City-Region Deal
Cùmhnant Baile-Roinne

FULL BUSINESS CASE	
Project name	**Northern Innovation Hub**
Themes	**Enhanced Growth Capacity, Digital Opportunity; Young People; Up-skilling; Life Sciences; Tourism;**
Lead	**Felix Spittal, Highlands and Islands Enterprise**
Date (Version)	**V3.3 Full Business Case 18/03/18**
Reason for Change	**Revised version with updated Food and Drink section** • **New EIA** • **Additional detail on Project Scope** • **Further revisions based on additional feedback from BEIS**
Main Changes	• **Food and Drink project scope updated** • **Revised Economic Impact for Food and Drink projects**

Inverness and Highland City-Region Deal – Northern Innovation Hub, Revised Full Business Case

1 Introduction

The Northern Innovation Hub (NIH) will be delivered by Highlands & Islands Enterprise (HIE) in partnership with The Highland Council (THC). The other major stakeholders are the 1,650 business beneficiaries who are expected to participate over the seven years.

The NIH requires circa £15m of funding. Of this, £11m is sought from the City-Region Deal. In addition, £1.7 million of European funding (ERDF) has been secured for activity up to December 2018. HIE is in discussion with the Scottish Government regarding a further £1.3 million of ERDF funding as part of the second phase of the European funding programme. Subject to approval by the HIE board, HIE expect to contribute a further £1 million towards the capital costs of the Food and Drink Technology Centre. In addition to the £15 million, £4.6 million in private funding has been identified for the NIH and this figure is expected to rise as the programme progresses and additional funding streams are explored.

HIE will be responsible for the management of these funds and delivery of the programme. With this funding, the NIH seeks to address the crucial need for greater market driven innovation in the regional economy.

Terminology in this report

Where the term 'City-Region' has been used in this document, it refers to the political boundary of the Highland Council. On occasion it has been necessary to use statistics from the wider Highlands & Islands region where these are the best available. This has only been done when the broader picture across the Highlands and Islands is consistent with that of the City-Region and will be clearly marked as such. Where the term 'businesses' has been used, it refers to both private enterprises and third sector organisations. Social enterprises are expected to benefit from many of the projects within the programme.

2 Executive Summary

The NIH has been designed to catalyse and transform levels of business innovation through a series of carefully targeted initiatives which combine to form a powerful driver of change. It is not a physical hub, instead it is dispersed to reflect the geography and business make-up of the City-Region.

The NIH was developed with the knowledge that a unique area like the City-Region requires a bespoke solution that differs from projects with similar aims in other locations across Scotland and the UK. The high numbers of SMEs in the City-Region, the distribution of businesses across the area, the main market failures and the number of sectors that are important for the economy were all central to the decision made on the approach that would deliver the greatest impact.

The NIH has been designed as a coherent programme, where the benefits to the area are enhanced by undertaking projects that complement each other and contribute to common outcomes. There are clear links between the various projects as well as pathways for businesses to benefit from multiple interventions.

Strategic alignment of the NIH

The UK and Scottish governments both recognise the need for the national economy to be more productive and competitive than current performance measures indicate. The UK Government continues to place productivity and greater business innovation at the heart of its economic and industrial strategies. Likewise, Scotland's Economic Strategy places innovation as one of its four key pillars for economic success. The NIH will align with existing regional, Scottish and UK strategies in order to ensure all public sector partners are pulling in the same direction.

Market failures

The NIH has been developed to address key market failures such as fragmented networks caused by the geography of the City-Region, shortages in the skills and expertise required to innovate and the lack of access to specialist expertise and support businesses require to grow. It will address those failures by providing a broad programme of business support that will tackle the barriers currently restricting innovation and preventing the City-Region from reaching its economic potential.

Other options considered

A range of options were considered prior to the decision to support the preferred option, ranging from 'do nothing' to 'creation of a physical innovation hub'. The options were appraised primarily against their ability to deliver the outcomes that would address the challenges identified in the City-Region.

- Option 1 - Doing nothing - continue with existing projects in the area
- Option 2 - Partial Intervention - consider interventions in Life Sciences and Tourism only
- Option 3 - Creation of an Innovation Hub through grouping of initiatives (preferred option)
- Option 4 - Creation of a physical Innovation Hub in Inverness

Option 3 was selected as the preferred option as it had the highest likelihood of achieving the desired outcomes and providing the solutions that will address the breadth of market failure across the City-Region. It will provide strategic coherence by contributing to all the eight themes of the City-Region Deal and aligns well with UK Government, Scottish Government and HIE priorities.

Developing the NIH model

Rather than focus activity on one or two sectors as is the case in other areas, the NIH has interventions in four sectors. This approach was adopted as the City-Region's relatively small business base means more intense and tightly focussed interventions would be ineffective as there is not the critical mass within only one or two sectors to maximise the potential of the NIH.

The selection of the four sectors outlined below was based on identifying opportunities where innovation could drive growth in the City-Region. Consideration was given to the assets and expertise present in the City-Region, as well as the factors that are currently restricting growth.

In addition, an overarching Technology and Young people strand was developed to address the digital skills gap, encourage adoption of new technologies across the business base, support entrepreneurship and ensure that young people are encouraged to remain, return or relocate to the City-Region.

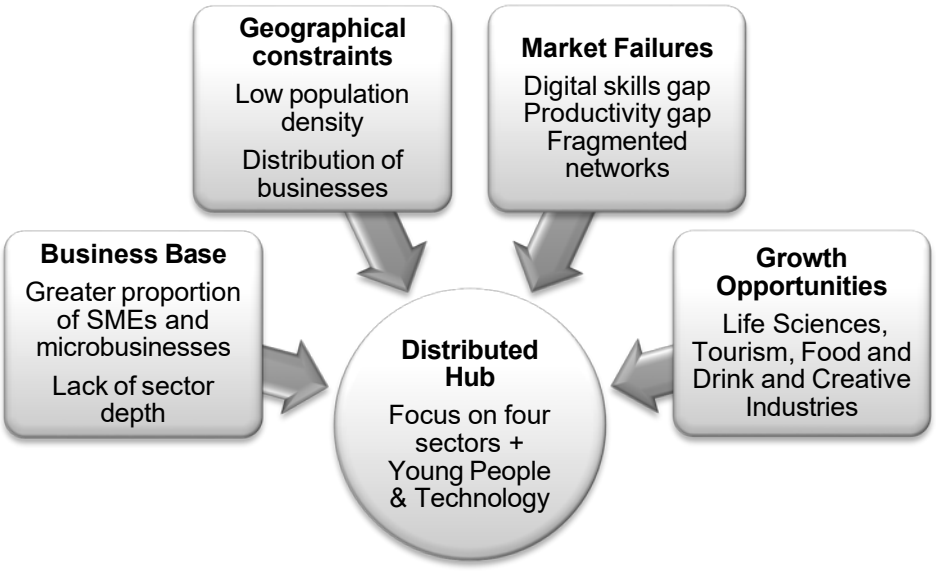
Tourism – Tourism is vital part of the economy, generating £410 million GVA for the Highlands and Islands. That impact is spread across the City-Region, paying wages in remote locations and supporting rural communities. A significant opportunity for growth exists around Adventure Tourism where the City-Region is considered to be a world-class destination with considerable natural assets. Digital tourism has also been prioritised as it was identified by the Tourism Scotland 2020 strategy as one of the four game changing priorities and a vital factor for growing the sector.

Creative Industries – Creative Industries is similar to Tourism in the geographical spread of businesses throughout the region and its importance to rural communities. An evaluation of the sector in 2013 showed particular strengths and opportunities in textiles, crafts, TV and film and music. A key asset for the sector in the City-Region is XpoNorth, the leading Creative Industries festival in Scotland. The NIH project will build on the opportunities presented by this major conference and existing networks to help the sector to grow.

Life Sciences – The presence of a globally recognised life science company in the City-Region (Lifescan Scotland) provides an opportunity for sector growth. In addition, the largely rural economy in the City-Region provides an opportunity for companies developing products and services for the digital health market. The City-Region also has particular strengths in medical technology and diagnostics. The intention is to double the size of the sector over the course of the programme, to add breadth and resilience and reduce the over-reliance on one large company.

Food and Drink – Food and Drink is the largest of the Highlands and Islands growth sectors, sustaining 12,700 jobs across 2,215 businesses. The City-Region has a global reputation for high quality produce, created with a strong sense of provenance from one of the finest natural larders in the world. To make the most of this opportunity, retain value in the area and help businesses grow, the sector requires support in areas such as product innovation and advanced manufacturing technology.

Figure 1 - Factors influencing the selected delivery model



Aims of the NIH

The NIH has been developed around three core themes and will deliver four main outcomes:

Table 1 – Themes and Outcomes

Themes	Outcomes
Young People - The NIH seeks to combat the challenge of highly skilled young people leaving the regional economy or not returning because of limited employment opportunities **Enhanced Growth Capacity** - The NIH seeks to stimulate economic growth through business acceleration activities which take into account the large number of small and micro enterprises in the City-Region. **Sectors and Place** - The NIH will focus on subsectors of Life Sciences, Tourism, Food and Drink and Creative Industries, where the City-Region has competitive advantages and where targeted projects can make an impact	**Higher skilled and better paid jobs are created**, enhancing growth through innovation and delivering more growth for businesses. **Young people wish to enter or remain in the City-Region**, securing the long-term sustainability of the economy and injecting innovation into local business. **Increased competitiveness and boosted productivity**, driving innovation through better networked businesses both at national and international level, accelerating economic growth. **The regional economy becomes more connected, innovative and outward facing**, showcasing its unique offering and world-class sectors. The City-Region increases in international attractiveness and reputation for innovation.

Outputs

Approximately 1,650 unique enterprises are forecast to receive support from the NIH over its lifetime. The range of support ranges from one-off events to intensive interventions over a substantial timeframe. To allow consistent measurement across the programme four key outputs have been identified and the following figures forecast across the programme:

- Up to 845 unique enterprises are expected to receive modest support (single event, one day of support or comparable level of intervention) to develop innovative products, services or processes.
- Up to 326 unique enterprises are expected to receive considerable support (series of events or greater level of intervention, up to five days equivalent) to develop innovative products, services or processes.
- Up to 625 unique enterprises are expected to receive intensive support (long-term support with intensive intervention greater than five days or equivalent) to develop innovative products, services or processes.
- Up to 30 unique enterprises are expected to cooperate with research institutions.

Partnerships and alignment

The NIH projects will fit well with current innovation activity and HIE is working with other agencies to carefully promote and deliver the NIH in a way that will bring added value to the programme. HIE is working with Business Gateway to ensure joint promotion of opportunities, clarity for businesses and measures to avoid duplication and overlap. The NIH will complement the Clusters 3 activity due to commence in 2018 by contributing to network development and collaboration in Tourism, Food and Drink and Creative Industries. HIE are working with Interface to explore academic links with a number of NIH projects and alignment with their Common Interest Groups of businesses. The HIE Life Sciences project will work closely with the UHI School of Health and Life Sciences to drive forward the shared ambitions and build on each organisation's strengths. Once in place, the NIH staff will continue this work and will explore new opportunities, to bring in additional private funding to the project and create new partnerships as it progresses.

NIH Project Summary

Table 2 outlines the projects that will be brought forward for the NIH and the total public funding they require over the lifetime of the programme.

Table 2 – Project descriptions

Strand	Project	Description	Project Costs
Young People and Technology	Technology Placement Programme	Graduate Technology Placements**:** 12-month technology based placement opportunities to small businesses on a competitive basis for a five-year period. Student Placements: mini technology graduate placements will be available which can last a maximum of 12-weeks.	£1,486,664
	30 under 30	Will provide thirty high-growth start-ups/young companies each year with intensive business support to improve their resilience and get them onto a path of growth.	£2,389,855
	Coding Academy	Will train and upskill a new generation of programmers, delivering high quality, job ready, junior software developers into industry.	£450,000
Tourism	Digital Tourism Development	Will deliver a broad programme of world class events, networking opportunities and support for tourism businesses to bring about a step change in their absorption of leading digital technologies into every aspect of their business.	£250,000
	Adventure Tourism Acceleration	An accelerator that will enable Adventure Tourism entrepreneurs to increase their business capability and collaborate to create scale in a global sector where the City-Region has competitive advantage.	£1,451,000
Creative Industries	XpoNorth Digital	A virtual and physical space where businesses will be supported to innovate on their interface with consumers. Through advice, workshops and digital tools, businesses will be supported to develop a community of interest and test new product ideas, create new access to finance and increase their profile.	£1,712,00
Life Sciences	Pathfinder Business Accelerator	An accelerator to drive the growth of start-ups and early stage Life Science and technology businesses.	£1,112,500
	Physical Space	Creation of a collaborative environment, with soft-landing and product showcasing opportunities for start-ups, new investors and international life science businesses.	£643,895
	NHS Market Ready	Will support SMEs in their ambitions to present, test and trial products and services and secure business from the NHS.	£200,000
Food and Drink	Technology Centre (TechHub)	Will attract the most ambitious and talented food and drink innovators to the City-Region, to develop and commercialise products and services in a state of the art facility.	£2,955,000
	TechHub Network	Will be the catalyst for creating market and sub-sector focused collaborations, within industry, with academic and research institutes and with the public sector partners.	£300,000
	Next Generation Programme	Will target young innovators and potential entrepreneurs developing products or processes that could create a step change in the food and drink sector.	£380,000

Economic Impact

An Economic Impact Assessment (EIA) of the NIH was completed by Reference Economic consultants in March 2017. Two assessments were completed with different methodologies. The first considered City-Region and Scotland impacts. The second drew on the results of the first to determine UK level impacts. An additional EIA was completed by EKOS consultants on the Food and Drink projects in July 2018.

