+ additional tourism jobs - Social inclusivity through access to employment & learning opportunities and services - Improved environment through reduced congestion and transport integration
- Yr Egin	203 Gross Jobs , (143 net with multiplier), £51m GVA B/C Ratio: 7.69	203 Gross Jobs , (143 net with multiplier), £47m GVA B/C Ratio: 11.43	- Analysis undertaken by the project itself suggests this could be as many as 600 additional FTE. - The project also aims to deliver wider regeneration and cultural benefits across the region and further afield.
- CENGs	500 Gross Jobs , (300 net with multiplier), £104m GVA B/C Ratio: 5.98	500 Gross Jobs , (300 net with multiplier), £154m GVA B/C Ratio: 8.09	- CENGs facility for services development/delivery - Skills: CENGs and the sector it is developing would provide opportunity for high-value skills to be developed, retained and attracted by the region. The array of skills employed would provide a comprehensive capability diverse sectors.
Total First Phase IoEA	1,879 Gross Jobs , 1,266 net with multiplier, £345m GVA	2,026 Gross Jobs , 1,369 net with multiplier, £519m GVA	

Skills and Talent, Joint Cabinet Committee Innovation Organisation, and Regional Digital Innovation Infrastructure are included in the IoEA section and summary table in the final summary due to the different nature of these interventions.

Summary: Smart Manufacturing

Direct and Multiplier Impact: Base Scenarios By Time Horizon			Thematic Benefits
Internet of Smart Manufacturing	10Yr	15Yr	
	350 Gross Jobs , 245 net with multiplier, £43m GVA B/C Ratio: 2.86	665 Gross Jobs , 466 net with multiplier, £95m GVA B/C Ratio: 5.73	- Safeguarding Regional Employment: The proposal supports the safeguarding of significant regional employment in the sector and supply chain (many thousands of jobs), together with retention of a valuable skills-base. This has massive socio-economic implications for the region and beyond. - Securing a Strategic Export Industry: Ensuring the viability of the regional metals cluster will underpin the development of the wider cluster and economy, and drive facilitate a range of export opportunities.
	719 Gross Jobs , 388 net with multiplier, £36m GVA B/C Ratio: 4.32	1,402 Gross Jobs , 981 net with multiplier, £140m GVA B/C Ratio: 12.5	- Analysis undertaken for Future Factory indicates ~£630m of wider impact across the region through enhanced industrial infrastructure and other long-term investments¹⁰.
Combined First Phase IoSM	1,069 Gross Jobs , 633 net with multiplier, £79m GVA	2,066 Gross Jobs , 1,447 net with multiplier, £235m GVA	

¹⁰ Factory of the Future, Programme Document, 28th September 2016

Internet of Energy

Homes as Power Stations

Summary

SPECIFIC is a National Innovation Centre and over the last 5 years has become a unique and integral part of the UK's Innovation Ecosystem. It is driving an entire new industry realising *Buildings as Power Stations*, creating entirely new value chains stretching from world-leading research to applications for strategic heavy industry much of it with a significant economic footprint in the SBCR. SPECIFIC has grown to 165 people including research engineers, technologists and construction professionals since 2011.

Homes as Power Stations aims to embed the Innovation Centre over the next 15-year period and build upon the existing SPECIFIC IKC foundations of demonstrator and commercialisation scale-up activities to create a cluster of innovation opportunities and radically transform the construction supply chain. This project builds upon an emerging multibillion pound industry which has both technology-push and market pull drivers and will support sectors ranging from steel production to house-building and facilities energy management and services. The Buildings as Power Stations first phase project will develop an Innovation cluster on the Baglan Energy Park to catalyse a supply and value chain which is developing from inward-investing and spin-out opportunities.

A core component of the proposal is the 'Active Building Company' which will drive engagement with local authorities, developers (and associated land banks), investors and other stakeholders to drive the Homes as Power Stations ecosystem of technology into new and existing communities. This will target creation of 1000 dwellings as a first regional phase, supporting scale up of an industry to deliver energy sustainable housing and other buildings across the UK. This will be achieved in conjunction with the Building Research Establishment to embed SPECIFIC approach as best practice in the UK and beyond.

Additionality

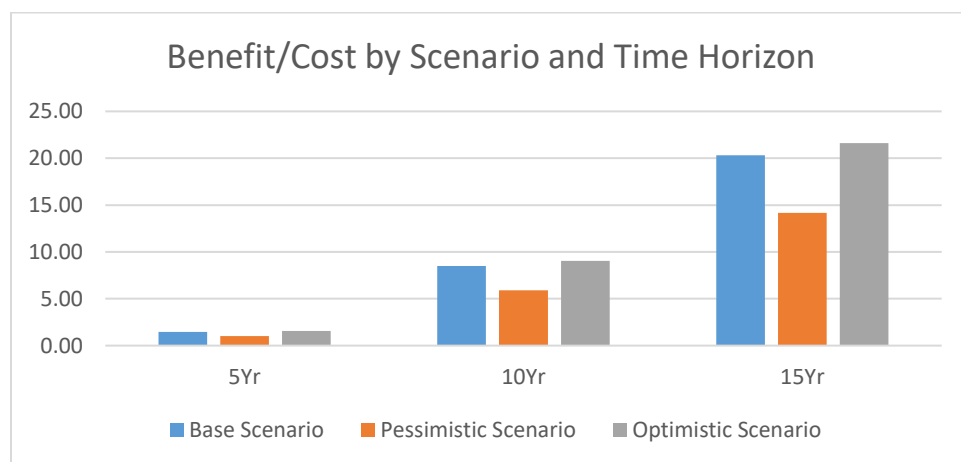
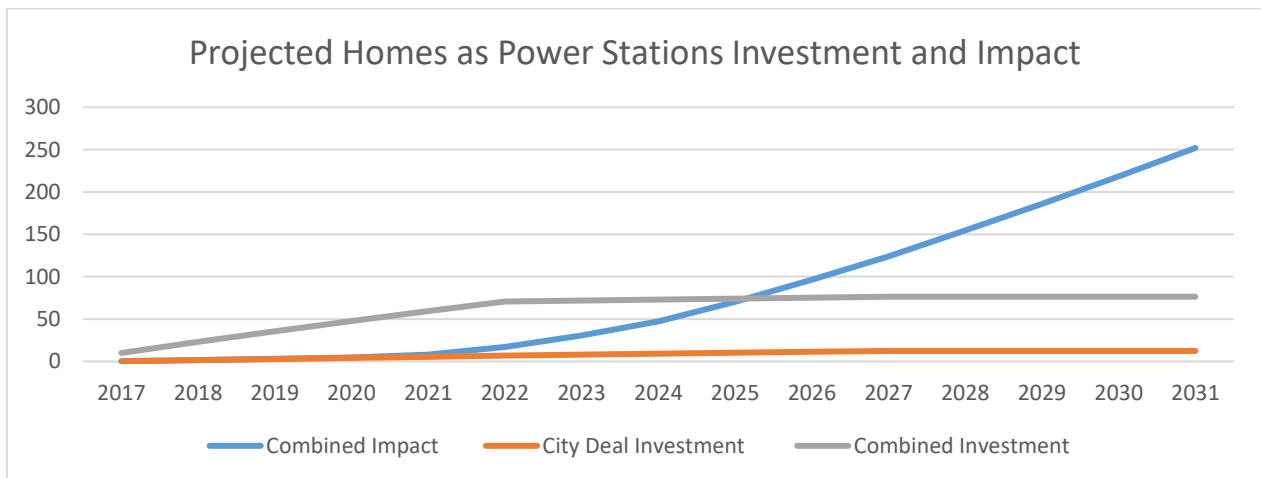
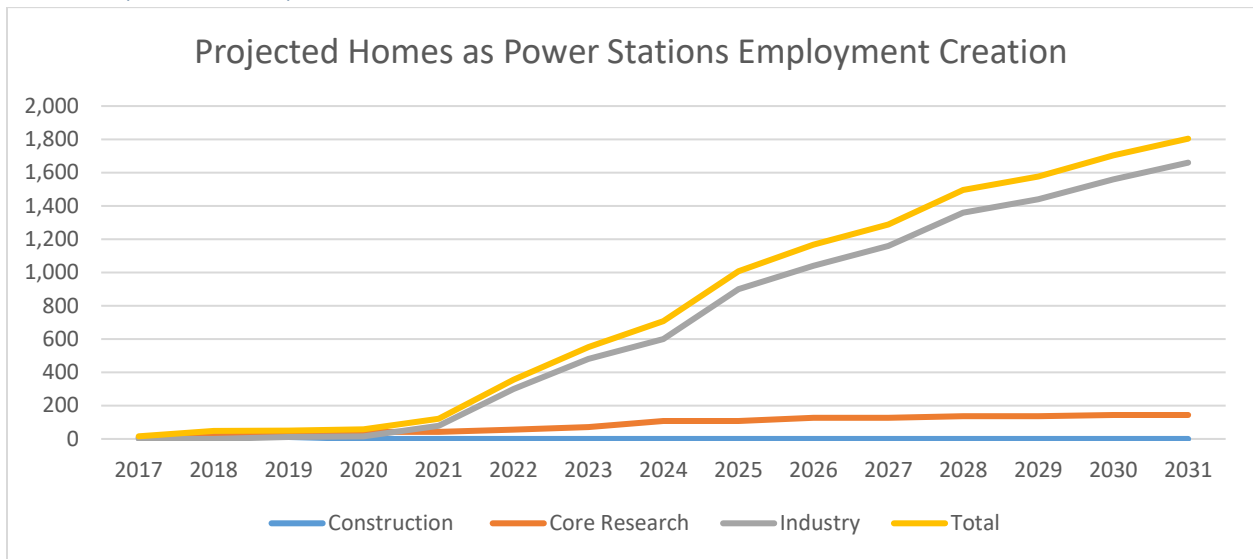
The Homes as Power Stations project is a disruptive intervention which by its nature provides inherent additionality, though with elements of substitution as described below;

Deadweight: The project involves new technologies and processes for the continued development of a new industry and value chain. Market failure in integrating technologies, suppliers and required skills prevents this development from otherwise happening and therefore deadweight is low/absent.

Displacement and Substitution: The shift to renewable energy inherently targets existing technologies and their value chains. However, shifting environmental and economic drivers are making these other sectors increasingly unviable. With regard to the broader sector, the weak supply and immense demand for new homes and refreshed built infrastructure suggests that Homes as Power Stations will simply add to addressing this deficit rather than crowding out traditional sectors.

Leakage: Collaboration with Innovate UK, BRE and wider sector (including steel supply chain) has worked to maximise the opportunity within UK Plc. The importance of proximity of within the nascent industry also suggests strong concentration and low leakage within the SBCR.

Direct Impact & Multiplier Effects



Thematic Benefits

The Homes as Power Stations project presents a broad range of thematic benefits beyond the direct employment impact presented in the projections above. The uplift in residential and wider infrastructure, both new-build and retrofit offers added value through reduced fuel poverty and subsequent health & wellbeing impacts. The significant export potential of this UK-based industry also suggests that these social benefits will be felt further afield in regions and nation facing similar challenges.

This above is in addition to the environmental benefits of reduced greenhouse gas emissions and fossil fuel dependence, improved grid performance, and increased fuel security/independence. Quantifiable benefits included in this appraisal are;

- £140m of new building stock and facilities
- £85.6m uplift in housing value from retrofit activities
- Fuel poverty reduction potential £117m benefit to the NHS over the period to 2031