Table 3 - Scotland and City-Region Economic Impact (Reference Economics)

Estimated quantfiable net attributable impacts (direct, indirect and induced)							
Programme/ Impacts	**City-Region**			**Scotland**			
	FTE	Annual Income (£m)	Annual GVA (£m)	FTE	Annual Income (£m)	Annual GVA (£m)	Comments
Technology Placements	22	0.5	1.7	19	0.5	1.6	Understated-do not include wider business benefits of retained graduates
Coding Academy	39	0.9	1.7	32	0.7	1.4	Understated-do not include wider business benefits of the individuals placed with companies
30 Under 30	182	4.1	8.8	156	3.4	7.4	May understate employment impacts given conservative interpretation of available evaluation evidence
Creative Industries	100	1.8	3.9	78	1.4	3.0	Do not include effects of less intensive support, but impacts will be largely covered by figures shown
Life Sciences	77	2.4	5.2	112	3.2	7.0	Do not include effects of soft landing spaces but impacts will be mostly covered by figures shown
Total	**426**	**9.8**	**21.5**	**498**	**9.2**	**20.5**	Figures understate total impacts given comments above, the impacts of the Tourism Programme cannot be quantified and the Food and Drink elements are not included
Food and Drink	The Food and Drink projects were subject to a separate Economic Impact Assessment by EKOS in September 2018. The results of this have been outlined below.						
Tourism	Not quantified due to lack of relevant evaluation evidence. However, the Programme has a strong rationale with evident links to the proposed activities. It is expected that a significant proportion of impacts is likely to come from the Adventure Tourism Accelerator element. Its additionality and attribution is expected to be high, with displacement relatively low due to very strong growth in market demand. Thus, the Programme has the potential to significantly advance Adventure Tourism in the City Region						

UK Impact

Table 4 sets out the results of a cost benefit analysis of three of the NIH Programmes that were part of the Reference Economics assessment. These are ones where all or most of the impacts have been quantified:

Table 4 – UK level economic impact

Programme	**BCR**
Life Sciences	6.3
30 Under 30	5.9
Creative Industries	2.3

All four performed at least adequately under the central estimates. Life Sciences and 30 Under 30 performed best, with high BCRs. This reflects their volumes of participants, and the relatively high GVA levels in the Life Sciences sector, compared to the programmes' costs. In all threecases, the results are sensitive to assumptions about displacement and the persistence of business impacts.

UK level assessment of non-quantified economy impacts

Table 5 shows the economic impact elements of NIH that it has not been possible to quantify.

It assesses the:

- Potential significance of their economic impacts in contributing to the total impact of the NIH. That is on a scale of 1 to 5 where 1 is slight and 5 is very significant.
- Significance of these impacts specifically at the UK level by reflecting potential displacement. That is on a scale of 1 to 5, with 1 representing relatively high displacement and 5 representing relatively low displacement.

Table 5 – Non-quantified economy impacts

Programme/Element	Potential Significance of Impacts	Potential Significance of Impacts *at* UK Level	Total Score
Tourism Programme	4	3	12
Life Sciences-soft landing spaces	2	5	10
Coding Academy-wider business benefits of the individuals placed with companies	3	3	9
Technology Placements-wider business benefits of retained graduates	3	3	9
Creative Industries-less intensive support	1	1	1

The Tourism Programme has the highest level of impact on this basis. It has the potential to make a reasonable contribution to the overall impacts of the NIH at the UK level. The non-quantified elements of the Life Sciences, Coding Academy and Technology Placements would have similar levels of impacts to one another.

Food and Drink – 2018 EKOS EIA

The Food and Drink projects were subject to an additional EIA in July 2018 once further work had been undertaken to define the project scope. A full breakdown can be found in the Food and Drink Section (4.10).

Food and Drink Cost Benefit Ratio Sensitivity: Total Net Costs (Discounted)

	Worst Case	Base Case	Best Case
Highland	2.99	4.80	5.76
HIE	3.68	5.88	7.06
Scotland	3.34	5.35	6.42
UK	1.13	1.99	2.39

As shown, on the basis of the discounted net costs the Food and Drinks projects still deliver a CBR of more than 1 in all scenarios.

These results show that the seven year initial timeframe of the NIH programme provides a unique opportunity to support innovation across sectors, both specifically and over a long period, in a way which will deliver transformational change in the economy of the City-Region.

3 Strategic Case

3.1 Context

The Northern Innovation Hub has a strong strategic fit with the UK Industrial Strategy green paper, Scotland's Economic Strategy and HIE's strategic priorities for the City-Region. This section describes the policy context and the nature of linkages with the NIH project.

3.2 Challenges facing the City-Region

Despite the progress made in recent years, in growing the population and strengthening the economy, the City-Region still faces many significant challenges: a lower GDP per capita than the rest of the UK, an aging population and a challenging geography within which to develop a sense of cohesion or scale amongst the business community.

Retaining young people

The population of the region has experienced significant growth in the last thirty years and has benefitted from investment in a range of business sectors, alongside improvements to digital infrastructure and higher education. However, this increase in population has slowed in the last eight years in the wake of the recession.

The region also faces a chronic problem of attracting and retaining younger people. By 2037, it is estimated that the proportion of the population aged 16-29 in Scotland will be 16.2%, but in the Highlands and Islands it will be 12.5%[1]. This presents a long-term challenge to sustaining the economically active, ambitious business community that is essential to encourage young people to remain in the region.

A productivity gap

Another challenging trend is that productivity in the City-Region continues to lag behind Scotland as a whole, where productivity is measured as GVA per person in employment. In 2014 for example, the City-Region's productivity was 63% of Scotland's overall level[2].

This productivity could also be further influenced by the continuing challenges facing the oil and gas sector. Although significantly impacting the Aberdeen and North East economy, the City-Region will feel a range of direct and indirect economic consequences from the oil and gas slowdown.

Attracting Foreign Direct Investment

The Highlands and Islands region has also lagged behind in attracting Foreign Direct Investment (FDI), attracting twelve projects from circa 140 across Scotland in 2016.

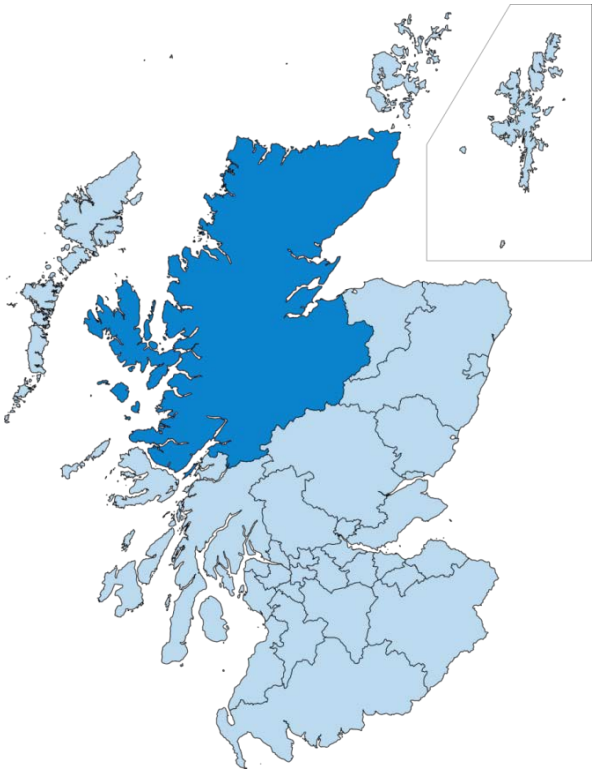
3.3 Businesses in the City-Region

The business base in the City-Region is dominated by smaller enterprises. Some 84.5% of companies are micro-enterprises (i.e. employing 0 to 9 employees). This is higher than in the rest of Scotland, where micro-enterprises account for 81.5% of all businesses. The proportion of businesses that have 50 or more staff is also slightly lower in the City-Region area, with 2.5% employing 50 plus compared to 3.5% in the rest of Scotland.

Figures from the Inter Departmental Business Register (ONS) show that across all industries in the City-Region in 2016, there were fewer than 12,000 VAT registered enterprises. Total employment last year in the City-Region was just under 116,000, according to estimates from the Annual Population Survey/ Labour Market Survey (ONS).

[1] Inverness and Highland City – Region Deal : Statement of Intent and Proposed Programme, January 2016
[2] EY ITEM Club Data

Figure 2 – Business Profile in the City-Region



Enterprises in City-Region	Figures
Microbusinesses	Total - 11,480 0 Employees - 2,540 1-4 Employees - 7,060 5-9 Employees - 1,880
SMEs	Total - 2,110 10-14 Employees – 760 15-49 Employees – 1050 50-59 Employees – 220 100-250 Employees - 80

Source: IDBR March 20

3.4 Market Failure

The challenges present in the City-Region are exacerbated by a number of barriers that constrain innovation. These are found across the UK but are particularly prevalent in the City-Region because of rurality, the scale and nature of businesses and their dispersal across the area.

A small population base combined with geographic dispersal means the City-Region does not benefit from industry cluster effects, where the exchange of ideas, the presence of close competitors and a large immediate market causes an upward spiral of business growth and scaling. As a result, businesses in the City-Region can become isolated and locked in to ways of working that prevent them from making the most of new technologies or moving into new markets.

There is currently insufficient access for businesses in the City-Region to the specialised technical support and advice that is crucial for innovation. Recently, this has led to a number of businesses leaving to take a presence elsewhere in Scotland where they can access the level of support they require.

Businesses in the City-Region can also struggle to access the highly skilled employees necessary to drive innovation. The Highlands and Island Skills Investment Plan identified that businesses had trouble filling vacancies for those with technical IT skills[3] because of the insufficient number and quality of applicants.

Further details of the specific market failures each project seeks to address can be found in the project descriptions in section 0. A summary of the market failures has been provided in section 8.3.

[3] http://www.hie.co.uk/common/handlers/download-document.ashx?id=50c3b1c3-b696-4111-8485-3cd42c8d9204

3.5 Development of the NIH

In the autumn of 2015 the UK Government requested that support for innovation was central to the City-Region Deal. Following a request from the Highland Council to lead the innovation programme, HIE started to develop the NIH, utilising the expertise in HIE's Sectors Innovations and Programmes team to develop the projects.

These plans were discussed with City-Region Deal partners regularly, as well as being tested and refined at various engagement events with businesses and other stakeholders. The Outline Business Case (OBC) was submitted to the UK Government, Scottish Government and Highland Council in October 2016. The OBC included the distributed approach, the four sectors that were to be the focus, the overarching technology element and an overview of the projects. The OBC was accepted by the UK Government, and the project proceeded to the development of the Full Business Case (FBC).

Consideration of the specific nature and requirements of businesses in the City-Region has determined the approach taken to the NIH, which is the development of a geographically distributed innovation hub. Solutions which would be suitable in other parts of the UK would not be appropriate for the City-Region. A physical hub would cause other parts of the City-Region to suffer economically as businesses would be drawn towards the location of the hub. Because of the geography, activity which takes place in Inverness does not create as much economic benefit across the whole City-Region as it would in more urban settings such as Glasgow or Aberdeen.

The Scottish Government are supportive of the approach taken to the NIH, with the following quote provided by Richard Rollison, Deputy Director, Innovation, Industries and Investment Division:

"The Scottish Government welcomes the development of the Northern Innovation Hub (NIH) and its approach to supporting business innovation in the Highlands. The broad programme delivered by NIH has the potential to transform the economy of the area and contribute significantly towards a number of the Scottish Government's strategic objectives. We support the distributed hub model that has been developed by Highlands and Islands Enterprise with partners as the best approach for an area which is unique to the UK because of its geography, dispersed population and business profile. The NIH builds on the sectors where the Highlands has strengths and expertise, as well as accounting for geographic challenges and market failure. What has been developed is a bespoke solution that addresses the economic opportunities for businesses in this part of the UK."

3.6 Alignment with existing strategies

The UK and Scottish governments both recognise the need for the national economy to be more productive and competitive than current performance measures indicate. The UK Government continues to place productivity and greater business innovation at the heart of its economic strategy. Likewise, Scotland's Economic Strategy places innovation as one of its four key pillars to economic success. The commitment from both Governments is clear as set out below:

- Innovate UK: "It's our vision at Innovate UK to help the UK economy grow head and shoulders above other nations by driving disruptive innovation – inspiring and supporting pioneering UK businesses to create the industries of the future."[4]
- Scotland's Economic Strategy: "Inspiring Scottish business growth through innovation. While Scottish Government recognises no one body or policy can 'create' innovation, they intend to work with universities as hubs of research and development and encourage businesses to invest more in innovation and research."[5]

[4] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/514838/CO300_Innovate_UK_Delivery_Plan_2016_2017_WEB.pdf

[5] http://www.gov.scot/Topics/Economy/EconomicStrategy

Delivering a more productive, competitive and innovative economy requires all parts of the UK to contribute to positive economic growth, including remote and rural parts of Scotland. Significant Government investment in the shape of access to superfast broadband means many more businesses can be digital businesses, but many do not realise this, and the absorption of technology to underpin competitiveness is now an urgent national issue.

The NIH will seek to align with existing regional, Scottish and UK strategies in order to ensure all public sector partners are pulling in the same direction.