Pembroke Dock Marine¹¹

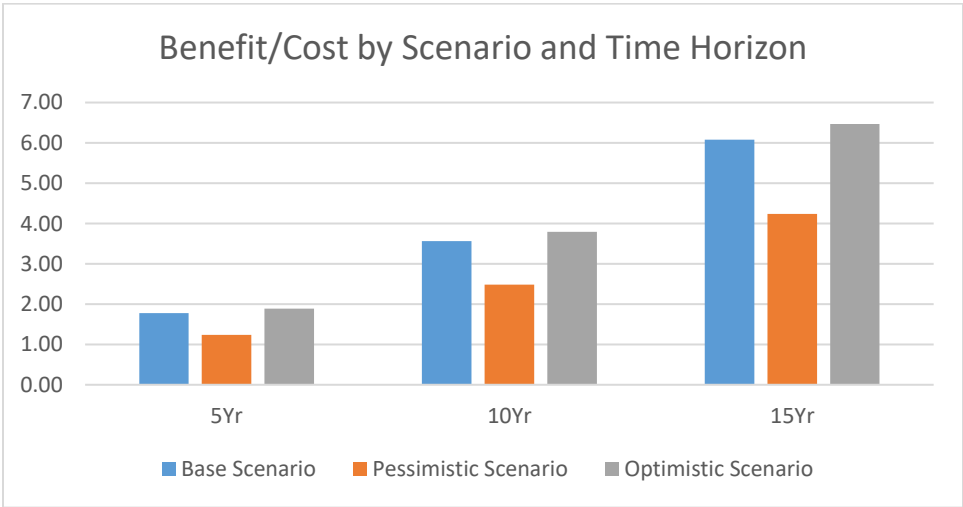
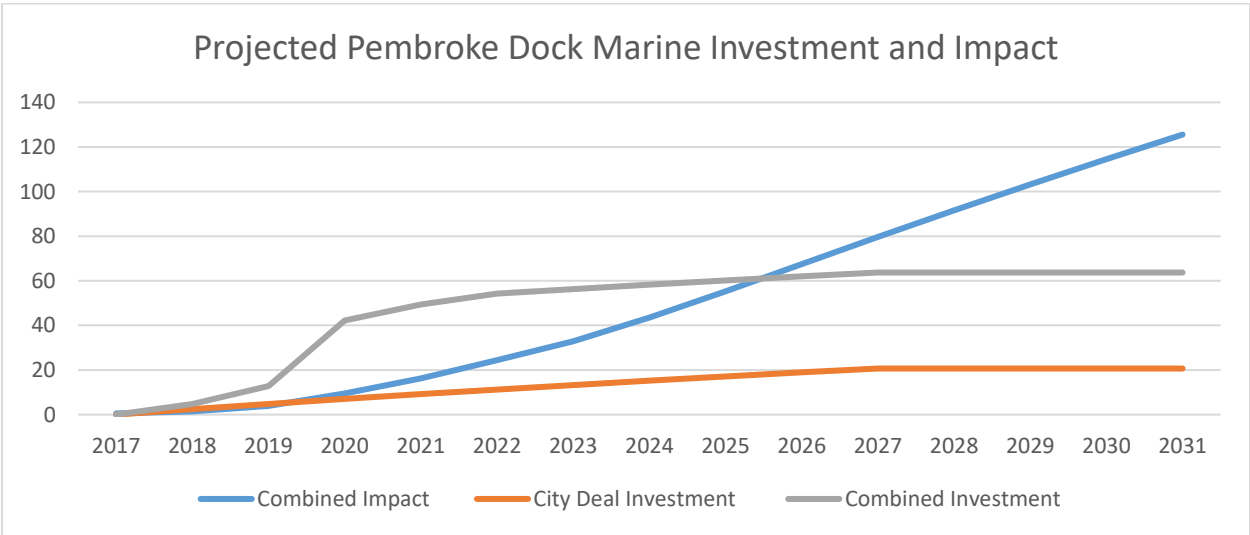
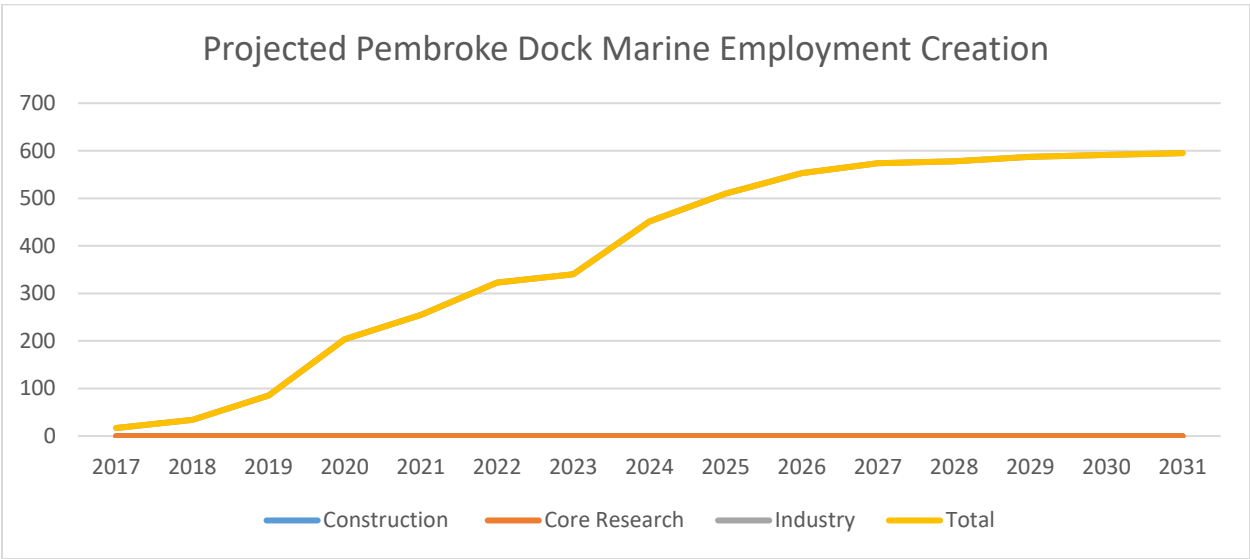
The Milford Haven Waterway offers this strategic location with a unique and complementary offer to the existing UK offer and with the right support will act as a focal point for the global marine energy sector. Through collaboration, wide support from industry, academia and the Swansea Bay City Region, the Marine Innovation Catapult seeks to address this by offering life-cycle support through the technical readiness levels to the sector as it accelerates towards commercialisation.

The Milford Waterway offers a compelling case to support the industry. However, to really return on the investment a collaborative approach from key industry partners has been created to offer the sector life cycle support that supports from the conceptual to the operational and eventually the decommissioning phases. These objectives will be met through the 4 pillars of the project, namely;

- The Pembroke Port Infrastructure project will create, within the Port of Milford Haven, new capacity for supporting marine energy developers on their journey from prototype manufacture and early testing, through to full-scale, serial manufacture, deployment at commercial scale, and ongoing operations and maintenance. The ability of Pembroke Port to accommodate device developers at every stage will maximise the ability to attract and keep these developers in the region, building expertise and experience in the supply chain, which can then be exported to the rest of the UK and globally.
- A Marine Energy Test Area (META) will provide a consented area of waterway, complete with licences and enabling infrastructure. It will allow device developers to quickly and cheaply perform tests on components, sub-assemblies and complete devices, and practice installation and O&M methodologies, near their base of operation and within easy reach of an extensive, and supportive, engineering supply chain. These “stepping-stone” activities then de-risk subsequent deployments at other locations around the UK, most notably FaBTest, EMEC and the two Welsh Demonstration Zones.
- Where the Port Infrastructure and META together provide physical and environmental resources, the Marine Energy Engineering Centre of Excellence (MEECE) will provide the knowledge, experience and capabilities to leverage those resources to the best advantage of the offshore energy industry. Using the deep water areas within META, MEECE will carry out accelerated life testing of components and sub-assemblies to avoid the early-life failures that have plagued the industry to date. MEECE will also provide a locus for a coordinated, joint-industry approach, disseminating lessons learned for future projects and improving industry effectiveness.
- The Pembrokeshire Wave Energy Demonstration Zone (PDZ) was identified by The Crown Estate as a location where multiple array scale projects could be developed in recognition of resource, proximity to port, supply chain and grid. At 90 KM2 it is the largest leased wave energy site in the world. Wave Hub is the Third Party Manager of the Zone with a collaborative approach to development including Port of Milford Haven, Marine Energy Pembrokeshire and Pembrokeshire County Council. A worldwide industry engagement exercise was carried out in 2015 where wave energy technology developers stated their interest in the Zone.

¹¹ Note: As Pembroke Marine has undertaken an analysis using a different baseline (GVA/MW) compared to that of other project proposals (activity and employment), this section presents the ‘Scenario 2’ (mid-point) drawn from data kindly supplied. This assumes £303m GVA for 60MW installation over fifteen years. Job estimates are therefore worked backwards from the GVA figures to give illustrate growth potential.

Direct Impact & Multiplier Effects



Additionality¹²

Deadweight: Due to its current cost and infancy, there is a risk that the sector could not meet the targets indicated to be a competitive form of energy generation for the UK consumer. This proposal has been put forward to give it every chance of doing so however, if the sector were to lose its economic efficiency, the strategic investment would be transferred to the support other sectors.

Many of the supply chain partners have diversified into marine energy from refinery servicing, ship fabrication and repair so are less susceptible to excess burden and less favourable market conditions from any one sector. This is another strategic reason for Pembroke Marine to be supported. A clustered supply chain with multiple markets to support will be far more resilient than a dispersed one.

Substitution and Displacement: Due to the timings of need, this site would not substitute another UK site in existence. Each of the four individual projects within this offer complement each other thus creating a test bed for a stable, predictable and local source of energy that can achieve security of supply to UK for the foreseeable future

Leakage: There is a threat of leakage, due to the need to offer cost effective energy to global consumers. Manufacturers will ultimately assemble devices on quays as close to site as possible.

The opportunity that META and MEECE especially offer is that by supporting early TRL level research and development, Developers are likely to base themselves and their IP related development within the region for the long term. Non - intellectual property knowledge can be retained and shared within the region and area for the others in the sector to benefit from or develop. There is also a threat to skills and also supply chain expertise leakage as local industry reliant upon carbon fuels diminishes. Projects like Hinkley Point and the potential Tidal Lagoon projects add risk to skill leakage from the region. This project would create a new sector, sustaining and generating jobs and significantly improving economic growth.

Thematic Benefits

Regeneration: Pembroke Dock Marine will support the redevelopment of a strategic UK fossil fuels energy hub into a centre for renewable energy industry. This will protect both the region and UK in terms of energy security, economy and inclusivity while also working towards achieving decarbonisation targets.

Skills: Development of new skills and repurposing of existing engineering and marine skills will ensure the growth and sustainability of UK as a leader in an important export market.

¹² Additionality information drawn directly from Pembrokeshire Marine Proposal document

Internet of Life Science, Health & Wellbeing

Campus Network: Phase 1

Summary

The ARCH programme has defined a campus and village Health & Wellbeing network to support growth of the Life Sciences and Health & Wellbeing sectors. The 'Campuses' will build upon the successful Institute of Life Science initiative, providing a world-class integrated research & business incubator/park, secondary/tertiary clinical, research and trials environment, and skills development hubs.

The Campuses Phase 1 project will create expanded infrastructure with wider capabilities allowing more and larger opportunities to be captured, ranging from major inward-investment opportunities to HE/NHS commercialisation activities. Creating significant new employment within high GVA sectors, the Campuses will have complementary foci of technology and clinical innovation, supporting development across a broad range of technology readiness levels.

A *Morrison Campus*, will expand research and innovation infrastructure in the field of genomics and proteomics alongside world-leading clinical delivery. Working alongside a regional centralisation of pathology services at Morrison Hospital, the Campus development will support creation of research collaboration and industry engagement facilities. World-leading research in health and bio-informatics together with a cluster of SMEs and multinational ICT/Pharma partners provides a strong foundation and UK USP for this high-growth sector.

In parallel, the reconfiguration of real estate will facilitate expansion of the *Singleton Campus* where a growing cluster of medical and other health technology companies/collaborations are focused. The Campus expansion will allow currently oversubscribed RD&I facilities to engage in prospective partnerships and projects attracted by the regional strengths in academic, clinical and industrial collaboration.

It is anticipated that the Campuses initiative will create significant employment and additional regional GVA contribution. Further impact of the project, including through wider workforce productivity and health benefits is considered at the Theme level.

Additionality

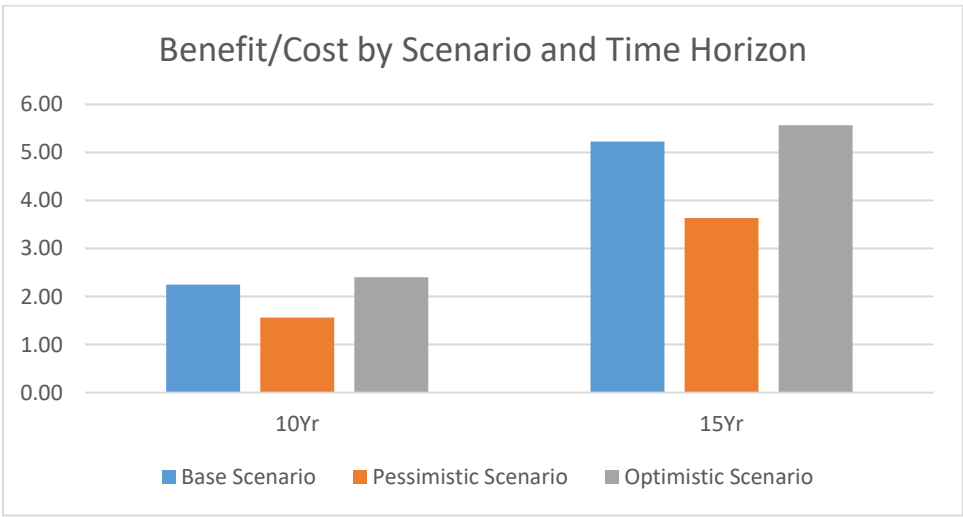
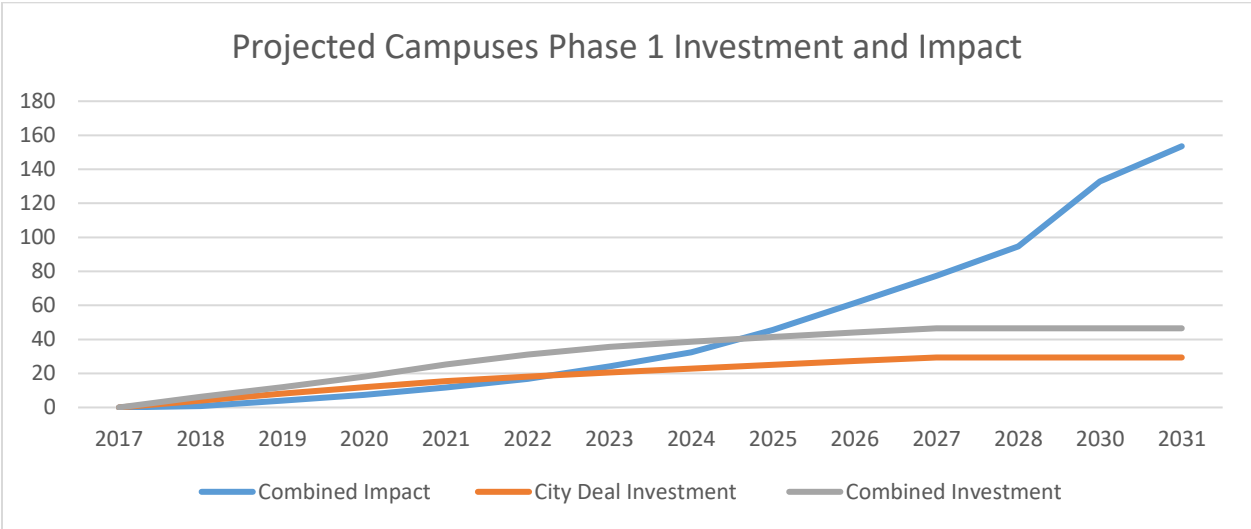
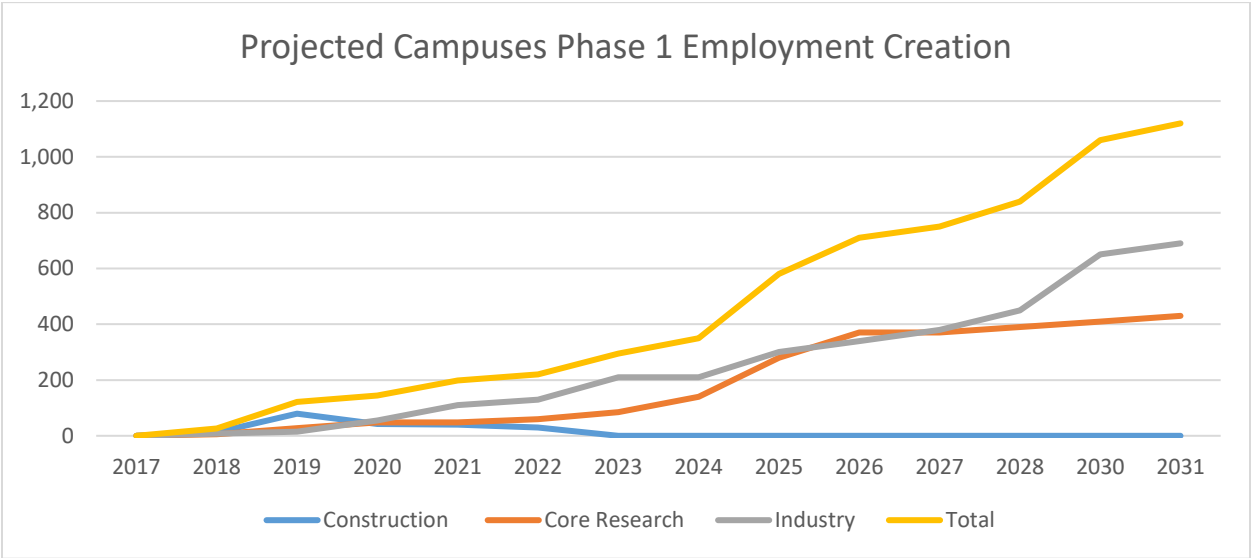
The Campuses initiative has been developed to optimise its additionality at regional, Wales and UK levels. Its focus on applying unique specific regional strengths to deliver a unique ecosystem underpins this, by targeting opportunities with an approach which cannot be achieved elsewhere.