UK Industrial Strategy

The NIH will contribute directly to the following pillars outlined in the Building our Industrial Strategy green paper[6]:

- Investing in science, research and innovation
- Developing skills
- Supporting businesses to start and grow
- Encouraging trade and inward investment
- Cultivating world-leading sectors
- Driving growth across the whole country

A table outlining how the projects link with the pillars in the Industrial Strategy has been included in 8.7.

Scottish Government's strategic aims

The approach taken to the NIH recognises that the City-Region is dominated by SMEs and microbusinesses in key sectors, which could work together more effectively to address common challenges and market opportunities. The NIH will directly support key Scottish Government strategic aims:

- Improve business competitiveness of SMEs, and their capacity to engage with regional, national and international markets in a more innovative way**.**
- Develop links between enterprises and Scotland's higher education sector, while increasing innovation through investment in products and services, social innovation, networks, clusters and open innovation models.

The Scottish Government Enterprise review in 2016 recognised the important role the public sector can play in driving innovation[7]:

- Acting as a catalyst through procurement and support for research and innovation.
- Contributing to the creation and development of innovative firms and assisting existing businesses to access finance and assimilate innovative products and ways of working.
- Helping to shape markets and create the best environment for innovation.
- Driving collaboration between business and academia.

The review also recognised the challenges for innovation:

- Simplify and streamline funding and interventions and reduce duplication in our support for innovation, while ensuring it is agile, fast and flexible in responding to businesses' needs.
- Improve leadership, digital and other skills to drive innovation and enterprise.

[6] https://www.gov.uk/government/consultations/building-our-industrial-strategy
[7] http://www.gov.scot/Publications/2016/10/4372/7

- Maximise the impact of university research to increase collaboration with businesses in Scotland and internationally in order to better drive improved economic output.
- Make better use of our existing network of innovation centres and ensure the wider public support landscape enables growth.
- Maximise the impact of our world-renowned research base.

3.7 The aims of the NIH

Themes

The NIH has been developed around three core themes:

Theme 1: Young People

The NIH seeks to combat the challenge of highly skilled young people leaving the regional economy by ensuring the City-Region has the same incentives as other parts of the country. Improving job opportunities and the perception of the area as a good place to start and grow an innovative business will encourage young people to remain, return or relocate to the City-Region. This will benefit the area by harnessing the entrepreneurship, creativity and technological awareness prevalent in younger people.

Theme 2: Enhanced Growth Capacity

The NIH seeks to stimulate economic growth through business acceleration activities which take into account the large number of small and micro enterprises in the City-Region. This will be achieved by developing networks that connect businesses with one another as well as with universities and entrepreneurs across the world, to facilitate knowledge exchange in business innovation, generate new partnerships and raise ambition levels through greater market awareness. The programme aims to place innovation at the heart of businesses, transforming small and medium scale enterprises (SMEs) to innovation driven enterprises (IDEs).

Theme 3: Sectors and Place

The economy is rich with resources and boasts a number of sectors that are globally competitive and innovative. However, geographical challenges currently prevent the City-Region from maximising its economic potential. The NIH will address the problems that face sectors in the City-Region by developing better co-ordinated networks, to improve communication and collaboration. NIH will boost awareness of an international perspective for businesses in the City-Region, and will focus on exploiting market opportunities in subsectors of Life Sciences, Tourism, Food and Drink and Creative Industries where the City-Region has competitive advantages and where targeted projects can make an impact.

Outcomes

The NIH has been developed to achieve four main outcomes:

Outcome 1: Higher skilled and better paid jobs are created, enhancing growth through innovation and delivering more growth for businesses.

The NIH will focus on competitive opportunities that are relevant to the City-Region providing sustainable growth for the Highland economy and delivering higher value jobs.

Outcome 2: Young people wish to enter or remain in the City-Region, securing the long-term sustainability of the regional economy and injecting innovation into local business.

Young entrepreneurs are able to sustain and build businesses with a greater chance of survival. A greater number of innovative businesses led by young people flourish in the City-Region. Innovation will be embedded in the economy through greater numbers of qualified young people returning with technology related skills. Young creative people remain in greater numbers.

Outcome 3: Increased competitiveness and boosted productivity, driving innovation through better networked businesses both at national and international level, accelerating economic growth.

Clusters of businesses flourish through combining common sector/industry interests and a shared commitment to capture a greater share of markets in the UK and internationally. Innovation remains key feature of the City-Region's economy, and the numbers of innovation active businesses drives up ambitious levels in the wider business base. Start-up businesses have increased export potential and improved links to UK and International markets.

Outcome 4: The regional economy becomes more connected, innovative and outward facing, showcasing its unique offering and world-class sectors. The City-Region increases in international attractiveness and reputation for innovation.

Small businesses choose to collaborate to extend their global reach, enhancing their income from exports by building scale around key opportunities identified through the NIH and in conjunction with HIE. International networks that already exist in the City-Region between stakeholders and global, innovative thinkers are leveraged to highlight what is possible.

3.8 Building on existing interventions

Through the City-Region Deal, the NIH provides a unique opportunity to build on existing strengths and deliver a step change in investment to deliver a more innovative and diverse Highland economy. The NIH has been developed to complement the existing sources of support for innovation by providing carefully targeted interventions in sectors where there is significant market opportunity.

Where there are successful innovation projects with proven track records, the NIH replicates, enhances or expands on those initiatives. Where completely new projects have been developed it is to address a specific gap in provision or to make the most of a market opportunity.

As an example of an expanded project, HIE currently manages a highly successful programme that helps place graduates within HIE account-managed businesses. The NIH creates the opportunity to expand this programme and take it in a new direction through the Technology Placements project. It will offer part funded graduate and student placements to all SMEs in the City-Region who want to adopt new processes or create products linked to the absorption of technologies.

As an example of where a new project has been developed, the Coding Academy is being introduced to address the shortage of high level digital skills in the labour market. The need for this intervention has been informed by research into skills gaps in the area and HIE's direct engagement with businesses.

The Life Sciences project expands on an existing and successful Pathfinder Business Acceleration project piloted by HIE in 2015 and 2016. Expanding this project will ensure this support is available to Life Sciences businesses over the next six years. The NHS Market Ready element of the Life Sciences project is a new service and has been developed in response to the experience gained through delivery of the Pathfinder project. It highlighted the need for additional support to help businesses engage more effectively with NHS procurement processes.

3.9 Linkages between the NIH projects

Using the three themes outlined in section 3.7 as a basis, the approach taken to developing the NIH ensures that projects will collectively have a greater impact than they would individually. For example, the Coding Academy will help retain young people in the area and improve their digital skills. Those highly skilled individuals will be available for Life Sciences and Technology companies as they expand their businesses through participation in the 30 under 30 and the Life Science Pathfinder projects. Growing sectors such as Creative Industries and Adventure Tourism will improve the attractiveness of the City-Region and the Life Sciences and Food and Drink projects will provide additional high value employment for young people.

The Technology Placements will encourage businesses to adopt new technological processes into their businesses and will complement the other projects by providing the additional capacity and expertise businesses needed to drive innovation. The less intensive interventions in Tourism and Creative Industries will provide insights and encouragement to businesses, showing the benefits of innovation and encouraging participation in the more intensive acceleration elements. A link will be established between the Next Generation element of the Food and Drink programme and the 30 under 30 project to ensure that participants have access to the breadth of specialist support they require.

There are strong links between the Food and Drink and Tourism elements, with the development of new and innovative food products encouraging tourism and similarly increased tourism providing a boost to sales of food and drink products. The Food and Drink project also links with Life Sciences in areas such as nutritional health. Improved relationships and understanding of NHS procurement developed through the Life Sciences NHS Market Ready project could also benefit food and drink producers, by helping them to win contracts with the NHS.

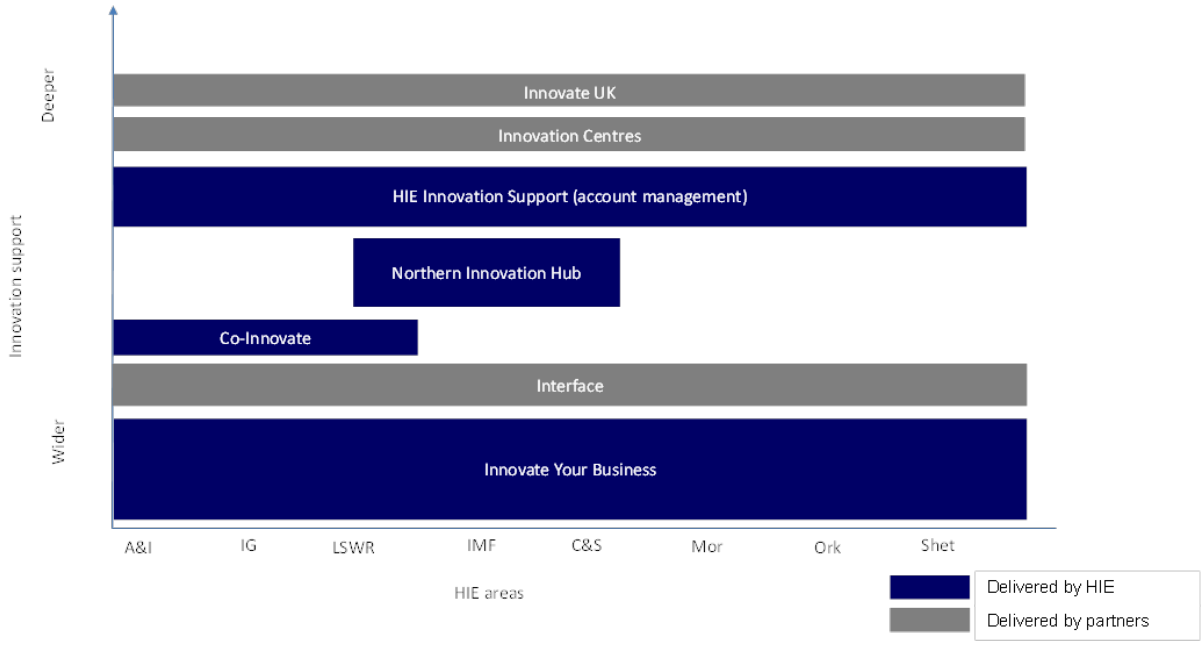
The Creative Industries and Tourism elements are also closely linked. In the City-Region a high proportion of tourism in the area is related to heritage and culture. Similarly, increased tourism will have a positive impact on the growth of Creative Industries sector.

A 'Business Journey' has been included in section 8.2 to show how a growing business could make use of different elements of the NIH programme.

3.10 Alignment with existing programmes

To cater for the breadth and depth of innovation across thousands of businesses in different sectors and at different stages of maturity, there are a number of different initiatives and projects providing support in the City-Region. What is critical is that businesses can navigate their way through the support landscape easily and duplication is avoided. This a key goal identified by the Scottish Government Enterprise and Skills review. The NIH projects will fit with existing programmes and will be carefully promoted and delivered to ensure clarity for businesses in the City-Region. The following diagram shows how the NIH sits in the Innovation landscape.

Figure 3 – NIH fit with innovation landscape



Bringing together the innovation strands in this programme will create a more coherent and streamlined package of support for businesses that provides the tools they need to innovate and grow. It will build

on and complement the successful activity already taking place and further enhance the landscape of support for businesses.

The NIH has been designed to complement and align with a number of existing and forthcoming programmes of activity which can add value.

Clusters 3

HIE are a partner in the Clusters 3 Interreg Europe programme. The project is currently in its investigative phase and is focussing on the knowledge exchange and good practice exchange elements. The delivery phase with pilot clusters across the areas is expected to commence in the second quarter of 2018. This project will align well with elements of the NIH Food and Drink, Creative Industries and Adventure Tourism strands, to increase collaboration, enhance innovation and develop internationalisation capabilities.

Interface

HIE have held a number of meetings with Interface – an organisation that connects businesses with academic support from Scotland's 23 higher education and research institutes. Interface runs Common Interest Groups which bring businesses together to develop projects around shared priorities and aspirations. Many of the priority areas for these groups fit with NIH aims, particularly in Creative Industries, Tourism and Food and Drink. Further discussions are planned, but there are clear benefits from building links between these groups, the clusters initiative described above and NIH projects such as the Food and Drink TechHub

Life Sciences

The NIH life sciences project and the University of the Highlands and Islands (UHI) School of Health and Life Science, which is also being funded by the City-Region Deal, will establish a ‘steering group’ to identify synergies, drive forward the shared ambitions and build on each organisation’s strengths. The UHI project will work largely in Technology Readiness Level (TRL) 1–5. HIE will work specifically in TRL 5-8 where HIE has substantial experience in late stage commercialisation and market launch.

The shared ambition is to create a seamless pathway for entrepreneurs and businesses. The UHI project will have a focus on Academic and NHS start-ups with HIE’s expertise driving innovation, accelerating sector and company growth and developing international markets. The project will see the City-Region as a leader in the development and delivery of digital health solutions. This collaborative approach with our local and UK stakeholders will be further developed to an international setting, working with exemplars in the field of digital health from Nordic countries including Denmark, Sweden, Iceland and Finland.

Further development

Additional conversations are taking place with a wide variety of other agencies at the project and programme levels. Once the programme is underway these will be developed further. The HIE staff working on the NIH will play an important role in developing new sources of funding and exploring additional partnerships with private and public bodies as the programme progresses.

4 The Economic Case

Introduction

Development of this major initiative is a direct response to the challenges the City-Region is currently facing, as set out in the Strategic Case. HIE and the Highland Council arrived at the solution of a Northern Innovation Hub through consideration of a series of options as part of developing the wider City-Region Deal proposal

This Business Case reflects on the process undertaken through the City-Region Deal and re-examines the validity of the selected preferred option.

4.1 Options appraisal

A range of options were considered prior to the decision to support the preferred NIH option, ranging from ‘do nothing’ to ‘creation of a physical innovation hub’. The options were appraised primarily against their ability to deliver the outcomes that would address the challenges identified in the City-Region.

- Option 1 - Doing nothing - continue with existing projects in the area,
- Option 2 - Partial Intervention - consider interventions in Life Sciences and Tourism only
- Option 3 - Creation of an Innovation Hub through grouping of initiatives (preferred option)
- Option 4 - Creation of a physical Innovation Hub in Inverness

The tables on the following pages contain a summary of the four options appraised against the key outcomes as well as more detailed consideration of each option.

Table 6 - Options appraised against outcomes

The table below contains a summary of how well the four options would contribute towards the four outcomes of the NIH.

Outcome	Option 1 – doing nothing	Option 2 – partial intervention	Option 3 – NIH grouping of projects	Option 4 – Physical hub
Higher skilled and better paid jobs are created, enhancing growth through innovation and delivering more growth for businesses.	Economic growth could remain static and the persistent challenges the City-Region currently faces are not addressed.	Jobs and growth impact is limited to Life Sciences and Tourism sectors and the cumulative impacts of the projects are not realised across the City-Region.	Maximum growth impact is realised through a co-ordinated programme of projects across key sectors and thematic priorities being available to businesses across the City-Region.	Growth impact is strong but limited to businesses within reach of Inverness. Fragile rural communities across the City-Region may suffer negative impacts as businesses are drawn towards the physical hub.
Young people wish to enter or remain in the City-Region, securing the long-term sustainability of the economy and injecting innovation into local business.	Young, entrepreneurial and economically active people continue to leave the City-Region, stifling innovation and negatively impacting the economy.	Minimal impact.	Young people remain, return or move to the City-Region. Skills, talent and creativity are retained. Businesses are more innovative through the availability of a higher quality workforce.	Positive impacts are present but limited to the area around the hub, further exacerbating the demographic challenges in rural communities out with the geographical reach of the NIH.
Increased competitiveness and boosted productivity, driving innovation through better networked businesses both at national and international level, accelerating economic growth.	Businesses remain isolated and unable to realise their full growth potential.	Increases to productivity and competitiveness are limited to Life Sciences and Tourism sectors and the cumulative impacts of the projects are not realised.	Maximum impact is achieved through improved networks and connections. Knowledge and expertise are shared, improving productivity and competitiveness.	Benefits will be realised but they will be most beneficial to the businesses in the vicinity of the hub that already have stronger connections.
The regional economy becomes more connected, innovative and outward facing, showcasing its unique offering and world-class sectors. The City-Region increases in international attractiveness and reputation for innovation.	Perception of the City-Region is not improved, negatively affecting inward investment and opportunities to collaborate.	Impact is restricted to Life Sciences and Tourism sectors and the cumulative impacts of the projects are not realised.	Perception of the City-Region as a good place to do business and reputation for innovation improves. Inward investment is encouraged across key sectors and international collaboration grows.	The wider City-Region does not experience the same reputational benefit. Inward investment is encouraged and international collaboration grows but only to businesses in close proximity to Inverness.

Detailed options analysis

The following tables present a more detailed analysis of each option, assessing the advantages and disadvantages, risks and costs associated with each option.

Table 7 – Option 1: do nothing

Option 1 – do nothing	
Advantages	Does not require additional investment in innovation activity.
Disadvantages	Will not address the market failure. Will not deliver the necessary outcomes.
Risks	Young people will continue to believe that they need to leave the area to further their career prospects. The proportion of young people in the City-Region will remain out of step with the rest of Scotland, compromising the need for an economically active and ambitious business community. Productivity will continue to lag behind Scotland and entrepreneurs will remain isolated and unable to benefit from interaction with other businesses. The City-Region falls behind in perception as a good place to start a business, as a centre for innovation and an attractive place to invest.
Costs	No funding and no expenditure.
Conclusion	Neutral impact but leading to decline across the City-Region. Rejected on grounds of being ineffective at addressing the economic challenges facing the City-Region.

Table 8 – Option 2: Partial Intervention

Option 2 - Partial intervention – Life Sciences and Tourism	
Advantages	Targeting of two key growth sectors would deliver significant impact in those sectors.
Disadvantages	Would only address some of the market failure and gaps in support for innovation. Impact would only be felt in two sectors. The holistic impact of the NIH would not be realised.
Risks	Would not address the core issue of young people leaving the City-Region - the proportion of young people in the region will remain out of step with the rest of Scotland, compromising the need for an economically active and ambitious business community in the City-Region. Would only have limited impact on productivity, competitiveness, employment, reputation and economic growth – other key sectors would not receive the support they require.
Costs	Lower cost than full intervention (options 3 & 4).
Conclusion	A focus on Life Sciences and Tourism would be unlikely have the desired impact as a holistic approach is required to achieve the full set of objectives. City-Region Deals are designed to have a significant impact and provide a real opportunity for 'step change' therefore a focus on a small isolated project would not have the desired effect or outcome. Rejected on the grounds of being insufficient to address the range of challenges facing the City-Region.

Table 9 – Option 3: NIH grouping of projects

Option 3 - NIH grouping of projects (preferred option)	
Advantages	High likelihood of achieving the identified outcomes. Will address the breadth of market failure in support for innovation that exists across the City-Region. Provides strategic coherence by contributing to all the eight themes of the City-Region Deal. Aligns well with UK Government, Scottish Government and HIE priorities.
Disadvantages	A series of projects could clutter the landscape for businesses if not managed and promoted correctly.
Risks	Requires effective collaboration with a number of external partners – UHI, NHS, Business Gateway and the Highland Council. Will require careful management to ensure effectiveness over the length of the project. It will require diligence and careful management to ensure the programme does deliver for the whole of the City-Region and isn't limited to the Inner Moray Firth.
Costs	See 6.2 for a full breakdown of costs.
Conclusion	The holistic initiatives target the City-Region's key problem areas. Each of the themes are aligned well with the strategic vision for the Inverness City-Region Deal outcomes. Selected as the preferred option.

Table 10 – Option 4: Physical Hub

Option 4 - Physical hub	
Advantages	High likelihood of achieving the identified outcomes. Will address the breadth of market failure for innovation support in the City-Region. Provides strategic coherence by contributing to the eight themes of the City-Region deal. Aligns well with UK Government, Scottish Government and HIE priorities.
Disadvantages	Benefits will disproportionately accrue to businesses in geographical proximity to the hub. Businesses from other parts of the City-Region would disengage and see the NIH as a further centralisation in Inverness
Risks	Hub is perceived as for Inverness or Inner Moray Firth area only, discouraging business participation in other parts of the City-Region. Other parts of the City-Region may suffer economically as businesses are drawn towards the physical hub location.
Costs	As option 3 - some cost savings may be made through co-location and sharing of services.
Conclusion	Although all themes are interrelated, initiatives are targeted to resolve challenges across a range of sectors and geographic locations; therefore one physical hub would not allow for the same scale of diverse projects which is required to achieve the desired 'step change'. Rejected on the grounds of being unable to meet the needs of the whole City-Region.

The ‘do nothing’, ‘minimal’ or ‘partial intervention’ options were not considered viable options for the reasons laid out above. They would not address the strategic scale of challenges and the fragmentation evident across the geographic area that necessitates a holistic solution. The preferred option to develop a dispersed Innovation Hub across core themes was adopted.

4.2 Economic impact summary

An Economic Impact Assessment (EIA) of the NIH was completed by Reference Economic Consultants in March 2017. Two assessments were completed with different methodologies. The first considered City-Region and Scotland impacts. The second drew on the results of the first to determine UK level impacts. Detailed descriptions of how impacts were calculated can be found in the project descriptions below – sections 4.4 - 4.10. Further information on the evaluation evidence and methodology can be found in Appendix 4.

An additional EIA was completed by EKOS consultants on the Food and Drink projects in July 2018.

Impact Summary – Scotland and City-Region (Reference Economics – March 2017)

Table 11 summarises the estimated quantifiable net attributable impacts at Scotland and City-Region levels. It also highlights areas where impacts have not been quantified.

The employment, income and GVA impacts shown are not for a single impact year, given that the activities are spread across a number of years. Rather, the impacts are for the third year after which the business/individual has been assisted, as is standard practice in economic impact assessments undertaken for HIE.

Table 11 – Economic impact summary – Scotland & City Region

Estimated quantfiable net attributable impacts (direct, indirect and induced)							
Programme/ Impacts	**City-Region**			**Scotland**			
	FTE	Annual Income (£m)	Annual GVA (£m)	FTE	Annual Income (£m)	Annual GVA (£m)	Comments
Technology Placements	22	0.5	1.7	19	0.5	1.6	Understated-do not include wider business benefits of retained graduates
Coding Academy	39	0.9	1.7	32	0.7	1.4	Understated-do not include wider business benefits of the individuals placed with companies
30 Under 30	182	4.1	8.8	156	3.4	7.4	May understate employment impacts given conservative interpretation of available evaluation evidence
Creative Industries	100	1.8	3.9	78	1.4	3.0	Do not include effects of less intensive support, but impacts will be largely covered by figures shown
Life Sciences	77	2.4	5.2	112	3.2	7.0	Do not include effects of soft landing spaces but impacts will be mostly covered by figures shown
Total	**426**	**9.8**	**21.5**	**498**	**9.2**	**20.5**	Figures understate total impacts given comments above, the impacts of the Tourism Programme cannot be quantified and the Food and Drink elements are not included
Food and Drink	The Food and Drink projects were subject to a separate Economic Impact Assessment by EKOS in September 2018. The results of this have been outlined below.						

Tourism	Not quantified due to lack of relevant evaluation evidence. However, the Programme has a strong rationale with evident links to the proposed activities. It is expected that a significant proportion of impacts is likely to come from the Adventure Tourism Accelerator element. Its additionality and attribution is expected to be high, with displacement relatively low due to very strong growth in market demand. Thus, the Programme has the potential to significantly advance Adventure Tourism in the City Region

Source: NIH Economic Impact Assessment

Note: The differences between the City-Region and Scotland figures in table 30 are due to the differing impacts calculated by the EIA and relate to factors such as higher levels of displacement at Scotland level than in the City-Region or benefits to the supply chain across Scotland as a result of the intervention.

Impact summary – UK Level

The EIA concluded that there is a strong fit between the NHI programmes and UK Government strategy and policy. This is especially the case for:

- Life Sciences, Tourism and Creative Industries in terms of the Industrial Strategy.
- Technology Placements and Coding Academy in terms of the Digital Strategy.

The review of evaluation evidence shows business support programmes achieving UK level impacts. The methods used by those evaluations informed our approach to a cost benefit analysis of four of the NIH programmes.

Table 12 sets out the results of a cost benefit analysis of three of the NIH Programmes. These are ones where all or most of the impacts have been quantified:

Table 12 - Central estimate BCRs for the relevant four programmes.

Programme	BCR
Life Sciences	6.3
30 Under 30	5.9
Creative Industries	2.3

All three performed at least adequately under the central estimates. Life Sciences and 30 Under 30 performed best, with high BCRs. This reflects their volumes of participants, and the relatively high GVA levels in the Life Sciences sector, compared to the programmes' costs. In all three cases, the results are sensitive to assumptions about displacement and the persistence of business impacts.

The scope and the approach adopted in the UK level impact are based on advice and guidance from Department for Business, Energy and Industrial Strategy (BEIS) analysts. The approach to calculating central estimates contains a number of elements used in the two UK Government commissioned evaluations which were used to determine method:

- Interim Evaluation of Growth Accelerator (BIS Research Paper No. 187, November 2014)
- Evaluation of the Business Support Helpline and GOV.UK (BIS Research Paper No. 193, December 2014)

Assessment of non-quantifiable economic impacts

This section assesses the economic impact elements of NIH that it has not been possible to quantify.

This section assesses the:

- Potential significance of their economic impacts in contributing to the total impact of the NIH. That is on a scale of 1 to 5 where 1 is slight and 5 is very significant.
- Significance of these impacts *specifically at the UK level* by reflecting potential displacement. That is on a scale of 1 to 5, with 1 representing *relatively* high displacement and 5 representing *relatively* low displacement.

The two scores were then multiplied to produce a total score for potential significance of the impacts at the UK level in the context of the overall NIH programme. The results are shown in Table 13.

Table 13 – UK level assessment of Non-quantified economy impacts

Programme/Element	Potential Significance of Impacts	Potential Significance of Impacts *at* UK Level	Total Score
Tourism Programme	4	3	12
Life Sciences-soft landing spaces	2	5	10
Coding Academy-wider business benefits of the individuals placed with companies	3	3	9
Technology Placements-wider business benefits of retained graduates	3	3	9
Creative Industries-less intensive support	1	1	1

Although evidence was provided by BEIS that may have allowed a quantified assessment of the Coding Academy, the consultant carrying out the EIA felt that the available reports did not contain sufficiently detailed information on their calculations to allow replication of the analysis.

The Tourism Programme has the highest overall score. This reflects that none of its elements have been quantified while the Adventure Tourism accelerator could produce significant impacts for NIH given its high levels of additionality and attribution. The mid ranking level of displacement at the UK level reflects the key strength of Adventure Tourism in the City-Region and its potential to attract more and longer visits by international tourists. On this basis we conclude that the Tourism Programme has the potential to make a reasonable contribution to the overall impacts of NIH at the UK level.