Deadweight: The Campuses do not propose generic activities which could have occurred otherwise, instead stimulating innovations which are enabled by the unique regional strengths. This is reflected in the Need and Demand section which has presented the capacity constraints which prevent activity being otherwise established. The core distinction between the Campuses and other initiatives, is that it is the proposed mix of scale, unique capabilities and capacity which create the opportunity.

Displacement and Substitution: The Open Access Open Innovation approach embedded within the Campuses and broader MediPark vision creates a unique innovation ecosystem. This involves the combination of industry activity in the targeted sectors; integrated healthcare system with 1m patient population; connected ICT health and bio-informatics across urban and rural communities; and a harmonised commercialisation space.

Leakage: The Campuses project has been developed to foster close collaboration within the south west Wales region, and it is here that the vast majority of benefit would accrue. Indeed, it is the geographic and intellectual proximity created by the Campuses and their ICT that will facilitate knowledge spill-overs and nurture collaboration. However, it should be note that the project has also been developed to align and integrate with Wales and UK-wide initiatives including Catapult Centres. In this regard, leakage through benefits accruing in other areas of the UK would be a positive effect and a result of symbiosis with other centres.

Direct Impact & Multiplier Effects



Thematic Benefits

Infrastructure and Land

The Campuses will provide significant UK RD&I infrastructure as centre to a regional MediPark. Creating over 4,000s.m. of specialist innovation space, the initiative will provide a quantum leap in capability and capacity, complementing strengths of other regions across the UK. This infrastructure (excluding equipment with limited lifetime) will have an initial value of £60m. It is assumed that maintenance and continued re-investment from new revenues will be used to maintain and refresh the facilities beyond the time horizon.

Asset and wider land value improvements, particularly around the Morriston Campus site will certainly be meaningful and worthy of consideration. They have not been included though at present for this will be affected by future phases of Campus development. However, the development of ILS Phase 2 involved redevelopment of land independently valued at £1m (2009). The release of further undeveloped land at Morriston is far greater in scale and would result in a further £15m of benefit.

However, the Campuses benefits and impact are not limited to job creation within the target sectors and wider economy. The Campuses will provide a pipeline of healthcare innovations benefitting communities during the development phase (locally) and from commercialisation (UK and further afield). This will provide both local economic uplift through improved health and subsequent productivity along with wider societal benefit.

Health & Wellbeing

Improved diagnostics and treatment: Expertise and resource developed and drawn into the region will support patient care and subsequent outcomes. For example, the genomics capabilities coupled with world-class informatics will not only provide a unique research and innovation platform but also support clinical decisions resulting in improved outcomes.

Service Efficiencies: The concentration of specialist services with ICT-technology allowing reach across the region and beyond will allow greater efficiency in use of valuable skills and other resources. RD&I in telehealth and telemedicine will also bring cutting-edge service delivery to the region first, providing patients with greater accessibility and quality of service.

ARCH Programme Delivery: The Campuses project will allow parallel reconfiguration of services initiating the broader ARCH capital programme. This will enable health investment to be made alongside the City Deal economic and skills development agenda allowing long-term structural change.

Village Network: Phase 1

Summary

The ARCH programme has defined a campus and village Health & Wellbeing network. A village contains a primary/community care facility, an ILS satellite and an education and skills development capability. A Health & Wellbeing village network will be constructed and operational during the first five-year period of the programme, with its first centre located at Llanelli. The villages will be digitally connected to the campuses through the Internet of Economic Acceleration capability and the network will drive local and regional economic activity.

A Health & Wellbeing village network will be constructed and operational during the first five-year period of the programme, with a first Village in Llanelli. The villages will be digitally connected to the campuses through the Internet of Economic Acceleration capability and the network will drive local and regional economic activity. A village contains a primary/community care facility, an ILS satellite, an education and skills development capability, and leisure and tourism facilities.

Additionality

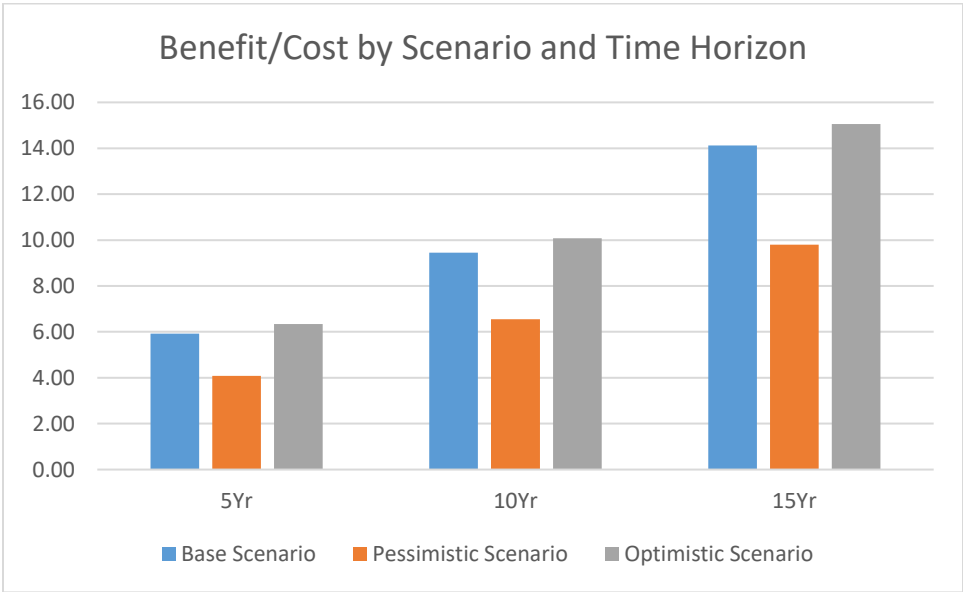
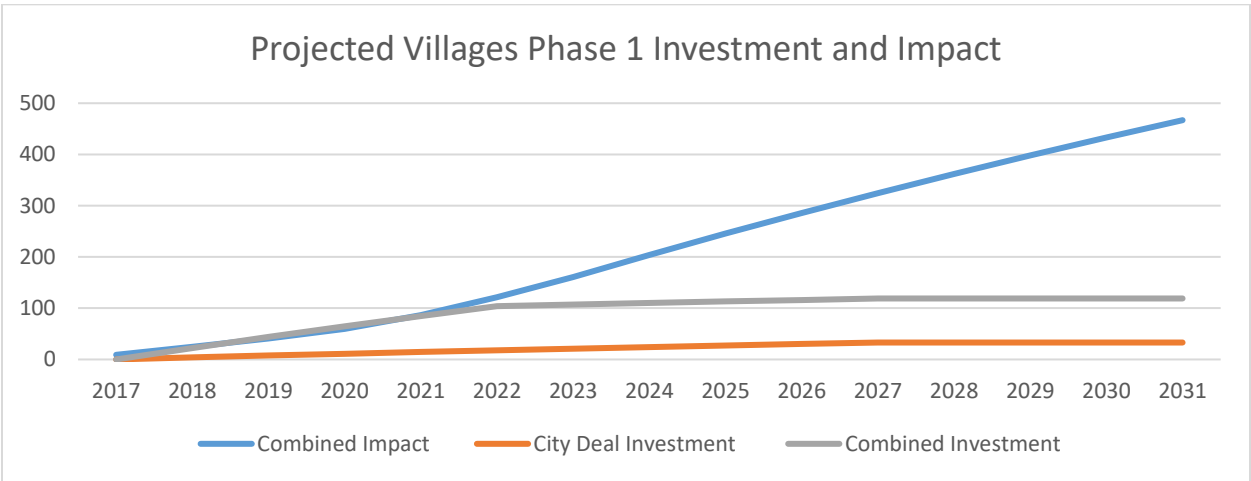
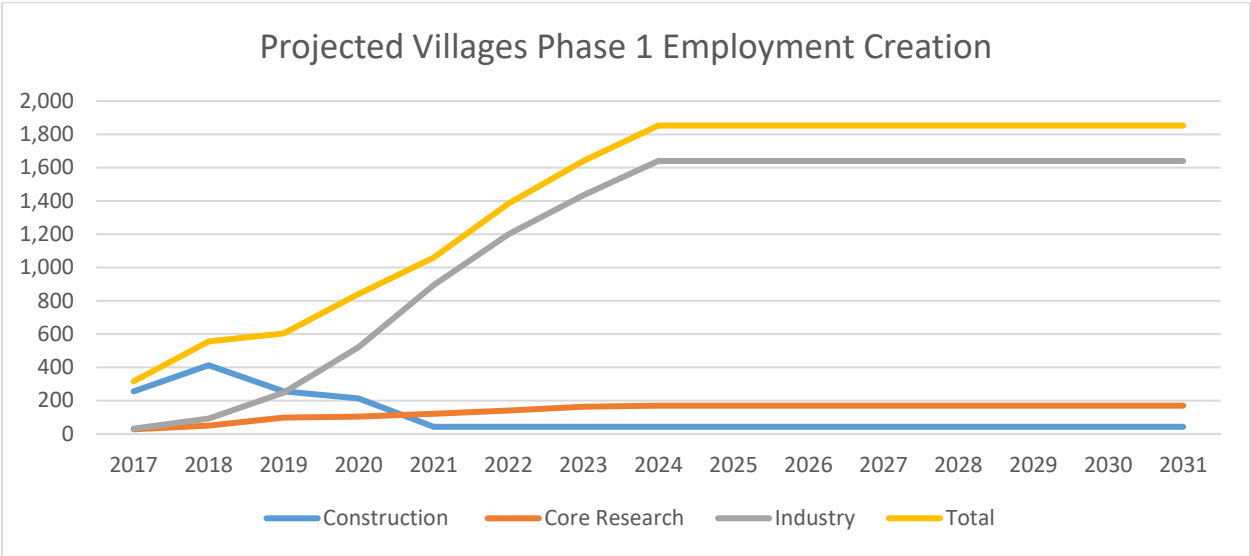
The proposed project has been developed in a high-growth sector built upon the unique strengths and assets of the region. A focus on new enterprise and inward-investment contributes to high additionality, with low deadweight and avoiding displacement.

Deadweight: Each Village has been developed to respond to their local context of needs and opportunities, where could developments have occurred otherwise they would already be underway. Sites identified for Village development are predominantly post-industrial/commercial and without City Deal/ARCH would unlikely have potential for such development.

Displacement and Substitution: The sectors targeted by each site are growing and non-competing, thereby offering limited displacement and substitution. As the identified development sites and investment attracted have received limited interest for alternative use this further supports this aspect of additionality.

Leakage: The Villages network is integrated and regional with the result from one village would likely be the result of synergy with another village, Campus activity or further component of the Internet Coast. Furthermore, the role of the Villages within a sub-regional innovation ecosystem make it difficult for the activity to be removed for it is the location and proximities of activity and data which make the scope achievable.

Direct Impact & Multiplier Effects



Thematic Benefits

Infrastructure and Land

This intervention will without doubt be a catalyst for further development and would help realise greater values in terms of property and land. The south west Wales area currently suffers in terms of commercial land values with a considerable gap between development cost and end values. No speculative developments have been delivered in recent years without funding assistance. The recently implemented south west Wales property development fund providing the evidence to support. This intervention is seen as a clear enabler for development which would raise the values and demand for property and land. Both commercial and residential assets would benefit helping address current market failure and providing a foundation to raise the values of supporting assets.