The Life Sciences soft landing spaces have the second highest score. Although their potential significance score is below those of the Coding Academy and the Technology Placements, they would have a relatively low level of displacement at the UK level. The impacts of the wider business benefits of the Coding Academy and the Technology Placements could be quite significant. Thus, despite higher displacement at the UK level, their overall scores are very similar to that for Life Sciences. Finally, the less intensive support offered through the Creative Industries Programme would have a slight overall impact.

Food and Drink – 2018 EKOS EIA

The Food and Drink projects were subject to an additional EIA in July 2018 once further work had been undertaken to define the project scope. The cost benefit analysis is shown in the table below.

Food and Drink Cost Benefit Ratio Sensitivity: Total Net Costs (Discounted)

	Worst Case	Base Case	Best Case
Highland	2.99	4.80	5.76
HIE	3.68	5.88	7.06
Scotland	3.34	5.35	6.42

UK	1.13	1.99	2.39

As shown, on the basis of the discounted net costs the Food and Drinks projects still deliver a CBR of more than 1 in all scenarios.

4.3 NIH projects in detail

In the following sections there is a detailed description of each of the projects that make up the NIH. This provides the economic case for each project, with additional information on the market failure, the preferred approach, the options considered and the approach to the economic assessment.

Budgets for each project have been included in 8.5.

NIH Outputs and Outcomes

Outputs and outcomes for the NIH have been standardised to allow measurement across the programme. Indicators demonstrate the level of activity expected within each project, with appropriate optimism bias considered and factored in. An assessment has also been made of how many unique businesses will receive support in each project. These figures and any assumptions made are best estimates that have been derived from HIE's previous experience delivering activity in these sectors.

A summary of the programmes main outputs and outcomes has been included in 8.6.

4.4 Technology Placements

Rationale/Market failure

The aim of this project is to enable businesses to make transformation change through their use of technology and to provide opportunities and incentives for young people to remain in the City-Region. It has been established as the dispersed nature of businesses in the City-Region and the relative lack of networks and clusters is leading to businesses becoming locked in to ways of working, markets and products. A gap in the market exists for placements which will help businesses utilise technology to innovate.

The project is intended to: help businesses transition into new technologies; provide the additional capacity required for business innovation; prevent young people leaving the area and improve business productivity and competitiveness in the region.

Outline of initiative

Graduate Placements

The aim is to offer up to 85, 12-month technology project placements to SMEs on a competitive basis for a five year period. There will be a competitive call at least three times a year, likely to be in January, May and October. Placements will be approved depending on the type of project and on the quality of expected outputs and outcome. A maximum of two graduate placements, regardless of length, will be available to a business within the duration of the programme to ensure the programme supports a wide business base.

Student Placements

Around 75 student technology placements will be available, and expected to last a maximum of 12-weeks full-time. This programme will enable students to undertake work-based project placements in conjunction with or as a requirement of their academic studies and this can be up to 22 weeks pro-rata. A maximum of two student placements at one time will be available to a business each financial year. However, if the two projects are running concurrently they will be required to have different outputs, although the outcomes could be similar.

Evidence from similar projects

HIE has considerable experience of delivering similar projects and evidence has been derived through HIE's management of the ScotGrad placement programme. The economic basis is underpinned by the 2013 Cambridge Economics 'Review of TalentScotland Placement Programme 2010-2013[8] and the Evaluation of the SDB Programme Phase 1, Steve Westbrook, 2014.

The TalentScotland programme was designed to support business innovation, knowledge transfer and growth in the Highlands and Islands by assisting graduates with their career progression and by so doing it was hoped that they will be encouraged to stay in the Highlands and Islands and thus reduce the present under-representation of young people. TalentScotland was similar to the Technology Placements in the financial subsidisation of graduate and student placements, with practical support provided throughout the placement and opportunities for training. The technology focus of the NIH is the key difference.

The review of the TalentScotland Programme found that "The rationale for the programme remains very strong. Organisations are benefitting from an enhanced level of innovative behaviour in product, and to a lesser extent, process development. Young people are gaining valuable work experience, and in many cases jobs, in the Highlands and Islands. The implication is that they are thus more likely to stay in the Highlands and Islands."

[8] http://www.hie.co.uk/common/handlers/download-document.ashx?id=e399d11e-b25d-4d1f-87b2-451e21731560

The Benefit Cost Ratio for the TalentScotland programme is estimated at around 4.4 on the basis of cautious assumptions. The total net additional GVA for the Highlands and Islands as a whole is estimated to be of the order of £6.48 million, equivalent to just over 200 net additional job years (FTEs) for the Highlands and Islands as a whole. The differences in impact between the TalentScotland programme and that of the Technology Placement Programme (£1.7 million annual GVA) can be attributed to the greater number of placements offered and the smaller size of businesses supported through the Technology Placements Programme, which affects the retention rate and likely displacement.

Approach taken to assessment of impact

The evidence from the previous HIE placements suggests that the placement projects are unlikely to be directly focused on increased turnover, not least because of the exclusion of marketing. Most of the placements were in one of the two following categories: Process Improvement or Software Development; and Technology & Advanced Engineering or Energy companies.

The employment generated by this intervention has two elements. The first is the temporary employment of graduates and students themselves in their placements. The second is the retention of some of the graduates as permanent employees after their placement ends. Based on information in the business case report, the placements themselves would generate 99 job years of employment. This translates to 10 direct FTE (Full-Time Equivalent) jobs, based on the convention that an FTE post is one that lasts at least ten years. HIE anticipate a graduate retention rate of 30-45% for the Placement Programme as many of the businesses will be smaller than those in the ScotGrad scheme which has a retention rate of 50%.

The activity of the graduates who are retained and also of the projects undertaken may lead to other employment in the host companies. However, there is no evaluation evidence for the ScotGrad programme which can be used to estimate these further impacts. Thus the quantified impacts shown below will understate the full level of impact of the Placement Programme.

Table 14 – Placement Programme: gross employment impacts (FTE)

Impact	City-Region	Scotland
Direct	42	42
Indirect	7	17
Induced	7	11
Total	**57**	**70**

Indirect impacts were calculated only in relation to the ongoing work of the retained graduates, as only very slight purchases of goods and services will be required to undertake the placement projects.

Based on experience of undertaking business surveys in the City-Region and undertaking a wide range of impact assessments, the indirect City-Region indirect multiplier was taken as 45% of the Scottish one. Based on experience of undertaking economic impact assessments in the City-Region, the induced City-Region indirect multiplier was taken as 75% of the Scottish one.

Table 15 – Placement Programme: gross annual income impacts

Impact	City-Region (£)	Scotland (£)
Direct	1,056,012	1,056,012
Indirect	159,542	354,538
Induced	130,629	202,113
Total	**1,346,184**	**1,612,663**

The placement salaries are based on information shown in the business case report (between £18,000 and £24,000)

The salary for the retained graduate was simply taken as the starting one, which was assumed to be that for their placement.

Estimation of indirect and induced multipliers was based on data from the Scottish Input-Output Tables, as per the employment calculations.

Table 16 – Placement Programme: gross annual GVA impacts

Impact	City-Region (£)	Scotland (£)
Direct	3,418,607	3,418,607
Indirect	375,669	834,819
Induced	178,667	287,751
Total	3,972,943	4,541,177

The GVA per FTE was estimated by applying the ratio of GVA per employee to gross wages and salaries per employee for all sectors of the City-Region (from the 2014 Scottish Annual Business Survey) to the average salary for the retained graduates. This produced a figure of £57,458 of GVA per retained graduate.

An allowance was made for some ongoing GVA impact from the placement projects themselves. Given their nature, as described earlier, their main impact on GVA will be through cost reduction rather than increased turnover.

Half of the 85 graduate placement projects were assumed to have a positive GVA impact within the host business. This was taken as 50% of the annual GVA of the retained graduate positions (i.e. c£29,000).

Half of the 75 student summer placement projects were assumed to have a positive GVA impact within the host business. This was taken as one sixth of the annual GVA impact of the retained graduate positions (i.e £9,600).

Calculations

The gross impacts shown above were converted into the net attributable impacts shown below by taking three factors into account: Deadweight, Displacement and Attribution.

Table 17 – Placement Programme: factors used to convert gross impacts to net attributable impacts

Factor	City-Region	Scotland
Non displacive activity of retained graduate	60%	40%
Attribution to Placement Programme	90%	90%

Assumptions

- For the impacts from the placement projects themselves it was estimated that 65% of their activity would be additional - i.e. would not otherwise have taken place.
- For the impacts of the retention of graduates, it was assumed that 60% of those posts would not be created in the absence of the Placement Programme.
- A very high level of attribution to the Placements Programme was estimated. This reflects the nature of its target market.
- A high level of displacement was estimated because of the likelihood of companies being small and operating in markets within Scotland. However, this was tempered by an expectation that many of the retained graduates would undertake work focused on efficiencies and cost savings rather than directly increasing sales.

Table 18 – Placement Programme: net attributable impacts

Impact	City-Region	Scotland
Employment (FTE)	22	19
Annual Income (£)	528,800	475,651
Annual GVA (£)	1,739,256	1,615,919

The figures shown in this table will understate the full impacts of the Programme as they do not include the wider impacts within the company of retaining the graduate.

UK Impacts

A scoring system was used to assess the programme elements that it has not been possible to quantify at UK level. It was used to assess the potential significance of impacts at the UK level in the context of the overall NIH programme.

Table 19 – UK level non-quantified impacts

Programme/Element	Potential Significance of Impacts	Potential Significance of Impacts *at* UK Level	Total Score
Technology Placements - wider business benefits of retained graduates	**3**	**3**	9

How the Technology Placements link to other NIH Programmes

The Programme will provide placement projects for businesses whose awareness and appetite for increased technological activity has been stimulated through: taking on graduates of the Coding Academy, advice and support received through the Digital strand of the Tourism Programme and attending events/receiving support through XpoNorth Digital.

Table 20 - other options considered

Option	Conclusion
Do nothing	Rejected as this is likely to result in the business not maximising the opportunities presented by technology and in turn may affect their ability to compete in the domestic and/or international markets as well as limited availability of graduate/student technology placements.
Enhance the current programmes	Rejected as this could cause confusion for clients as to who to go to, understanding of placement intervention rates, criteria and benefits. More importantly, it would limit the ability to specifically targeted technology opportunities and reduce the return on investment.
Develop and deliver a specific Technology Placement Programme. (preferred option)	Selected as this targeted approach has the greatest impact and will ensure the best return on investment (ROI). It targets businesses with growth aspirations which will benefit from technological development. The outcome is accelerated growth while increasing productivity and competitiveness. It will also target technology graduates with the aim of attracting and retaining these important skills in the City-Region.

4.5 30 Under 30

Rationale/Market failure

This project will provide thirty high-growth start-ups/young companies each year with intensive business and financial support to get them through their first twelve months and onto a path of growth. It has been established to address a gap in the market for entrepreneurs who are currently unable to access the specialised support they require to grow their business in the City-Region. Currently networks are fragmented by geography and the ability of businesses to collaborate is constrained.

The project is intended to:

- Prevent young businesses leaving the City-Region and ensure it is an increasingly attractive place to start and grow a successful enterprise.
- Ensure that entrepreneur's ideas are nurtured to reach their full market potential.
- Ensure the number of higher growth start-up businesses in the City-Region increases and there is a reduction in early stage failure rates amongst start-up businesses.

Outline of initiative

To address geographical constraints, 30 under 30 will establish a largely virtual acceleration model in the City-Region, with some physical components. Much of the support and assistance provided to entrepreneurs will be delivered using digital technologies, but there will also be opportunities to meet face-to-face and forge networks. This will overcome the challenges of distance and the requirement to undertake extensive travel to further develop and commercialise their business ideas, whilst making the most of the benefits of the cohort approach. Thirty entrepreneurs will participate each year for the seven years of the project.

Lessons learned from the Entrepreneurial Support Programme evaluation showed that to realise the full benefit of that limited intervention, there was a need for greater post-attendance support and aftercare. 30 under 30 will provide the intensive and long-term support necessary to create the greatest impact. 30 under 30 will help entrepreneurs build on the skills they have and gain access to expertise and training in areas they currently lack. By bringing in high quality expertise and advice at an early stage, this project will ensure that entrepreneur's time isn't wasted on 'low quality ideas' and good ideas are nurtured to reach their full market potential.

As the programme develops, the region will increasingly be perceived as a positive and highly supportive environment to start and grow an ambitious business, leading to the number of young entrepreneurs leaving the area to start a business falling. Competiveness and productivity in young businesses will be improved, leading to higher growth and employment.

Evidence of similar projects

The Propel Programme is funded by Invest Northern Ireland. The following information is taken from *An Evaluation of Invest NI's Propel Programme*: Final Report (SQW, April 2015).

Propel aims to "maximise the number and impact of sustainable, knowledge intensive, high growth, export orientated start-up businesses established in Northern Ireland". The eligibility criteria for participation have some similarities with those set for 30 Under 30 as follows:

- The business/idea must be innovative.
- Established/trading no longer than 2 years
- Capable of commercialisation within 6-9 months.
- Target annualised growth of 20%.

- Significant market opportunity - £250,000 turnover by Year 3.
- Capable of creating jobs.

A key difference is the lack of an age related criterion for participants. The programme was also split into two phases. Phase 1 lasts for one month during which participants attend three workshops and the focus is on the market validation of their product/service. At the end of this period an interview was undertaken to decide which individuals should progress to Phase 2.

There is more intensive and extensive support than would be offered through 30 Under 30, though a number of the activities/means of support are similar.

There are some differences between Propel and the 30 Under 30 proposal. However, it is the closest to it among programmes for which quantified evaluation evidence is available. Therefore the impact data from the evaluation report has been used to give some basis to the estimates of the potential impacts of 30 under 30 at the Scottish Level.