Health & Wellbeing

The Health and Wellbeing Villages network is integral to the transformational change being delivered through the ARCH Programme. Key philosophies of ARCH include impacting on economic value through the creation of jobs and investable private sector innovations. A substantial investment in economic activity in existing areas Med Tech and research excellence, as well as those which are emerging, will accelerate and grow the competitiveness of the region. This will also deliver benefits to the health and wellbeing of the population since sustainable employment is a key determinant of health. With compounding pressures on public, private and third sector health service delivery, at a time when budgets are increasingly constrained, an effective wellbeing approach is required to help keep the population healthy and out of hospital systems. With a continually rising and ageing population, employment and product/process/service creation in health and wellbeing in the community and the home is of paramount importance to the Welsh and UK governments. As part of the Internet of Health and Wellbeing and the ARCH programme, the skills of the workforce of the region will also be uplifted through new and enhanced transformational change learning initiatives in life science and health in the region.

Internet of Economic Acceleration

Swansea City & Waterfront Digital Business District

Summary

The City & Waterfront Digital District responds to the availability in the near future of significantly-increased digital capacity in Swansea City Centre and will develop physical infrastructure and supporting places, spaces and linkages that will generate increased urban agglomeration and create a viable and sustainable innovation ecosystem. The project will create a purpose-built high-quality Digital Village and a Digital Public Square and multi-purpose events Arena.

The City & Waterfront Digital District vision is for Swansea to become the UK's first truly digital city where digital technologies are embedded in our way of life, and where emerging and existing technologies converge to deliver new solutions that change the way people live and businesses operate. The aim is to create a vibrant and sustainable city centre that facilitates the growth of higher value activities (particularly tech businesses) and acts as a key driver for the regional economy. The project will: -

1. Provide flexible and affordable accommodation to support the growth of tech businesses and other higher value added activities through the development of a new Digital Village in the City Centre;
2. Revitalise the city centre to create the vibrant environment, leisure and lifestyle offer that attracts and retains tech businesses and skilled workers for the benefit of the wider region.

The City Region will be better able to compete on the world stage to attract inward investment, highly skilled people and entrepreneurs, which will in turn create further economic opportunities. The City Deal investment will facilitate the creation and growth of businesses and higher value added activities, stimulating the economic performance of the whole region.

Businesses across the region will be able to take advantage of the supply chain opportunities that a strong Swansea economy can generate. Citizens will benefit from new high quality employment opportunities, access to world class digital technology and all the cultural, retail, leisure and educational amenities that a modern, digitally-advanced City Centre can provide.

The Swansea Digital District Waterfront component is an ambitious, innovative activity to create a commercial and learning community centred around a transformational City University. The University has purchased circa 23 acres in total in the SA1 Waterfront development zone from Welsh Government and will occupy a number of buildings in the core of the site with most of the perimeter waterfront locations reserved for future expansion and partner development.

Additionality

The City & Waterfront Digital District has been developed to nurture new industries and enterprise in order to maximise its additionality. It also provides grow-on opportunities for enterprise within the region which requires proximity to existing activity which could not be achieved otherwise.

Deadweight: Market failure in providing new office/knowledge-based business infrastructure within the region demonstrates low deadweight. Extensive market studies and engagement with developers has demonstrated both the need/demand for the intervention and the low deadweight effect in terms of built environment improvement and overall regeneration

Displacement and Substitution: Sector focus within the scope of activities accommodated protects against substitution. Locations defined for the District are currently redundant, while the new nature and specific requirements of the targeted sector do not suggest any other detriment by absence of any potential alternative location.

Leakage: Construction phase benefits within the region and UK-supply chain will be targeted through smart procurement. During operation the collaborative nature of the targeted activities suggested strong embeddedness amongst firms both within the district and SBCR. However, the sectors need to be outward-looking and indeed, 'leakage' across the region through is inherently beneficial.

Thematic Benefits

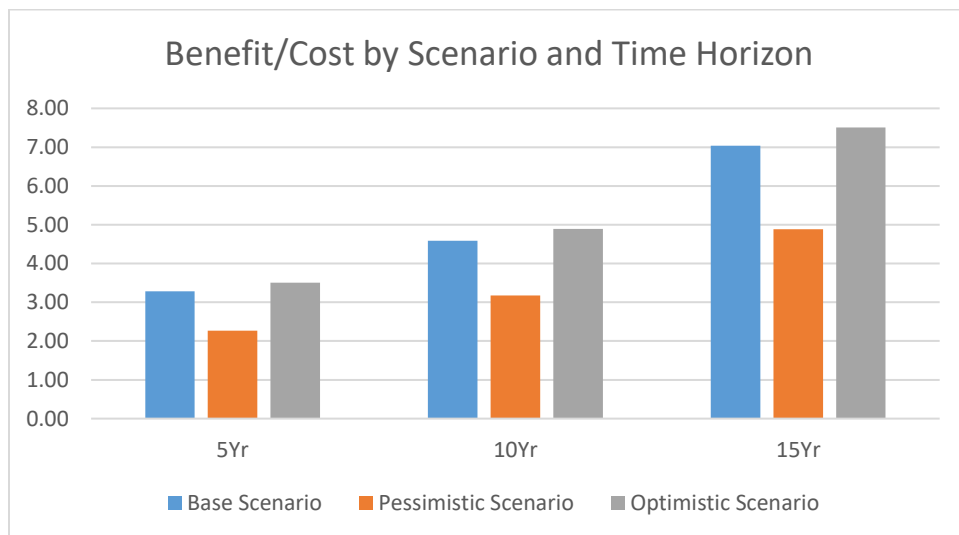
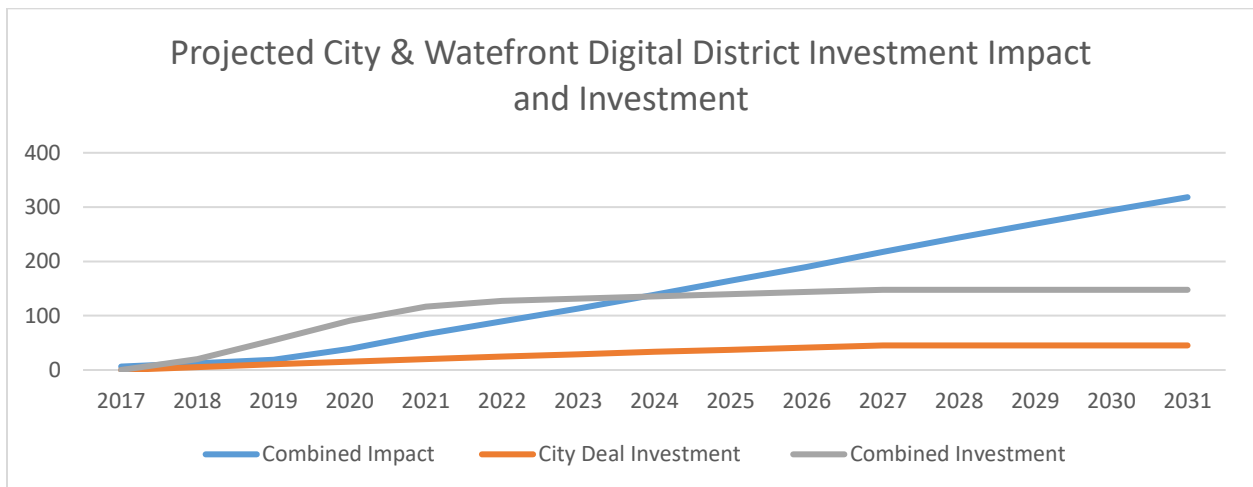
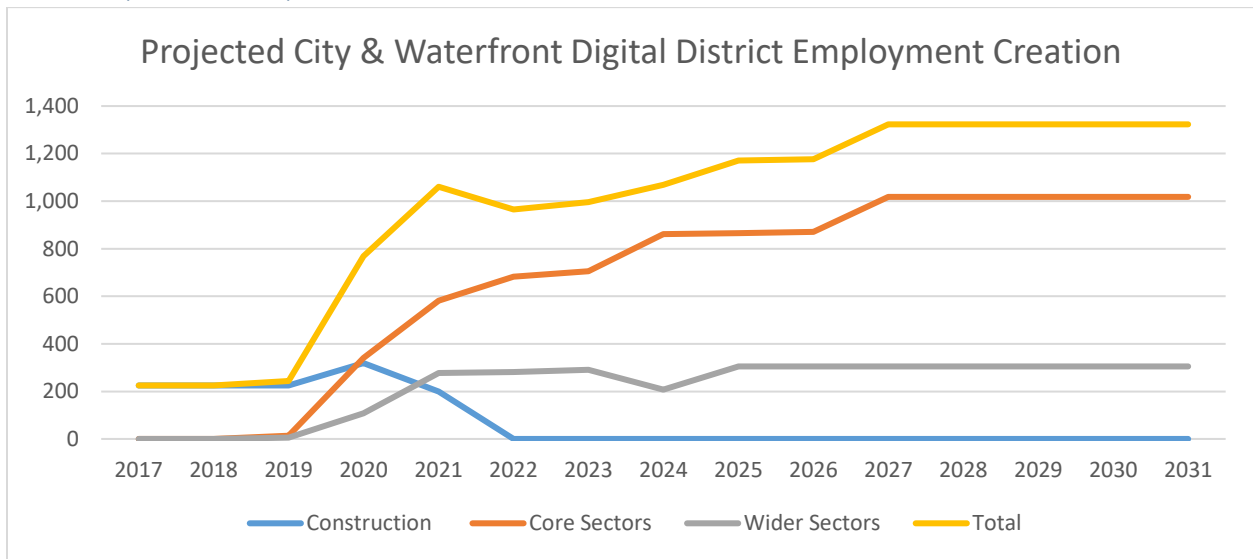
Inclusivity: The City Digital District will enhance accessibility to employment and learning opportunities, healthcare and wider services. The proximity of a number of deprived wards will therefore open up opportunities to these communities, as well as those travelling into the centre.

Land Value and Real Estate: The major regeneration of Swansea City Centre as a Digital District will greatly enhance the physical environment, supporting higher rents and in turn rateable values. The value of this infrastructure at completion will be of the order of £130m. The Waterfront component will support the continued regeneration of the SA1 region, catalysing further growth eastwards. This will result in uplift of land/property values both relating to the delivered infrastructure and wider area. The £30m facility itself provides an indicator of the uplift provided by the project.

Environment: Development of enterprise within the centre promotes activity with reduced reliance on car journeys, with resultant congestion and air quality improvements. The redevelopment will also facilitate remodelling of the transport network in the centre, improving traffic flows providing further environmental benefit.

Education and Inclusion: The nature of the SA1 Waterfront project brings further benefits in supporting a diverse range of start-ups, creating a link with and fuelling the wider cluster. This includes the overlap of learning and enterprise to create an environment based upon proven models.

Direct Impact & Multiplier Effects



Yr Egin

Summary

The Yr Egin project aims to further enhance the existing and latent potential of the creative and digital industries in the South West Wales region, and will complement the University's SA1 project in Swansea. It involves the construction of a creative and digital hub within the Carmarthenshire region and the development of a Creative Sector cluster to further support the economic regeneration of the City Region building on the decision by S4C, the native language broadcaster, to establish a significant presence in Carmarthen as the anchor tenant in the building.

Yr Egin will be an iconic, purpose built centre on the University of Wales Trinity Saint David's, Carmarthen campus. The anchor tenant will be the native channel S4C, who announced in March 2014 that their headquarters would relocate from Cardiff to the Carmarthen Campus. The national broadcaster will continue to maintain a significant presence in the nation's capital.

The broadcaster will be surrounded by approximately 25 companies working in the creative and digital industry, providing a service not only for S4C but for other broadcasters, corporate producers, brands and public services. The centre will invite companies that complement each other to form a creative and digital cluster, encouraging collaboration for the mutual benefit and promoting the effect of 'innovative and creative collision'. This union of complementary expertise will organically harness new ideas, provide access to networks and create an opportunity to share knowledge in a productive and meaningful way.

Additionality

The high-growth sector targeted by Yr Egin offers great scope for additionality, though with an initial level of deadweight/displacement giving initial impetus to the cluster.

Deadweight: The project is targeting a growing sector, attracting and developing new opportunities built around an integrated media production environment. While some activities may have occurred elsewhere, this would be factored within the appraisal.

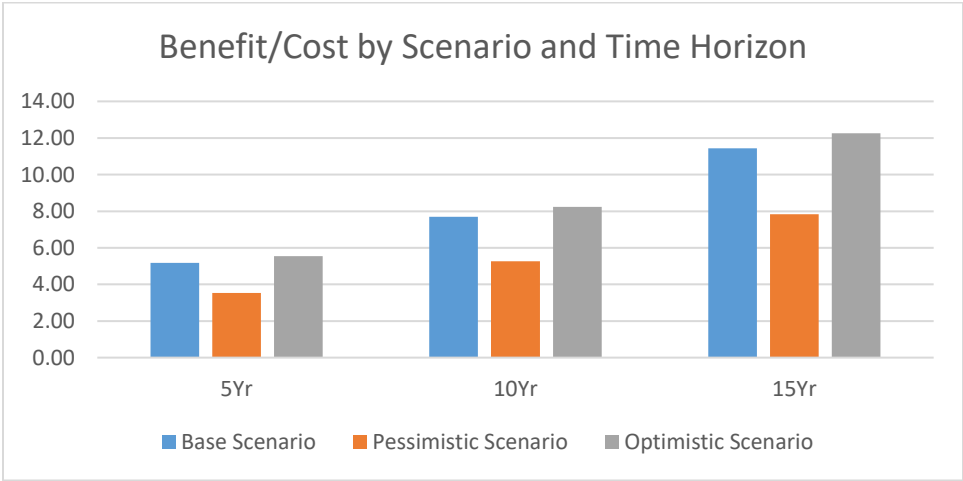
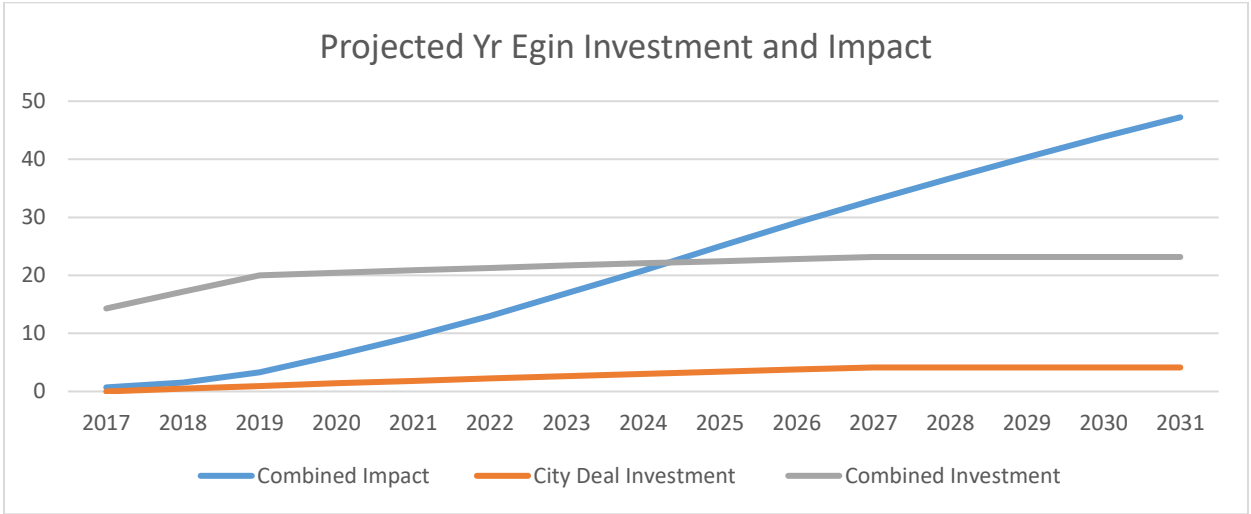
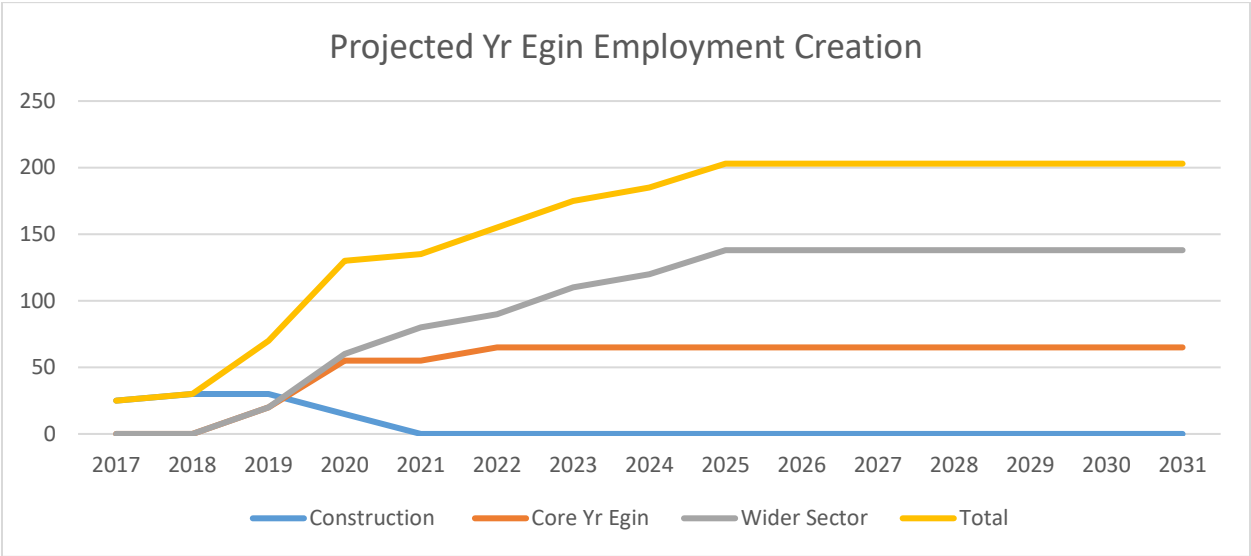
Displacement and Substitution: The cluster development does involve some initial shifting of activity, though predominantly involves new enterprise. Therefore, any initial displacement/substitution will become diluted over time and also allow other development where resources have been released.

Leakage: The cluster being developed is part of a wider Wales media sector and relates to global export opportunities. However, leakage will be limited particularly in respect of linguistic and other cultural foci within the cluster.

Thematic Benefits

Yr Egin aims to deliver benefits beyond the core activity, stimulating wider activity across the region and sector. Analysis undertaken by the project itself suggests this could be as many as 600 additional FTE. In addition, the project will deliver wider regeneration and cultural benefits across the region and further afield.

Direct Impact & Multiplier Effects



Centre for Next Generation Services (CENGs)

Summary

CENGs deliver an open access, agnostic, scalable data platform supporting tools and capability which consolidates multiple data types into a single repository (Data Lake). This will provide the capability to utilise our significant existing and future data assets to innovate, develop and discover new commercial opportunities. These opportunities via Proof Of Value (POV) projects can be transitioned into a series of commercial propositions. The provision of this repository allows entrepreneurs and innovators drawn from a range of different sources and institutions to concentrate their efforts on delivering solutions without having to build their own platform, thus accelerating the number of ideas and opportunities which we can take to market.

CENGs will be staffed with a mix of commercial and technical experts. The general administration of the organisation, e.g. HR, Payroll will be supported as part of the Swansea Bay City Region governance model and delivery vehicle. CENGs aims to provide the platform and specialist skills needed to “pull through” innovative ideas into commercial propositions. A pipeline of innovation; ideas and opportunities; will be sourced locally from research institutions, universities, business start-ups and SMEs. Additional demand will be sourced from “solicited projects” from existing partners and the wider economy. The aim is to grow this demand pipeline aggressively.

Additionality

Deadweight: The market targeted by CENGs is underdeveloped in the region and makes use of unique testbed environment created through the themes of the Internet Coast. This suggests low deadweight on the basis of other regions not being able to offer comparable opportunities.

Displacement and Substitution: The initiative targets a mix of commercialisation of a number of existing and proposed initiatives including City Deal proposals. The blend of these would dictate the extent of substitution and displacement.

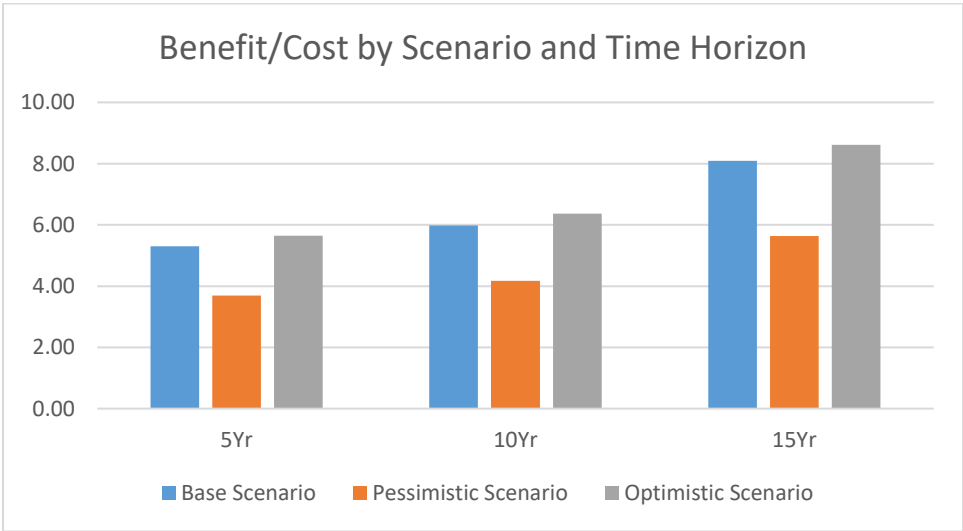
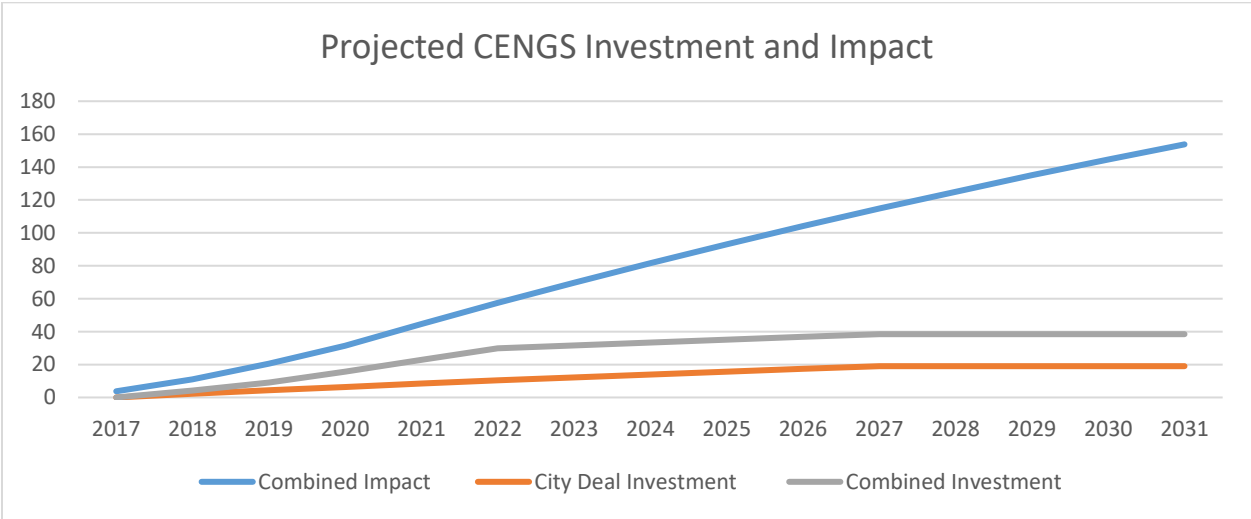
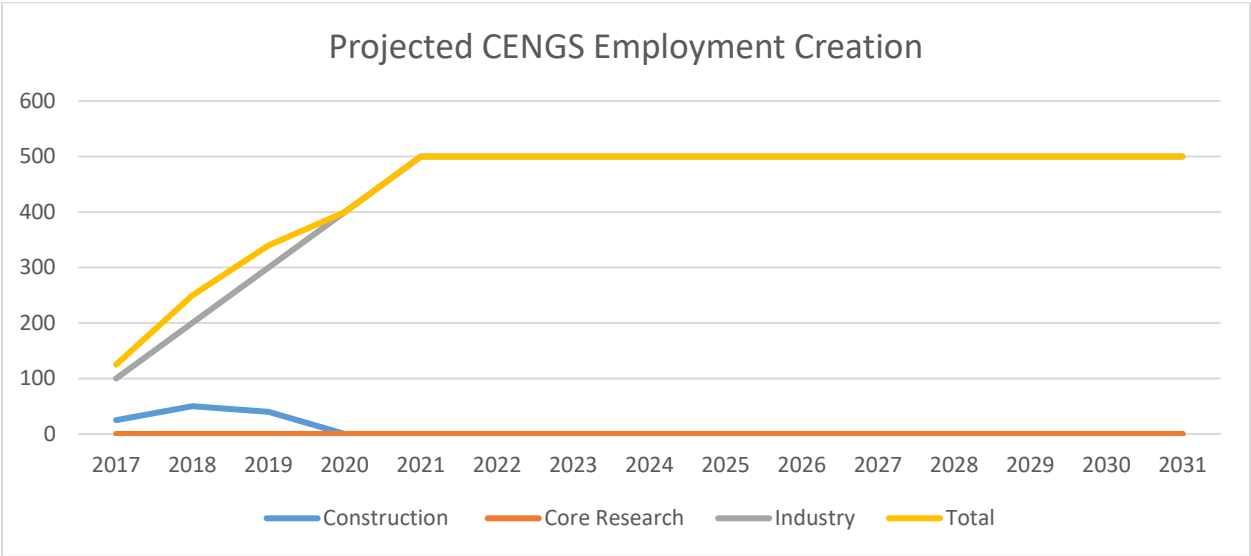
Leakage: Ensuring development occurs within the region is a challenge that is central to ensuring the targeted employment creation. As the activity involves multinationals it is inevitable that activity will involve both inward investment and benefit further afield.

Thematic Benefits

Skills: CENGs and the sector it is developing would provide opportunity for high-value skills to be developed, retained and attracted by the region. The array of skills employed would provide a comprehensive capability across a range of sectors.

Cross-sector activity: The generic and varied skills involved, and therefore their relevance to a broad range of sectors, allows support of a broad range of opportunities across Internet Coast and other themes.

Direct Impact & Multiplier Effects



Skills and Talent

Summary

The Skills and Talent Intervention will provide an integrated regional approach to delivering skills in the region focusing on specific sector skills required in order to meet the demand of the Swansea Bay City Region – City Deal – Internet Coast and the themes therein.

The development of the City Deal proposal is dependent upon the creation, retention and attraction of skilled and talented future generations. The intervention would involve;

- Advanced skills: Leading innovation across the Internet Themes, underpinned by existing and new provision (including EngD/SciD level)
- Under/Postgraduate Expansion: providing increased productivity through greater graduate skills application across the Themes
- Further/Higher Education: delivering skills for new roles within the Theme sectors, including blended learning approaches (including through Foundation Degree/Apprenticeships)
- Continuing Professional Development: ensuring the region's skills across the Themes remains at the forefront of practice.
- Apprenticeship: support the integration of apprenticeship opportunities throughout the Skills and Talented Future Generations project.
- Skills Facilities (e.g. Talent Bank): Creation of sector-specific facilities to support the development of new skills/roles and step-change in capacity required across the region.

The intervention will channel these efforts through a unique regional construct, managed and led by the RLSP, which provides an 'Open Education' mirror to the 'Open Innovation' Economic Framework activities. This will ensure that efforts respond to industry demand, remaining relevant and effective while avoiding duplication or missed opportunities.