Approach taken for Scottish impact

The Propel evaluation shows figures for gross impacts covering turnover, employment and GVA. However, the ratios between them do not appear realistic. This may reflect that a proportion of the impacts were forecasts for the future, in addition to those achieved to date.

To take these factors into account estimates are based on gross turnover per participant company. The figure in the evaluation report was a total of £190,000, which included impact to date and future forecast turnover (the average turnover figure includes those participants reporting no impact).

To reflect what will be some uncertainty around forecast future turnover the £190,000 figure was reduced by 25%. This was converted into GVA per company by assuming that this was 50% of the turnover level, based broadly on the turnover: GVA ratios of most sectors of the economy.

The GVA per company figure was then converted into FTE employment per company by using the average GVA per FTE for the City-Region economy based on BRES data from 2014 (i.e. c£48,900). The level of employment per company is lower than in the Northern Ireland programme. That reflects that much of its claimed employment impact was predicated on future sales and growth (and we have reduced the impact to allow for this), plus the more extensive nature of support through Propel.

Table 21 – 30 under 30: gross employment impacts (FTE)

Impact	City-Region	Scotland
Direct	306	306
Indirect	72	159
Induced	55	91
Total	**433**	**556**

The 30 Under 30 programme will be open to all sectors. Indirect and induced impacts were based on the average of all sectors multipliers from the Scottish Input-Output Tables

Table 22 – 30 under 30: gross annual income impacts

Impact	City-Region (£)	Scotland (£)
Direct	7,399,802	7,399,802
Indirect	1,476,790	3,281,755
Induced	953,921	1,530,522
Total	**9,830,513**	**12,212,079**

Direct income was calculated by multiplying the direct FTE jobs with wages data for the City-Region from the Annual Survey of Hours and Earnings (2015) for all sectors in the economy. The figure used was around £24,200 per FTE.

Table 23 – 30 under 30: gross annual GVA impacts

Impact	City-Region (£)	Scotland (£)
Direct	14,962,500	14,962,500
Indirect	3,057,092	6,793,537
Induced	2,938,636	4,730,635
Total	**20,958,228**	**26,486,672**

The approach to estimating indirect and induced multipliers was based on data from the Scottish Input-Output Tables, as per the employment calculations.

The basis of the direct GVA calculation was described earlier (under "Gross Employment"). The approach to the calculation of indirect and induced GVA mirrored that described earlier for employment.

Calculations

The gross impacts shown above were converted into net attributable impacts by taking three factors into account: Deadweight, Displacement and Attribution.

Table 24 – 30 under 30: factors used to convert gross impacts to net attributable impacts

Factor	City-Region	Scotland
Additionality (1)	80%	80%
Non displacive activity of recruits (2)	75%	50%
Attribution to 30 Under 30 (3)	70%	70%
Overall Factor-(1) x(2) x(3)	**42%**	**28%**

The additionality of the Programme is expected to be high given the distinctiveness of the proposed offering to a specfic age group, albeit that a proportion of the gross impacts could still be achieved, including through other means of support (e.g. Business Gateway, other HIE support programmes).

Displacement is assessed as low in the City-Region and medium at the Scottish level. This reflects that the innovative nature of the businesses/business ideas and the expectation that some of the businesses sales would be made outside Scotland.

Attribution would be somewhat lower than additionality. That is because participants will be able to access other public sector support during and, for some, after the 12 month period. If the main aim of the Programme is to be achieved, growing businesses of scale, then additional public sector support is likely to be important in some cases.

Assumptions

- To reflect what will be some uncertainty around forecast future turnover we reduced the figure from the Propel Programme evaluation by 25%. This was converted into GVA per company by assuming that this was 50% of the turnover level, based broadly on the turnover: GVA ratios of most sectors of the economy.

Table 25 – 30 under 30: total (direct, indirect and induced) net attributable impacts

Impact	City-Region	Scotland
Employment (FTE)	182	156
Annual Income	4,128,816	3,419,382
Annual GVA	**8,802,456**	**7,416,268**

UK Level Impact

To calculate UK level impact aspects of the methodology from Interim Evaluation of Growth Accelerator (BIS Research Paper No.187) were used. This project was similar to 30 under 30 as it offers business support to SMEs with high growth potential on a competitive basis. Further details of this evaluation have been included in Appendix 4.

Table 26 – 30 under 30: cost benefit results

Central Estimate	
GVA (PV)	£11.7 million
Costs (PV)	£2.0 million
NPV	£9.7 million
BCR	5.9
Sensitivity Tests (BCR)	
Displacement of 90% rather than 80%	3.0
Impacts persist for three rather than five years	3.1
Both of the above	1.5

The central estimate shows a high BCR (just under 6). The results are clearly sensitive to the assumptions about displacement and the persistence of impacts. However, the BCR is still above 1 even if changes are made to both these factors.

Calculations

The following calculations were used to determine a UK level impact from the Scottish figures. Further details of these calculations can be found in 8.4.2.

1. Start with gross impacts at the Scottish level for 30 Under 30 - £26,486,672
2. Multipliers were adjusted to reflect the larger scale of linkages within the UK economy compared to the Scottish one - Indirect: 1.79 and Induced: 0.24. This produced a total UK GVA impact of £33,188,913
3. To calculate the net attributable impacts at the UK level there was a need to allow for a higher level of displacement than at the Scottish level - the overall factor to convert gross impacts to net attributable impacts at the UK level is c11%. This gives a total UK level net attributable impact of £3,717,158.
4. A Cost Benefit Analysis was applied where UK level GVA impacts were calculated for each year of an appraisal period and compared with programme costs.
5. Cost Benefit analysis returned total discounted impacts Present Value of Benefits (PVB) of £11,724,785.
6. The Net Present Value (NPV) is £9,739,376. That is calculated by subtracting the Present Value Costs (PVC) £1,985,408 from the PVB £11,724,785.
7. The Benefit Cost Ratio (BCR) is calculated by dividing the PBV by the PVC. In this case it is £11,724,785/£1,985,408 which gives the BCR of 5.9 shown above.

30 under 30 linkages to other NIH Programmes

From 2020/2021 the Technology Centre, developed as part of the Food and Drink strand will be in place. 30 under 30 will collaborate with this NIH initiative to enable entrepreneurs working on the Next Generation Programme to access the wider package of support offered by 30 under 30 and the benefits of being involved with a larger cohort.

Other delivery options considered

Table 27 – 30 under 30: other delivery options considered

Option	Conclusion
Do nothing	This option was rejected as it would not address the need that exists in the City-Region for intensive support for entrepreneurs. The City-Region would lag behind other areas, restricting innovation and growth.
Limited Intervention	A limited intervention was considered which would run a project similar to the pilot delivered by Entrepreneurial Spark in 2016 that provided 3 months of support. Whilst this would return modest benefits, this was rejected as an intervention period with more intensive and longer term support will deliver greater benefits to participants and more significant returns on investment.
Creation of a premises based accelerator	This was rejected due to the dispersed nature of businesses over a large geographical area in the City-Region.
30 under 30 **(preferred option)**	This option was selected as it would address the gap in support for start-ups with high growth potential and stands the best chance of delivering increased employment, growth and reputation boost to the City-Region.

4.6 Coding Academy

Rationale/Market failure

This project will establish a Coding Academy in the City-Region to address a gap in the market which is not currently serviced by traditional academic routes or private sector training provision. It will train and upskill a new generation of programmers, delivering high quality, job ready junior software developers.

This project will:

- Address the shortage in digital skills
- Facilitate innovation in businesses
- Help retain young people in the City-Region

Outline of initiative

We will procure a model similar to CodeClan in Edinburgh (see next section) but tailored to the specific requirements of the City-Region. CodeClan delivers a 16 week full-time, classroom based course and we intend to include elements of that model for the pilot.

We anticipate delivery will be initially from a central, collaborative and innovative space within or nearby Inverness Campus. The space will include teaching facilities, break out areas and access to catering facilities. Future delivery may move to other areas within the City-Region in line with demand.

Initially we will procure a two year pilot programme with up to 10 students per year and a mix of employers ranging from start-up and early stage businesses to global companies. This will allow us to assess and adapt the approach and deliver a further 3 years with the refined model, which will run two cohorts per year.

The business model in Edinburgh is based on 20 students paying £4,500 each. This represents a significant investment in personal development and consequently the drop-out rate has been low. Around 80% of the CodeClan students to date have had first degrees although not necessarily in an IT related subject. Fees are in line with what a graduate might expect to pay for further academic or professional qualifications.

Key Features:

- An initial two year pilot followed by three years operation on the refined model.
- The pilot will deliver one 16 week full time course per year for up to 10 students.
- Depending on demand, the refined model will deliver two cohorts per year of up to 10 students.
- Course development and delivery will be led by professional developers and industry experts and focussed on practical skills.
- There will be a £1,500 course fee for students – assistance will be provided in helping potential students access alternative funding for places.
- There will be two costs for businesses recruiting graduates from the project –£1,500 for SMEs and £2,000 from large companies.
- The academy will be promoted as a career change option with a focus on struggling sectors such as Oil and Gas industry or on those that are “under-employed”.

Evidence of similar projects

To address a gap in the training infrastructure within Scotland and meet immediate and short-term demand from industry, a Coding Academy, CodeClan, was designed and developed by Digital Scotland Business Excellence Partnership (DSBEP) industry members and launched in Edinburgh in October 2015. Modelled on international best practice, it is a Coding Academy to train and upskill a new generation of programmers, delivering high quality, job ready, junior software developers into the industry. The model is working well with evidenced demand from students and employers. CodeClan launched in Glasgow in January 2017.

There are a number of features which distinguish CodeClan from established educational establishments. Evidence shows that since its launch, CodeClan's students are career changers. The average age is 30 and 80% have left employment to upskill and retrain for jobs in the technology sector. Over 80% of CodeClan graduates have successfully got jobs.

To develop a talent pool to underpin growth a coding academy is proposed for the City-Region. As in Edinburgh and Glasgow, it is proposed that the procured model will fill a gap in the market and complement not compete with existing skills and training infrastructure in the area (UHI, colleges and private training providers).

The evaluation of Codeclan in Edinburgh is still underway but initial results are extremely positive and justify the adoption of the model for the City-Region. Looking at the first six cohorts which ran between October 2015 and November 2016 101 of the 107 students that started completed the course. Of those, 83 have been placed with an employer, with the majority employed within three months of the course finishing. The consultants carrying out the evaluation estimate additionality of 40% for the businesses employing an individual who had been through the programme

Approach taken for Scottish impact

Utilising evaluation evidence from the evaluation of "CodeClan" which is taking place, the following gross employment, annual income and GVA impacts were determined for the Coding Academy.

Assuming the same performance as CodeClan, of the total 80 trainees that start with the Coding Academy, it is forecast that 76 will complete their training with 62 then placed with companies. Broadly in line with what has happened at CodeClan, it is estimated that of the Coding Academy placements:

- The vast majority (53) will be with companies in the City-Region.
- A further six will be elsewhere in Scotland.
- The remaining three will take up a post out with Scotland.

Thus, the impact will be 53 direct FTE in the City-Region, and 59 FTE in Scotland as a whole. There are 72 FTE jobs within the City-Region and 100 FTE for Scotland as a whole. The approach to calculating indirect and induced impacts followed that for the Technological Placements Programme.

The multipliers used were weighted composites of those for the most common sectors of employment of CodeClan trainees (i.e. ICT, tourism, public sector, creative industries). However, ICT was given a weighting of only 50% as there is an expectation that other sectors will be more prominent in the Coding Academy than they have been through CodeClan.

Again, the Scottish level multipliers were scaled down for use at the City-Region level - i.e. 45% for the indirect multiplier, 75% for the induced one. Gross annual impact was calculated using an average annual salary of £23,000 (more details follow in the assumptions).

Annual GVA was calculated using data from the Scottish Annual Business Survey relationship between GVA and income across the four sectors most widely served by CodeClan.

Table 28 – Coding Academy: gross employment impacts (FTE)

Impact	City-Region	Scotland
Direct	53	59
Indirect	9	22
Induced	11	19
Total	**72**	**100**

Table 29 – Coding Academy: gross annual income impacts

Impact	City-Region (£)	Scotland (£)
Direct	1,213,196	1,359,596
Indirect	216,162	543,629
Induced	153,606	272,706
Total	**1,582,964**	**2,175,931**

Table 30 – Coding Academy: gross annual GVA impacts

Impact	City-Region (£)	Scotland (£)
Direct	2,246,660	2,517,771
Indirect	438,014	1,088,741
Induced	463,106	829,498
Total	**3,147,780**	**4,436,010**

Calculations

The gross impacts shown above were converted into net attributable impacts by taking three factors into account: Deadweight, Displacement and Attribution.

Table 31 – Coding Academy: factors used to convert gross impacts to net attributable impacts

Factor	City-Region	Scotland
Additionality (1)	75%	70%
Non displacive activity of recruits (2)	80%	50%
Attribution to Coding Academy Programme (3)	90%	90%
Overall Factor-(1) x(2) x(3)	**54%**	**32%**

Assumptions

- The average salary for the Coding Academy graduates who take up a post in City-Region was assumed to be slightly lower than the CodeClan average, given the smaller scale of businesses. Thus, an average annual salary of £23,000 rather than £24,400 was applied.
- The calculations assume the same performance as CodeClan, of the total 80 trainees that start with the Coding Academy, it is forecast that 76 will complete their training with 62 then placed with companies.
- Additionality is assessed as very high at 75% in the City-Region. This is higher than the consultants" estimate of 40% for central belt businesses shown earlier. This reflects the:
    - Much smaller pool of suitable labour in the City-Region.
    - Much more limited availability of freelancers or consultants to do programming work if a permanent employee cannot be recruited.
- Displacement is assessed as low (in the City-Region) to medium (Scotland). This reflects that some of the programmers may work on tasks that are focused more on efficiency improvements rather than directly increasing sales. Displacement is lower in the City-Region than in Scotland.