Analysis by SQW undertaken for the SBCR Board highlighted the skills gaps which limit potential growth within the region and the subsequent economic impact. This reflects the findings of numerous sector studies undertaken by the Regional Learning and Skills Partnership

Additionality

The Regional Learning and Skills Partnership has been in existence for a number of years and has established a detailed understanding of the region, forging effective collaborations and enhancing regional skills capacity. Its aim is to ensure additionality and effectiveness of efforts across the region in addressing the needs and opportunities of existing and new industries.

Joint Cabinet Committee Support Organisation

Summary

The Joint Cabinet Committee Support Organisation intervention has been developed to provide a capability that for an integrated regional approach to supporting enterprise and innovation, with sector specific initiatives against the other internet themes. Interventions will be designed to stimulate Open Access Open Innovation and will be equally accessible to all including small SMEs and inward investors. This is a further development of the 'governance vehicle' paper to describe the core functions of an organisation to facilitate the delivery of the vision.

The Support Organisation will provide an integrated regional approach to supporting enterprise and innovation, with sector-specific efforts targeting each Internet theme. The intervention would involve;

- Proof of Business Partnerships: using the region as a testbed for each of the Internet themes, aiming to embed wider value/supply chain activities.
- Commercialisation Support: driving 'technology push' not only for regional public sector R&D output, but also for spin-in opportunities arriving through Open Innovation.
- Graduate Entrepreneurship: Expansion of current efforts to develop the next generation of entrepreneurs

The intervention will embrace an Open Access Open Innovation approach which will ensuring a multiplicity of actors and opportunities, both indigenous and inward-investing.

Additionality

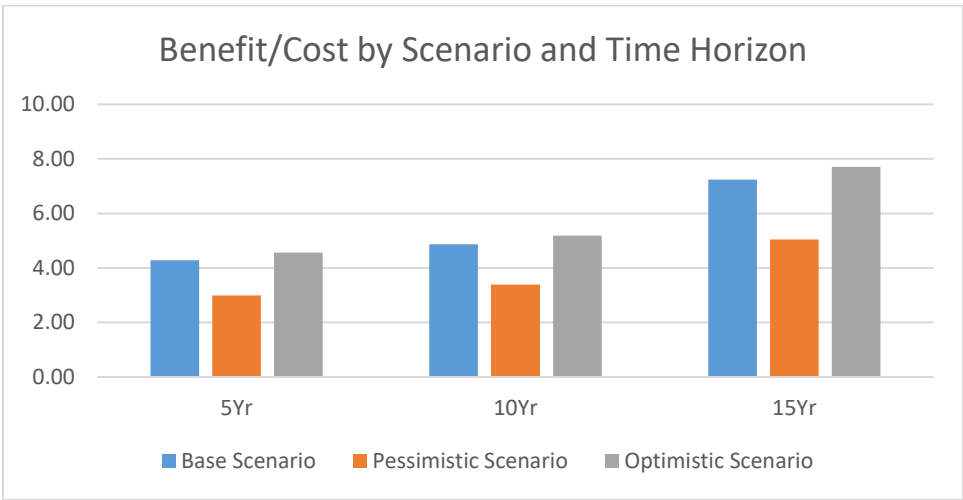
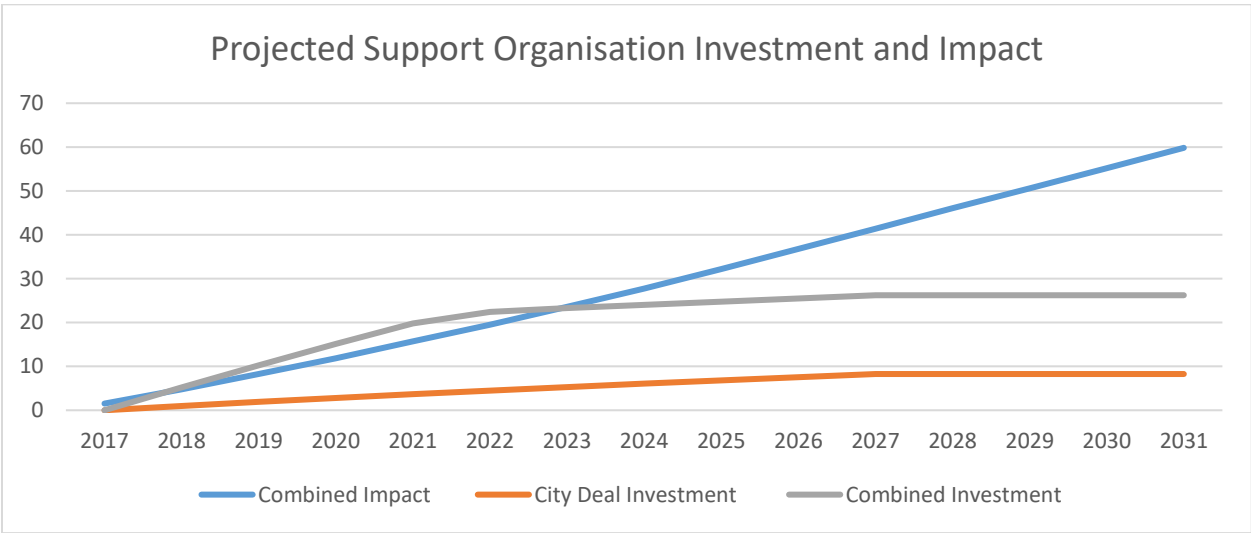
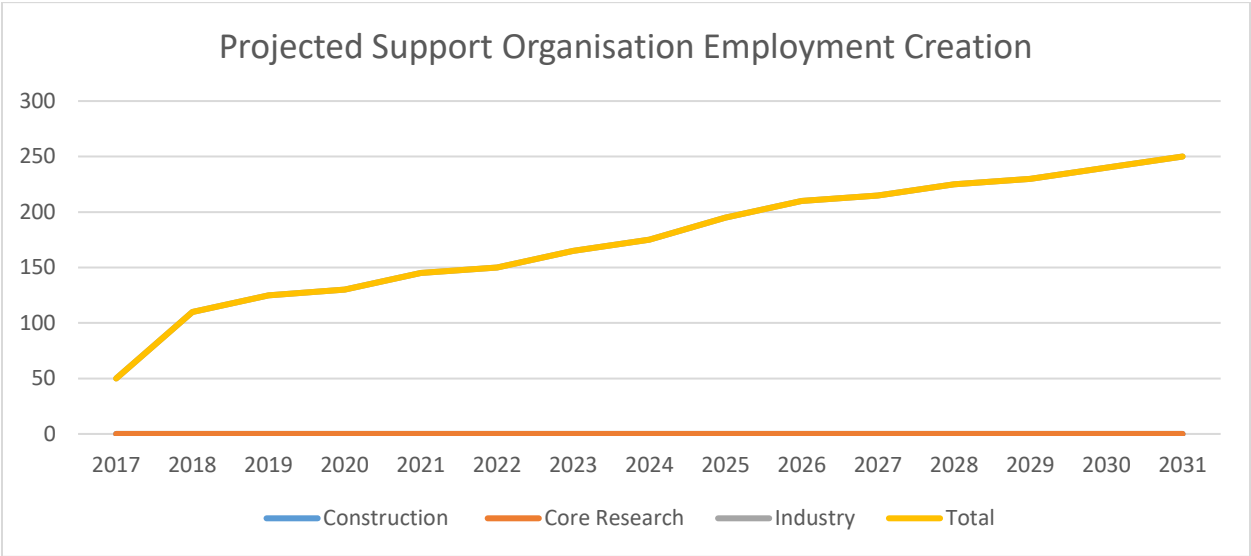
The Support Organisations has been developed to support the operation of the Internet Coast across all themes. This appraisal has however focused upon specific activities outside the scope of other Themes (to avoid potential double-counting), including 'technology push' commercialisation, graduate start-ups and other forms of innovation collaboration.

Deadweight: As noted above, the Innovation System is focused on adding value across the Internet Coast, though impacts considered in this appraisal are in areas where market failure has been identified. Furthermore, the Innovation System has focus upon opportunities which fall between or across Internet Themes thereby pursuing opportunities with added value which would otherwise be missed.

Substitution: The existing mass of innovation activities across the region, and forthcoming Internet Coast projects suggest. Therefore, minimisation of substitution is dependent upon the management of the Innovation System to ensure it does not interfere is what works, and concentrates effort into cross-cutting collaborations and opportunities beyond the reach of individual Projects.

Leakage: The multidisciplinary and global nature of knowledge-based sectors means that benefits will accrue beyond the region. Strong linkages with other UK capabilities will ensure that those lost to the region can hopefully be maximised within the UK.

Direct Impact & Multiplier Effects



Regional Digital Infrastructure

The Internet Coast vision is of a region with near 100% Ultrafast Broadband and 4G coverage, together with opportunities for emerging technologies such as 5G mobile connectivity and Internet of Things (IoT) applications. However, relatively sparse populations in some parts of the region, together with legacy infrastructure and market failures have led to patchy connectivity which have been recognised for some time.

The opportunity to accelerate economic development across a broad range of sectors through a step-change in infrastructure is evidenced in the Mott MacDonald Internet of Economic Acceleration Report for the SBCR. This cited from a number of studies assessing the value of Superfast Broadband, GVA productivity improvements of between 0.3-0.5% over a 15-year period. Importantly, these sources relate to a broad range of regions and sectors, reflecting the diversity of SBCR.

Noting the particularly acute connectivity challenges within the region this suggests a lower baseline and potentially greater benefit. However, as the costs and sources of investment for much of this continue to be defined it is not possible at this stage to consider cost/benefit.

Using the cited improvement related to SBCR this suggests potential for ~£31.5m p.a GVA uplift to the region, or ~£225m cumulative to 2031¹³. Based on average GVA/worker this would equate to ~780 gross additional jobs¹⁴. At this stage, the SBCR region is targeting £25m of City Deal investment, aligned to Internet Coast themes to catalyse wider infrastructure investment and rollout.

Importantly it should be noted that rollout of Ultrafast Broadband and mobile connectivity has impacts beyond purely economic. Tackling digital exclusion and making public services accessible are critical challenges for the inclusive, healthy and prosperous society SBCR aims to nurture. While it has not been possible to appraise these benefits due to the timescales of this work, these are significant factors which should be noted for further consideration.

¹³ Assuming the roll-out took on average 5 years

¹⁴ It should be noted that this is assumed across the wider SBCR economy and is in addition to the other Internet Themes

Smart Manufacturing

Steel Science Innovation Centre

Summary

Current turmoil in heavy manufacturing and industry, and in particular the steel sector underlines the urgency to support the sector in achieving sustainability. Demonstration of long-term industrial strategy based upon new products and process opportunities, unique to the region, is critical for planning of this sustainability.

Steel technologists will be co-located with academic and research staff from Swansea and key UK partner universities (most notably Imperial College, Cambridge and Cardiff) supporting knowledge flow to existing Catapult centres. SUSTAIN will connect to the wider UK academic ecosystem through the four core partners and create a vibrant multidisciplinary environment equipped with state of the art research equipment that will deliver innovative solutions to industry led problems across the UK steel sector.

Building on regional industrial and academic excellence including capabilities at Port Talbot Steelworks to establish a Centre of Excellence in Next Generation Metal Processes and Products. The centre will support innovation in improving efficiency and quality of production processes together with applying multi-disciplinary and multi-sectoral knowledge to the development of new metal based products.

Additionality

The proposal has been developed to strengthen and expand a strategic cluster in the field of metals products and processes. This involves safeguarding existing and creating new employment.

Deadweight: The proposal does relate to a significant existing activity across the region. The support of this sector is most appropriately viewed as safeguarding.

Displacement and Substitution: The proposal has been developed in partnership with other initiatives including further City Deal proposals to avoid duplication. By targeting new opportunities built upon regional capabilities this minimises both displacement and substitution within the UK.