That is because of some its larger ICT companies in particular will be heavily involved in selling to markets in other areas.

- Finally, attribution of impacts to the Coding Academy Programme is seen as likely to be very high (i.e. 90%). That is because the means of sourcing the recruit and the nature of his/her ongoing work is likely to require very limited additional public sector support.

Table 32 – Coding Academy: total (direct, indirect and induced) net attributable impacts

Impact	City-Region	Scotland
Employment (FTE)	39	32
Annual Income	854,801	685,418
Annual GVA	**1,699,801**	**1,397,343**

Within the City-Region over half (54%) of the gross impacts are retained as net attributable ones. The corresponding figure within Scotland is 32%, reflecting the higher level of displacement assumed at the national level. Again, the figures will understate the full impacts of the Programme as they do not include the wider business impacts of employing a Coding Academy graduate.

UK level impacts

A scoring system was used to assess the programme elements that it has not been possible to quantify at UK level. It was used to assess the potential significance of impacts at the UK level in the context of the overall NIH programme.

Table 33 – Coding Academy: UK level non-quantified impacts

Programme/Element	Potential Significance of Impacts	Potential Significance of Impacts *at* UK Level	Total Score
Coding Academy - wider business benefits of the individuals placed with companies	3	3	9

Coding Academy linkages to other NIH Programmes

A route into employment for some Coding Academy graduates could be through the Technology Placements. The Coding Academy will also provide a source of work ready employees for businesses increasing their digital activity as a result of participation in: Technology Placements Programme, Tourism Programme, XpoNorth Digital and the two Life sciences Pathfinder programmes.

Other delivery options considered

Table 34 – Coding Academy: other delivery options considered

Option	Conclusion
Do nothing	Digital skills shortages will persist and constrain business and sector growth. This approach was rejected as proactive intervention is needed to make a step change in terms of scale and timing to bolster the existing skills infrastructure regionally.
Provide scholarships to other Coding Academies	This was rejected as although some graduates would likely return following their course, the majority would be most likely to remain away from the City-Region.
Replicate the CodeClan model in the City-Region	The model operating in Edinburgh and being rolled out in Glasgow is based on cohorts of 20 students being recruited onto a 16 week course every 8 weeks. This option was rejected as the scale and frequency of courses is not suitable for the City-Region's economy.
Develop Coding Academy tailored to the City-Region **(preferred option)**	This option was selected as it is the approach most likely to address the shortage in digital skills, facilitate innovation in businesses and help retain young people in the economy.

4.7 Tourism

Rationale/Market Failure

Two projects are being developed in critical areas for Tourism in the City-Region. The Digital project will address a market failure where businesses in the City-Region don't have access to the digital skills they require to innovate. The Adventure project will address the market failure where geographical constraints are preventing networks from being established and restricting collaboration.

The project is intended to:

- Develop use of digital technologies in Tourism businesses and increase collaboration to bring business efficiencies and enhance market reach
- Help the City-Region become better connected to global trends and insights
- Encourage and support clusters of Adventure Tourism businesses to increase collaboration and networking

Outline of initiative

The elements which comprise the tourism projects are designed to build a more competitive tourism economy in the City-Region, where collaboration is widely used to create growth through improving the visitor experience and reaching more deeply into our strongest market opportunities.

The preferred option comprises a focus on Digital as the key enabler and on the Adventure Sector as the key market opportunity around which multiple innovative approaches can be galvanised. It will deliver a step change in the use of digital technology, enabling dispersed, rural businesses to collaborate more, to reach new markets, transform the visitor experience and generate increased operating efficiencies. It will deliver a transformation series of activity to support the adventure sector, creating a level of scale in parallel with an ambitious shift in mind-sets, leading to the City-Region being recognised by our key tourism markets as one of the best places in the world for adventure tourism.

Digital Tourism Development - Will deliver a broad programme of world class events, networking opportunities and support for tourism businesses to bring about a step change in their absorption of leading digital technologies into every aspect of their business.

- Global Market Insights Programme **-** Delivered via a yearly programme of interactive live broadcasts, expert series, and podcasts from the Highland Council area, this programme will provide access to cutting edge market insights to 300-400 businesses dispersed across the area.
- Digital Leaders Boot Camp **-** The Digital Leaders Boot Camp will be highly intensive, targeted at around 30 high growth tourism businesses who lead the sector. It will bring together our top performing digital tourism businesses and destinations and some of the biggest names from the global digital community to provide a very high level of challenge, interaction and support.
- Digital Tourism Think Tank Partnership **-** The Digital Tourism Think Tank (DTTT) is a global initiative that provides leadership to the tourism industry in digital marketing best practice.
- Content Creation Campus **-** Over the 10 years of the City-Region Deal, we will bid to host a major Content Creation Campus in the Highlands attracting over 30 countries and in excess of 150 delegates to provide hands-on learning, innovation and inspiration all around digital content and the social influence of the millennial visitor.
- Technology Showcase **-** This intervention will implement an innovative collaborative partner project that demonstrates the possibilities new advances in technology can bring to tourism and increase business and destination competitiveness.

Adventure Tourism - will enable adventure tourism entrepreneurs to increase their business capability and collaborate to create scale in a global sector where the City-Region has competitive advantage.

- Adventure Tourism Acceleration - Will provide tailored business support for six cohorts of adventure tourism companies based in clusters across the Highland area. The accelerator will enable adventure tourism entrepreneurs to increase their business capability and to collaborate to create scale in a global sector dominated by micro enterprises.
- Adventure Connect Events **-** These events will unlock the entrepreneurial potential of the sector through a series of specific facilitated workshops where individuals can learn and develop.
- Adventure Tourism Think Tank **-** The Think Tank will create a high level dialogue across industry, academia, media and public sector. It will provide leadership and influence at the highest level, aiming to create a shift in the business community towards more innovative behaviours.

Taken together and delivered as an integrated programme of activity this will accelerate the journey for tourism entrepreneurs to take new innovations to the market place. The projects will be distributed over 5 years, to maintain momentum and will be interspersed with conference and knowledge sharing highlights.

Evidence from similar projects

As described in detail below, the EIA was unable to quantify the Tourism projects due to lack of evaluation evidence. However, learning from a pilot Tourism Digital Innovation programme in 2014 provided learning to inform the approach to this project. It provided intensive one-to-one advice for 60 tourism companies and innovation grant support to 12 follow up projects. It supports the need for a highly segmented approach adopted through the NIH, that comprises a ladder of support from market awareness through to intensive one-to-one support. The pilot also confirmed the need to fully engage recognised industry leaders to help create the culture and behaviour change required across the sector. Plans included in this proposal for the market awareness programme, intensive Digital Boot Camp, and development of leadership in partnership with the Digital Tourism Think Tank are based on the HIE 2016 research and outcomes of the 2014 pilot work.

Approach taken to assessment of impact (Scotland and UK)

The Tourism project was not quantified by the EIA due to lack of relevant evaluation evidence. However, the Programme has a strong rationale with evident links to the proposed activities. It is expected that a significant proportion of impacts is likely to come from the Adventure Tourism Accelerator element.

The EIA stated that the Adventure Tourism project would expect to have:

- A high degree of additionality given it is unique offering in a tourism context.
- Low displacement effects given the very strong growth in adventure tourism demand.
- Quite high attribution as many participants will not receive much in the way of other public sector support to take business developments forward.

The accelerator and the other Adventure Tourism activities have the potential to significantly advance the sub-sector in the City Region. This could be to a point where it increases to a scale which would have a significant impact on its international visibility.

The wider benefits of the growth of the Adventure Tourism sector would be:

- Additional business for those in other parts of the tourism sector, notably accommodation providers, food and beverage outlets and transport operators.

- Making the City-Region a more attractive place to live for those who undertake outdoor activities, thus helping to attract and retain population.

Its additionality and attribution is expected to be high, with displacement relatively low due to very strong growth in market demand. Thus, the Programme has the potential to significantly advance Adventure Tourism in the City Region

UK Impact

Similarly, at UK level it was not possible to quantify the Tourism Programme due to lack of evaluation evidence. Instead the EIA assessed the:

- Potential significance of their economic impacts in contributing to the total impact of the NIH. That is on a scale of 1 to 5 where 1 is slight and 5 is very significant.
- Significance of these impacts specifically at the UK level by reflecting potential displacement. That is on a scale of 1 to 5, with 1 representing relatively high displacement and 5 representing relatively low displacement.

Table 35 – Tourism: non-quantified UK level impact

Programme/Element	Potential Significance of Impacts	Potential Significance of Impacts *at UK Level*	Total Score
Tourism Programme	4	3	12

The Tourism Programme has the highest overall score of all the non-quantifiable projects. This reflects that none of its elements have been quantified while the Adventure Tourism accelerator, a key element, could produce significant impacts for NIH given its high levels of additionality and attribution.

The mid ranking level of displacement at the UK level reflects the key strength of Adventure Tourism in the City-Region and its potential to attract more and longer visits by international tourists.

How the Tourism projects link to other NIH Programmes

Those tourism businesses increasing their digital tourism activity will potentially benefit from available skills generated by the Technology Placements Programme and the Coding Academy. The increased tourism activity stimulated by the Tourism Programme will increase demand for the products of businesses that participate in the Food and Drink Programme.

Other options considered

Table 36 – Tourism: other options considered

Option	Conclusion
Do nothing	Assumes no additional funding beyond current HIE investments. Rejected as sector growth likely to decline as other competitor countries and regions gain market share.

Progress themes individually	This option was rejected as the least preferable, incurring almost the full cost of the preferred option, but without the strategic linkages. Economies of scale would not be realised and the desired step change in performance would not take place.
Progress themes as set out, but at more modest scale	It is questionable whether at a more modest scale any of the desired outcomes could be materially achieved, however through progressing an integrated suit of programme activity as in option three, but scaled back to reduce costs, some benefits would still be realised. This option was rejected as it remains unlikely that the step-change in performance being sought would materialise due to limited reach and in the inability to achieve a tipping point by engaging sufficient businesses.
As preferred option below but with focus on different set of opportunities.	Extensive research and industry consultation has demonstrated that digital tourism is the key capability that will determine success and that the adventure sector is the strongest market opportunity for the City-Region Deal. This option was rejected as while it would be feasible to adapt the model set out here for use on other markets and other capabilities, the impacts in doing so would be reduced, and it could lead to reputational risks in adopting a focus on markets which are not supported by the evidence base.
Preferred option as detailed above	This option was selected as it will create the step change required to create a globally competitive, innovative sector with enhanced international focus and mind-set. This option also delivers best value for the public purse and leads to multiple outcomes directly contributing to national strategic requirements.

4.8 Creative Industries

Rationale/Market failure

The Creative Industries project (XpoNorth Digital) has been developed to help businesses focus on innovation around the relationship between producer and consumer. This relationship is vital for the creative industries sector and will address market failures that persist around skills shortages in digital technology, information deficiencies restricting innovation and difficulties in accessing traditional sources of finance. It will build on the successful XpoNorth networks and conference, which is Scotland's leading creative industries festival.

The project is intended to:

- Ensure that businesses have the skills and knowledge to exploit technology more effectively, and provide the tools for increased innovation.
- Support creative businesses to take a new approach to developing new products and services, accessing finance and new markets, and developing a larger customer base.

Outline of initiative

Rather than focus directly on producing new content, XpoNorth Digital will focus on innovation around the relationship between producer and consumer. This will give businesses the tools and capability to carry out faster and more effective R&D for themselves that is tailored to the needs of their customers.

This project will support the creative industries sector in the City-Region to develop new business models that are based around a creative idea and help them mobilise, manage and incentivise a community of interest around this core theme. This community will help them develop new ideas and provide a test bed for new products. It will also help them to access investment, through crowd funding, gathering valuable data from the community or facilitating approaches to investors. In addition, by talking about the business across their networks and platforms, the community will increase the reach of the business exponentially without significant financial outlay

The project will:

- Create a virtual and physical centre that will support creative businesses to adopt new business models based on customer centric innovation and transmedia working.
- Support businesses to use existing digital platforms more effectively, and develop new platform options where required.
- Develop communities of interest around businesses that will act as an R&D facility, financiers and marketing department.
- Provide training and advice for new starts and existing businesses.
- Offering creative support to other business sectors.

Evidence of similar projects

Evaluation evidence to estimate the potential economic impacts of XpoNorth Digital was taken from two studies that looked at the impacts of a previous HIE funded programme. Evaluation of Highlands and Islands Enterprise Support for Creative Industries (EKOS, 2013) and Evaluation of the SDB Programme Phase 1 (Steve Westbrook, 2014).

These two studies estimated impacts based on those who had received more intensive in depth support, using results of a survey of assisted businesses. That was in order to increase the extent to which impacts could be attributed to the programme, although it does means that impacts from other programme elements were not captured. Thus, they will understate the total programme impacts, although not significantly.

The previous HIE funded programme offered a range of advice, support and training to businesses and individuals involved in each of the Music and the Screen Broadcast sub-sectors through a trade network approach, which HIE also used at the time to support other creative industries sub-sectors.