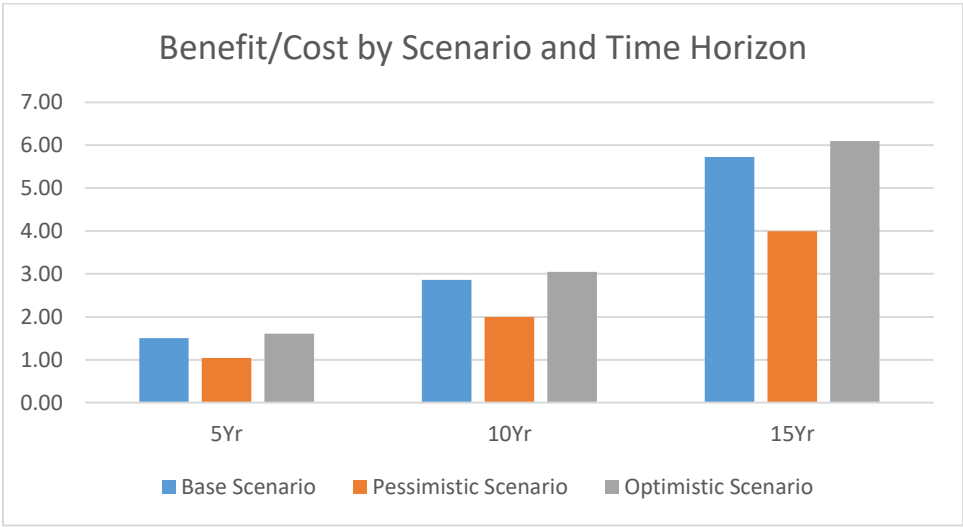
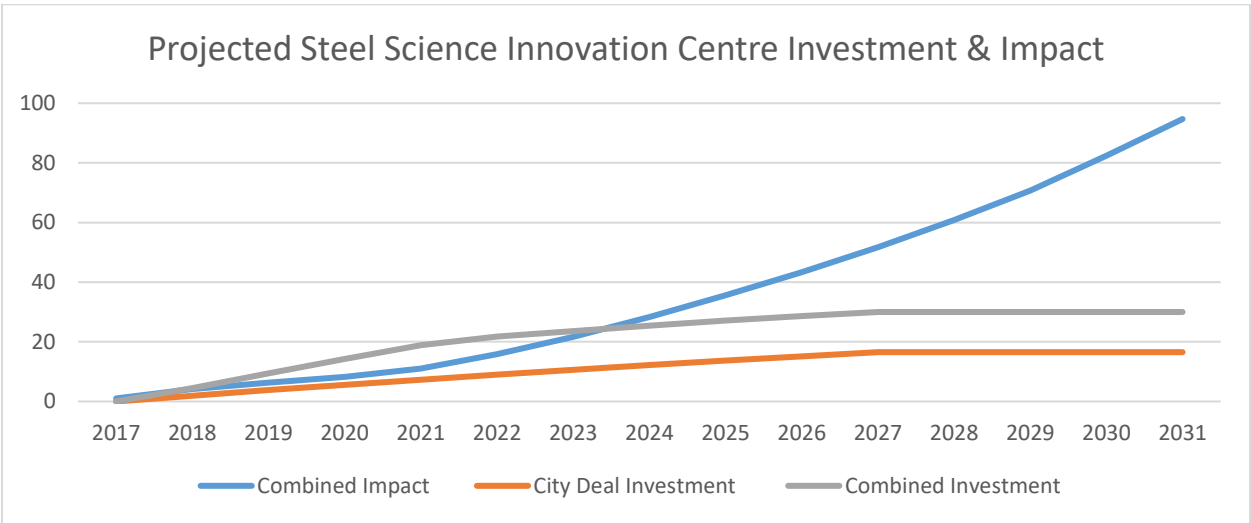
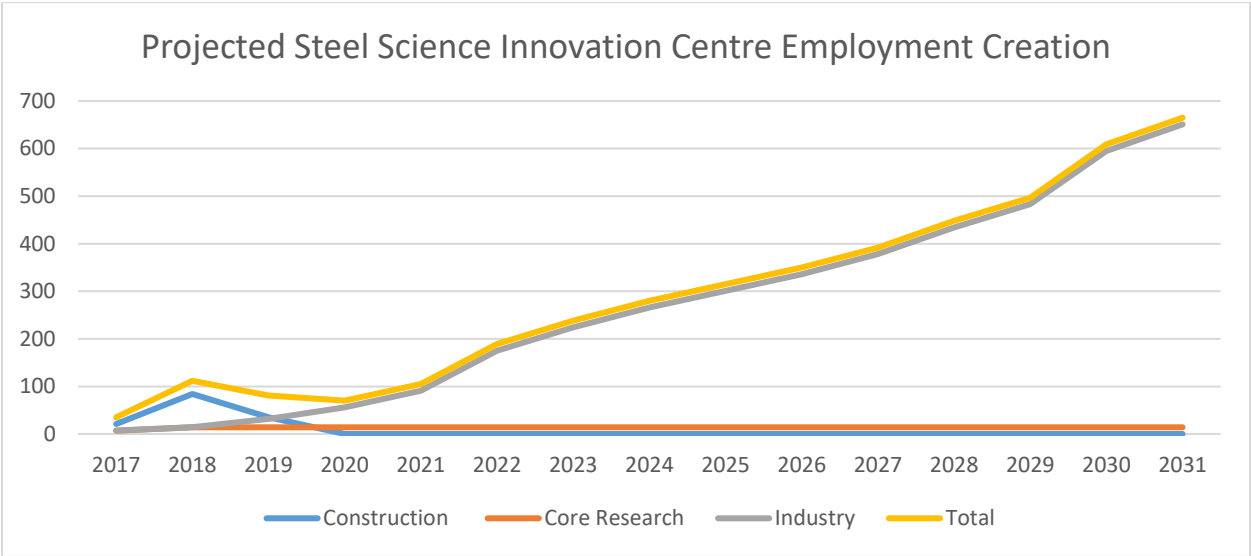
Leakage: The proposal acknowledges and builds upon the integrated and interdependent parts of the industry across the UK. Therefore, leakage beyond SBCR is anticipated though is an inherent part of the activity

Thematic Benefits

Safeguarding Regional Employment: The proposal supports the safeguarding of significant regional employment in the sector and supply chain (many thousands of jobs), together with retention of a valuable skills-base. This has massive socio-economic implications for the region and beyond.

Securing a Strategic Export Industry: Ensuring the viability of the regional metals cluster will underpin the development of the wider cluster and economy, and drive facilitate a range of export opportunities.

Direct Impact & Multiplier Effects



Factory of the Future

Summary

Manufacturing in the Swansea Bay City Region is one of its major economic wealth creating activities. It confronts a host of fast emerging large technical challenges some of which are threats and others offer significant opportunities. These form part of the megatrends altering the industry, most likely for the long term, which in their combined form are termed the third (some also call it the fourth) industrial revolution.

The Region will create a Factory of the Future to counteract these threats and to actively develop and exploit opportunities. The Factory of the Future will be a fully digitally connected, open innovation manufacturing ecosystem deploying a physical hub and spoke network in newly built and leased space, distributed over the Swansea Bay City Region with state of the art equipment where innovative concepts for the regional and the wider economies will be initiated, developed, demonstrated and transferred into industry by a team of world class experts from industry and academia working in a highly multidisciplinary, close collaboration environment.

The Factory of the Future will use a holistic approach and it will involve expertise from engineering, ICT, economics and management to fully exploit the potential of these elements together to futureproof the manufacturing activities and increasing employment and GVA in industries ranging from heavy industry to complex microelectronics assembly to consumer products and food in the region.

Additionality

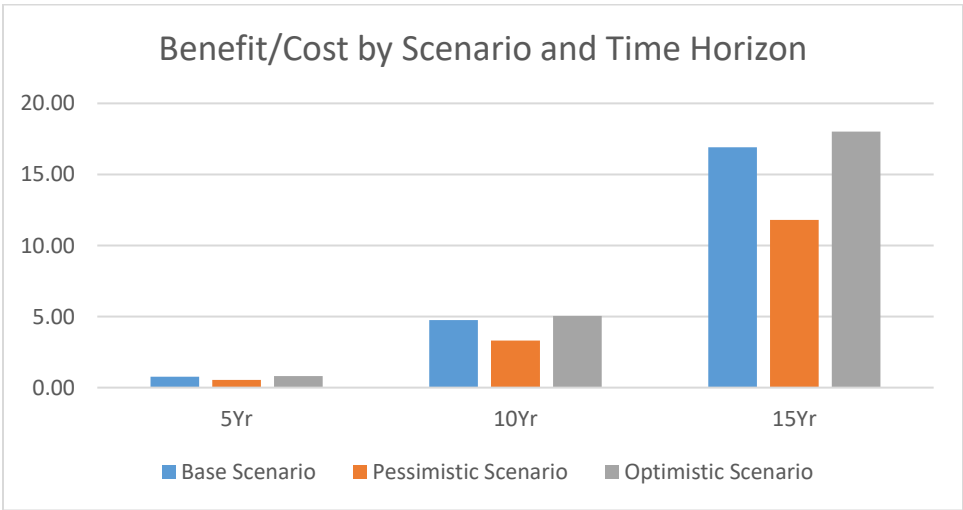
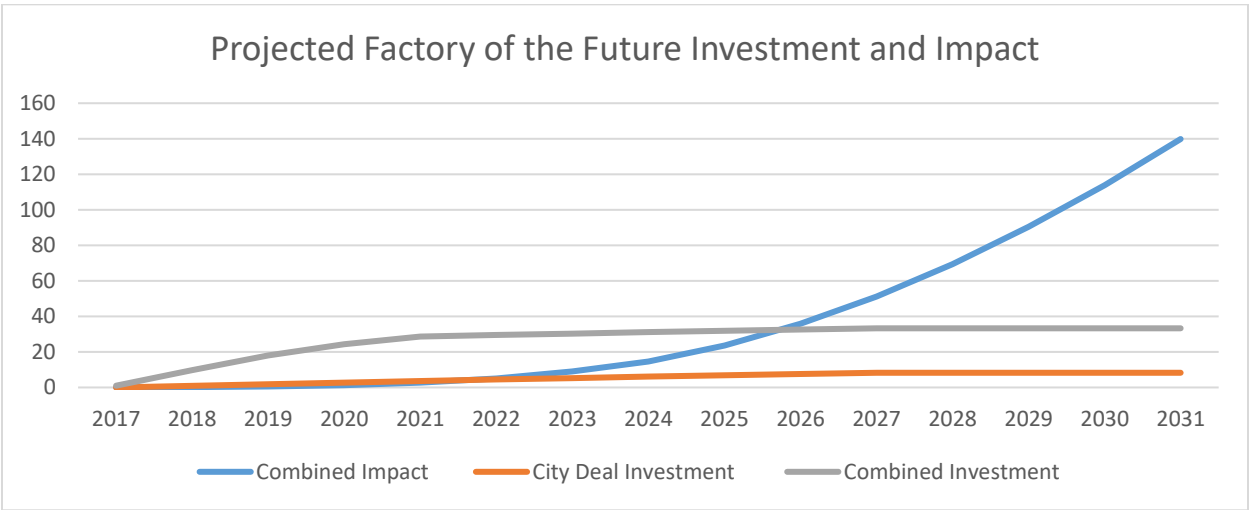
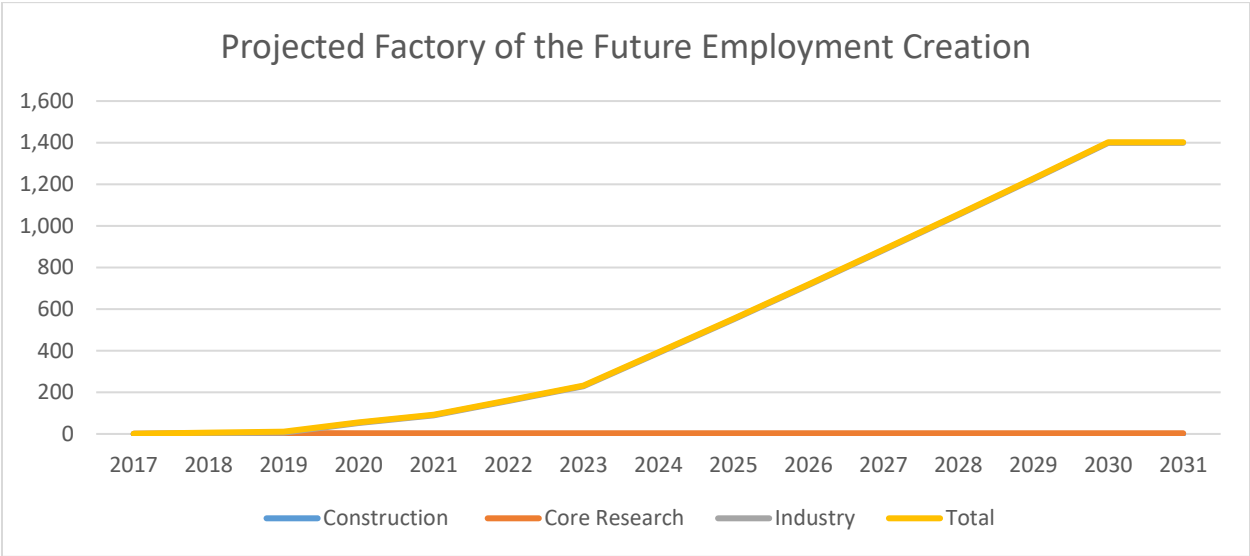
The Factory of the Future is a paradigm shift which aims to re-establish the momentum of the regional and UK sector. The new nature of the approach provides additionality to existing manufacturers and creates value otherwise out of reach of other parts of the value chain.

Deadweight: The Factory of the Future is targeting opportunities of a nature which would be inconceivable without it. In this respect it is creating its own market using the unique set of capabilities provided by the regional value and supply chain. There is however deadweight which may be captured, though from outside the UK in the form of re-shored or inward-investing manufacturing opportunities.

Displacement and Substitution: The move towards greater cyber-physical integration across all sectors means that Industry4.0 approaches will become far more mainstream. In this respect, the Factory of the Future assimilates rather than substitutes. Therefore, substitution becomes additionality by the factor of how much capacity, capability and productivity are increased.

Leakage: The Factory of the Future is by virtue a porous construct allowing new components to self-assemble into a value chain. While the Internet Coast connectivity will allow it to attract opportunities from across the globe, it is the internal regional connections bringing local connections that will attract and retain value within the region.

Direct Impact & Multiplier Effects



Thematic Benefits

This industry-led initiative aims to create an ecosystem capable of delivering innovative products/ processes/ devices developed within the region for the benefit of the region, but also creating opportunities of expanding/exporting this expertise to the wider world increasing national and international competitiveness for Welsh companies.

The Factory of the Future will be self-sustaining in line with models used for instance by the HVM Catapults. Due to its multidisciplinary nature the Factory of the Future will be closely linked to the other Internet Themes of the Swansea Bay City Region City Deal proposal.

Separate analysis of the Factory of the Future initiative has identified that ~£630m of wider benefit beyond that demonstrated through Direct and Multiplier effects. This includes importantly investment into industrial infrastructure supporting the wider manufacturing value chain to prepare for future challenges and opportunities.

Swansea Bay City Region: City Deal Land Value Uplift

The proposed Internet Coast City Deal has been devised as a regional initiative developing key sectors across the Swansea Bay City Region. Earlier sections in this report have presented summaries of Internet Themes and individual projects, together with their projected job creation and GVA contributions. That analysis has aimed to respond to the core question of how the proposed Deal could assist in addressing the productivity and employment gap between the region and wider United Kingdom. Consideration of these benefits against sought City Deal investment had supported appraisal of the proposed activity.

The UK Government Department for Communities and Local Government (DCLG) recently published guidance for development appraisal based upon land value uplift. This approach allows a more ‘market-focused’ perspective to be applied in appraisal of development proposals. This section aims to identify land value uplift benefits realised by the Internet Coast to support the overall appraisal process.

While the proposed SBCR City Deal capital investments are centred around key sites, they are all intended to varying extents to stimulate broader regional sectors. For example, Factory of the Future aims to create broad supply chains opportunities across the region, while benefits of Digital Infrastructure aim to provide almost ubiquitous benefits for companies. Therefore, benefits are targeted not only at the project/scheme/site level but also more broadly across local and regional communities.

Valuation of land in such developments is complex and generally involves a residual value method or comparisons such as through use of relevant benchmarks such as those published by DCLG¹⁵. Guidance on these approaches is provided by professional bodies (e.g. RICS¹⁶), Government Departments^{17,18} and academia. In short, each project’s primary development could potentially be assessed separately from a development perspective using the residual value approach or alternatively regional benchmarks for similar use could be applied¹⁹. Either approach has its limitations and impracticalities, and both are challenged by the complexities of the proposed SBCR Internet Coast. Therefore, this appraisal aims simply to examine the potential land value uplift benefits resulting from relevant City Deal project proposals. The following section presents how this has been undertaken, the key uplifts targeted, and a summary of the combined benefit.

Approach

As presented in previous sections examining anticipated GVA and jobs impacts, this outline appraisal builds upon work undertaken at the Project and Theme level including options appraisal/selection, and therefore works with the Internet Coast scope as an integrated portfolio of ‘Preferred Options’.

This appraisal uses the Comparison approach by identifying enhancements in land use across relevant Internet Coast projects. From the individual projects’ combined scope, the project teams have identified and quantified land value enhancements, categorised by nature of activity. While relatively crude, the appraisal aims to be indicative, and later adjustment for additionality/sensitivity analysis aims to factor

¹⁵ Land value estimates for policy appraisal, Department for Communities and Local Government, UK Government, February 2015

¹⁶ Valuation of development Land, Valuation Information Paper 12, Royal Institute of Chartered Surveyors (RICS), 2008

¹⁷ The DCLG Appraisal Guide, Department for Communities and Local Government, UK Government, December 2016

¹⁸ Transport Appraisal in the Context of Dependent Development, Department for Transport, UK Government, January 2014

¹⁹ As noted in Annex D: Land Value Uplift for Non-Residential Development, The DCLG Appraisal Guide, DCLG, UK Government, 2016

for assumptions not averaged out by diversity amongst the range of sites, conditions and other factors across the region.

This aims to be consistent with the approach presented in the DCLG Guidance²⁰, though as specific benchmark data are unavailable for Wales, benchmarks for a comparable English region are applied²¹, supplemented with project-specific and other data as appropriate.

The identified enhancements examined are;

- Brownfield land developed for;
 - Business Park,
 - City Centre,
 - Residential
- Greenfield land developed for;
 - Business Park,
 - City Centre,
 - Residential

Unlike singular transport or other infrastructure schemes such as airports or defined routes, the interconnected nature of Internet Coast projects makes it inherently difficult to assess additionality at the project, or even Theme, level. Therefore, a programme level adjustment presenting Optimistic, Base and Pessimistic scenarios is provided with the Summary, which also incorporates sensitivity analysis for assumptions and key parameters used. This applies adjustments of 40-60% covering the Low/Medium – to High quadrants within the DCLG framework²². This approach is consistent with the approach applied in the earlier employment growth and GVA contribution analysis.

Internet Coast Themes

The following section outlines the land value uplift benefits delivered by relevant projects within each of the Internet Themes.

Internet of Economic Acceleration

City Digital District: The City Digital District will realise 118,567m² of urban business environment during the period to 2031. It will also create 2.83 hectares of residential development during the same period. Wider development across the City Centre and uplift of surrounding land value will also be delivered, though requires further analysis.

Centre of Excellence for Next Generation Services: CENGs will create a 2,500m² innovation centre, planned for opening in 2018. It is also anticipated that it will stimulate wider development, though as this cannot be quantified at present it is not yet included in appraisal figures.

Yr Egin: The project will create 10,162m² of business park facilities on a greenfield site across two phases. In parallel, it will also result in 2.5ha of greenfield land being developed for housing.

²⁰ Annex E: Estimating Value for Money for Non-Residential Development Using Land Value Numbers Where Available, The DCLG Appraisal Guide, DCLG, UK Government, 2016

²¹ Exeter has been selected due to similar peripheral UK location and mix of urban/rural hinterland.

²² As noted in 4.0.2 of the DCLG Appraisal Guide Data Book, Department for Communities and Local Government, UK Government, September 2016

Internet of Energy

Pembroke Dock Marine: The project will create 17,533m² of offices and laboratories as well as 26,993m² of external quayside and laydown space within the facility²³. However, the most notable land, or rather seabed, uplift relates to the development of the 90km² Marine Energy Demonstration Zone. Benefits resulting from this development falls beyond the model used in this section reference should be made to the wider analysis, including earlier projected contribution to GVA and employment.

Homes as Power Stations (NPT): The Neath Port Talbot development involves 0.44ha of residential development on brownfield land. For appraisal, it is projected that the other local authorities involved will follow with similar scale schemes, and this will be repeated twice in the period to 2031 as the project works towards its 1,000 homes target (new build only).

Internet of Health & Wellbeing

Campuses: The development of innovation centres at Singleton and Morriston will create 5,000m² of initial land uplift with planned development of a further 27,000m² of further development across the sites during the period to 2031. It is also projected that employment growth will support development of 4ha of land for residential activities as the expanded Morriston site benefits from enhanced infrastructure.

Villages: The Delta Lakes project will redevelop 55 acres of brownfield land into ~50,000m² of mixed enterprise and residential development. The initiative will also unlock neighbouring brownfield sites of Draka, North Dock and Castle Works with a similar development mix resulting in a total 6.83ha residential, ~50,000m² business park, and 21,800m² expanded town centre.

Factory of the Future

Factory of the Future: A core innovation centre created on a brownfield site offering 3,150m² of test and development space will support longer-term development of 30,000m² business park facilities for advanced manufacturing. Wider benefits within the broader supply chain will also support the viability and growth of other sites across the region and beyond.

Combined Land Value Uplift

The above sections present a summary of land uplift benefits for projects with relevant scope and for which data are available. Other projects including Steel Science and Digital Infrastructure will clearly also have impacts, though are not included in this analysis.

The following table provides a summary of the identified land value uplift benefits, totalling gross value of ~£123m (£101m discounted). Adjusted for additionality with a range of 40-60% this suggests a net uplift of £40-80m. However, it should be noted that the limitations of this appraisal do not include wider benefits such as Pembroke Marine's offshore impact or wider uplift from distributed activities.

²³ This external space has been included in calculations as business park space. This results in a value broadly equal to Land Value Appraisal provided by the Port Authority based upon expansion of the site from 5.74ha to 7.75ha.

Land Value Uplifts - Outline Appraisal

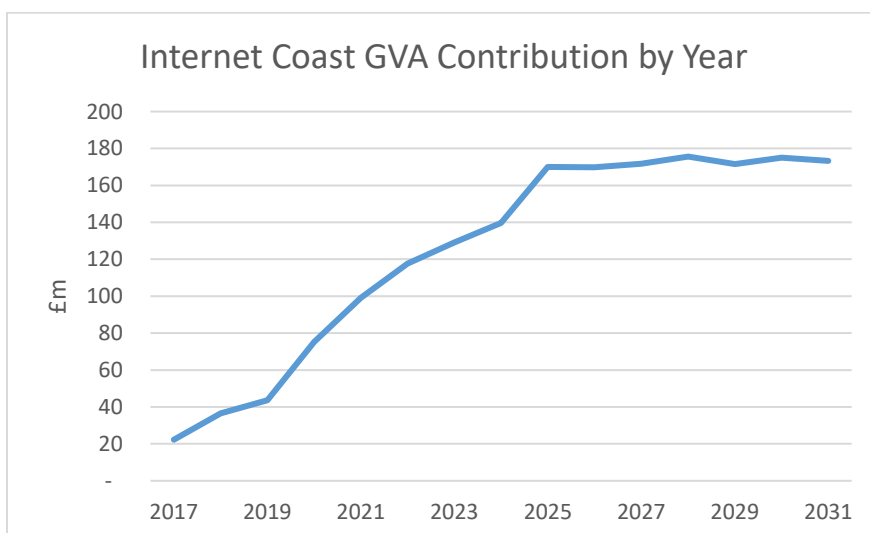
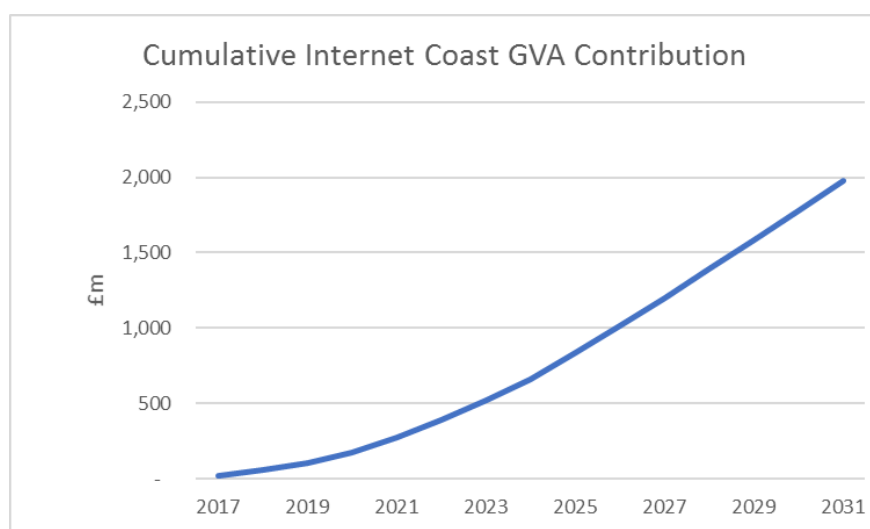
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Uplift	Unit	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Brownfield to Business Park	m	0	51,968	22,388	28,993	4,000	0	0	3,000	15,000	0	0	0	0	0	15,000	140,349
	£	0	1,247,232	537,312	695,832	96,000	0	0	72,000	360,000	0	0	0	0	0	360,000	3,368,376
Greenfield to Business Park	m	0	0	3,912	2,750	0	0	11,500	2,000	0	0	0	0	10,000	0	0	30,162
	£	0	0	187,776	132,000	0	0	552,000	96,000	0	0	0	0	480,000	0	0	1,447,776
Brownfield to City Centre	m	0	2,589	0	28,831	21,440	46,950	3,412	4,400	6,400	13,895	0	0	3,900	0	8,550	140,367
	£	0	1,227,186	0	13,665,894	10,162,560	22,254,300	1,617,288	2,085,600	3,033,600	6,586,230	0	0	1,848,600	0	4,052,700	66,533,958
Greenfield to City Centre	m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	£	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brownfield to Residential	ha	0	1	4	5	0	1	1	2	0	0	0	1	0	0	0	15.82
	£	0	1,600,000	9,125,000	11,400,000	1,200,000	2,075,000	2,550,000	4,675,000	325,000	1,100,000	1,100,000	2,200,000	0	1,100,000	1,100,000	39,550,000
Greenfield to Residential	ha	0	0	0	0	0	1	0	2	2	0	0	0	2	0	0	6.50
	£	0	0	0	0	0	1,000,000	0	1,500,000	5,000,000	0	0	0	5,000,000	0	0	12,500,000
Total	£	0	4,074,418	9,850,088	25,893,726	11,458,560	25,329,300	4,719,288	8,428,600	8,718,600	7,686,230	1,100,000	2,200,000	7,328,600	1,100,000	5,512,700	123,400,110
Total (Discounted)	£	0	3,931,813	9,172,648	23,268,934	9,936,634	21,196,285	3,811,012	6,568,204	6,556,397	5,577,752	770,311	1,486,699	4,779,129	692,226	3,347,702	101,095,747

Business Park Total	m	170511.00
	£	4,816,152
City Centre Total	m	140,367
	£	66,533,958
Residential	ha	22.32
	£	52,050,000

Total - Base	60,657,448
Total - Optimistic	80,876,598
Total - Pessimistic	40,438,299

Internet Coast Combined Impact

The Internet Coast projects will support an important contribution to regional and UK GVA over the period, adding £1.976bn from Themes and Infrastructure, along with wider thematic benefits including land value uplift. Adding ~£173m p.a. to the regional economy equates to ~5% of the GVA gap between (current) regional and UK productivity levels. The following graphs present the projected development of these benefits over the period to 2031.



Additional Benefits will be realised through the Regional Digital Infrastructure, Skills and Talent, and activities of the Joint Cabinet Committee Support Organisation. These are included with the detailed breakdown on the following page.

First Phase Projects request of City Deal support totalling £241m (£197m discounted). This represents a potential 10:1 Benefit Cost ratio across the Internet Coast over the SBCR period. The following section provides a breakdown by project.

Project Proposals Impact Summary

Theme – Project Summary	CD Request²⁴ (£m)	Jobs (Gross)	GVA (Direct)	Thematic Benefits (£m)
Internet of Energy				
- Smart Low Carbon Homes & Buildings	15	1,804	251	343
- Pembroke Marine	25	595	126	-
Internet of Health & Wellbeing				
- Campuses Phase 1 ²⁵	15	1,120	153	75
- Villages Phase 1	40	1,853	467	2
Internet of Economic Acceleration				
- City & Waterfront Digital District	50	1,323	318	623
- Yr Egin	5	203	47	
- CENGs	26	500	154	
- Digital Infrastructure ²⁶	25	780	225	TBC
- Skills	10	-	-	
- Joint Cab Innovation Organisation	-	-	-	
Smart Manufacturing				
- Advanced Metals Products/Process	20	665	95	TBC
- Factory of the Future	10	1,402	140	630
Total	241	10,244	1,976	1,548

²⁴ Undiscounted

²⁵ Phase 1 Activities as per Initial Business Case – B/C based on integrated Campuses

²⁶ Initial Investment aligned with Phase 1 Projects

Appendices

Included as Separate Document