Support provided by that programme that is similar to the planned XpoNorth activity included:

- One-to-one mentoring and workshops.
- Specific networking events to give the widest possible access to the international industry.
- Delivery of training, particularly around R&D and the development of better content.
- Delivery of showcasing support through Meet the Buyer events.
- Working with businesses to fill skills gaps and provide information/support for access to new markets and distribution.

However, there are a number of main differences with the planned XpoNorth activity

- XpoNorth Digital will cover the whole sector – previous programme focussed on subsectors of Music and Screen Broadcast.
- XpoNorth Digital concentrates on digital whereas the previous programme was broader.

Approach taken to calculating Scottish Impact

Using the evidence from the two evaluation studies, the following figures were calculated based on the 175 companies that are expected to receive in-depth support through XpoNorth Digital.

Table 37 – Creative Industries: gross employment impacts (FTE)

Impact	City-Region	Scotland
Direct	105	105
Indirect	18	40
Induced	11	19
Total	**133**	**164**

The direct employment per assisted company and the indirect and induced multipliers are all taken from the evaluation studies.

Table 38 – Creative Industries: gross income impacts (£)

Impact	City-Region	Scotland
Direct	1,898,712	1,898,712
Indirect	290,503	717,291
Induced	205,239	327,000
Total	**2,394,453**	**2,943,003**

As with the employment estimates, the gross income figures are derived from the evaluation evidence.

Table 39 – Creative Industries: gross GVA impacts (£)

Impact	City-Region	Scotland

Direct	4,079,137	4,079,137
Indirect	693,453	1,541,007
Induced	477,259	749,353
Total	**5,249,849**	**6,369,496**

Again, these GVA impacts are based on the findings of the evaluation studies.

Calculations

The gross impacts shown above were converted into net attributable impacts by taking two factors into account: Deadweight and Displacement.

In this instance there was no need to also adjust the gross impacts for attribution to the XpoNorth Digital Programme as attribution is already accounted for in the evaluation evidence that was used to calculate the impacts.

Table 40 – Creative Industries: factors used to convert gross impacts to net attributable impacts

Factor	City-Region	Scotland
Additionality (1)	87%	87%
Non displacive additional company activity	86%	55%
Overall Factor-(1) x(2)	**75%**	**48%**

They show very high levels of additionality and a very low level of displacement at the City-Region level. These figures are based on the evaluation evidence. The result is that three quarters of the gross impacts are retained as net attributable impacts.

The estimate of displacement for Scotland is based on the consultants own understanding of the creative industries sector and its recognised strong growth prospects, including in markets outside Scotland.

Table 41 – Creative Industries: total (direct, indirect and induced) net attributable impacts

Impact	City-Region (£)	Scotland (£)
Employment (FTE)	100	78
Annual Income (£)	1,791,530	1,408,227
Annual GVA (£)	**3,927,937**	**3,047,804**

The impacts are lower for Scotland than in the City-Region because of the assumed much higher level of displacement at the national level.

A wider benefit of the Programme will be to make the City-Region a more attractive place to live. That is through a growing and thriving range of cultural opportunities, both to participate in and to watch.

Approach taken to UK impact

To calculate UK level impact aspects of the methodology from the Evaluation of the Business Support Helpline and GOV.UK (BIS Research Paper NO. 193) were used. The helpline was similar to the creative industries project on offering light-touch and in-depth support and advice for businesses.

The results for the Creative Industries programme are shown below**.** The costs and benefits were calculated over an appraisal period of 12 years. The BCR is above 2 under the central estimate, and above 1 if a higher rate of displacement is applied. However, it falls to less than 1 under each of the other two sensitivity tests.

It should be appreciated that the GVA figures do not capture all of the programme's potential impacts. That is because they have not quantified the effects of the less intensive support that would also be provided.

Table 42 – Creative Industries: UK level Cost Benefit Results

Central Estimate	
GVA (PV)	£3.3 million
Costs (PV)	£1.5 million
NPV	£1.9 million
BCR	2.3
Sensitivity Tests (BCR)	
Displacement of 90% rather than 80%	1.1
Impacts persist for one rather than three years	0.8
Both of the above	0.4

For the Creative Industries project, impacts are assumed to persist for three rather than five years. This reflects that these three programmes are less explicitly targeted at high growth businesses than 30 Under 30.

Calculations

The following calculations were used to determine a UK level impact from the Scottish figures. Further details of these calculations can be found in 8.4.2.

1. Start with gross impacts at the Scottish level - £6,369,496
2. Multipliers were adjusted to reflect the larger scale of linkages within the UK economy compared to the Scottish one. The UK level multipliers used were: Indirect: 1.67 and Induced: 0.15. These were applied to produce the UK level annual GVA impacts - £7,811,275
3. To calculate the net attributable impacts at the UK level there was a need to allow for a higher level of displacement than at the Scottish level. The overall factor to convert gross impacts to net attributable impacts at the UK level is c17%. This was applied to the total gross impacts of £7,811,275 giving a total UK level net attributable impact of £1,359,162.
4. A Cost Benefit Analysis was applied where UK level GVA impacts were calculated for each year of an appraisal period and compared with programme costs.
5. The total discounted impacts PVB are £3,314,329.
6. The NPV is £1,858,988. That is calculated by subtracting the PVC (£1,455,342) from the PBV (£3,314,329).
7. The BCR is calculated by dividing the PVB by the PVC. Here it is £3,314,329/£1,455,342 which gives the BCR of 2.3 shown above.

Links between Creative Industries and other NIH projects

Those creative businesses increasing their digital activity will potentially benefit from available skills generated by the Technology Placements Programme and the Coding Academy.

Other delivery options considered

Table 43 – other options considered

Option	Conclusion
Do nothing	This option was rejected as it would not sufficiently address the gaps in support, market failure, and the main issues facing creative businesses in the City-Region.
Creation of a new digital network	A new digital network has been considered. This would be achievable and would allow businesses to access specialised technical knowledge. However, this model was rejected because it runs the risk of distracting businesses into considering new technology options when there are an incredible range of digital platforms already available at little or no cost. A more holistic approach is required that does not restrict the network for digital, thereby benefitting from the creation of new opportunities at XpoNorth.
XpoNorth Digital **(preferred option)**	This option was selected as it addresses the market failure and builds on a highly successful programme to deliver growth and employment in the sector and develop initiatives that will have cross-sector benefit as well as further enhancing the international reputation of the City-Region.

4.9 Life Sciences

Rationale/Market failure

This project has been developed to address market failures restricting the growth of SMEs in the Life Sciences sector. These include: extensive periods of research and development; complex healthcare procurement and regulatory requirements; user and key opinion leader acceptance of products and services; international market awareness and access to NHS market for innovative SMEs. Although start-ups are very innovative they are heavily reliant on grants for survival and any market focus is mainly at a Scottish level with low levels of international trade.

The project will build on the City-Region strengths in digital health, medical technology and diagnostics. Our sparse and dispersed population presents a unique set of opportunities and challenges for product and service development through to deployment. Taken together these will drive innovation, export and international trade, investment, community engagement and collaboration.

This project is intended to:

- Add breadth and resilience to the existing business base, doubling the size of the Life Sciences sector over the lifetime of the programme.
- Enable the sector to become capable of capturing more national and international market opportunities.
- Raise the profile of the City-Region as an attractive location for inward investment.
- Create high quality job opportunities in the City-Region.

Outline of initiative

The project will deliver a range of initiatives that contribute in the broadest sense to the vision and strategy of the City-Region Deal by improving the environment for businesses in a key sector.

The components of this project will be:

Pathfinder Accelerator - A business accelerator programme focused on driving the growth of start-ups and early stage life science, health and technology businesses. Using industry knowledge, the Pathfinder programme will help founding business teams to make the right decisions at the critical, early stages. The Pathfinder Accelerator will deliver two cohorts per year with up to 10 participants.

NHS Market Ready - Run in conjunction with the Pathfinder Accelerator, NHS Market Ready will support SMEs in their ambitions to present, test and trial products and services and secure business from the NHS. It will deliver one cohort per year with 10 businesses expected to participate in each cohort. These will deliver awareness raising seminars and workshop, but also deep engagement sessions for further advanced businesses.

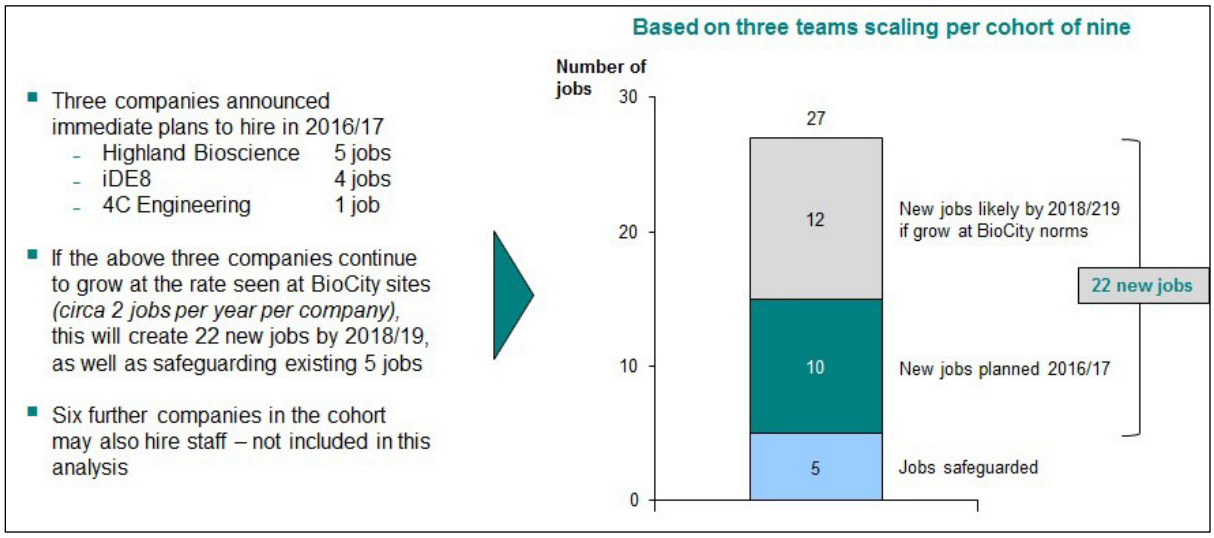
Physical Space - Will enable potential inward investors and UK based businesses who are considering locating in the region to base themselves in Inverness for a period and gain first hand insights on the benefits of the region. Showcasing space will also be devoted to companies showcasing their products and services and to run product awareness and trial sessions. This will enable companies to display new innovative products, gather end-user comment and data and facilitate engagement with clinicians and other NHS decision makers.

The elements compromising this project will be co-located in a physical space in Aurora House on Inverness Campus. Co-location of these elements will be critical to the success of the project, by enabling collaboration and interaction between businesses, clinicians and international partners.

Evidence from similar projects

The evidence of the impact of the main element of this project (the Pathfinder Accelerator) has been well established by the two pilots run in 2014 and 2015. Based on the results of the 2016 Pathfinder cohort, which consisted of nine individual teams, and the professional opinion and experience from BioCity, very conservative projections indicate the creation of 22 jobs within a 3 year timeframe.

Figure 4 – Pathfinder Accelerator pilot results



This was based on 10 staff that had already been hired by three participating companies and a further 12 additional jobs predicted by 2019-2020. This was based on the assumption that the companies would continue to grow at the same rate. In addition, the project was seen as safeguarding the five jobs in the three companies.

The Qualitative findings from the review found that:

- 100% said Pathfinder is very good.
- 91% said Pathfinder exceeded expectations, 9% said they were met.
- 91% said the approach to learning was based on a very appropriate entrepreneurial model, the other 9% saying that is was simply appropriate.

The main difference between the previous Pathfinder and the one that will be delivered as part of the NIH is the NHS Market Ready cohort element which has been developed to meet a specific need identified during the previous pilot.

Approach taken to assessment of impact (Scotland and UK)

HIE's initial estimates were that 486 direct FTE would be safeguarded/created by participant companies over an eight year period. However, those estimates have not been used for the following three reasons.

- First, they would represent 55% of the total direct FTE at Nottingham"s BioCity. Employment at that location has grown to this level over a 14 year period in a part of the UK with a very much greater base of population, companies, HEIs, etc., than the Inverness City-Region. This makes HIE's initial employment target appear very unlikely - especially given the challenges faced to date by the City-Region in significantly growing the number of Life Sciences companies and their employment levels.
- Second, the initial HIE estimate is based on the prospective impacts from a single cohort using information provided by the contractor that delivered the programme, rather than being an independent assessment.

- Third, the innovative nature of many of the projects, and the technologies they will involve is likely to limit the number of jobs that are created and/or sustained over a period.

However, the softer evidence from the evaluation shows that the Pathfinder accelerator has been well received by participants and effective in a number of regards. Thus, and on the basis of the undoubted growth potential for digital health products and services in the City-Region, we have estimated that here could be up to 150 direct jobs created/safeguarded by the two Pathfinders.

That would be around 17% of the current BioCity levels of direct employment. The figure of 150 direct FTE would represent an average of: around eight gross FTE per cohort - i.e. 0.8 gross FTE per participant/project in the two Programmes

Table 44 – Life Sciences: gross employment impacts (FTE)

Impact	City-Region	Scotland
Direct	125	150
Indirect	14	67
Induced	28	59
Total	**167**	**275**

It has been assumed that a number of the 150 direct jobs from the two Programmes are established in/moved to elsewhere in Scotland. These could be in neighbouring Moray as well as parts of Scotland outside the Highlands and Islands.

The indirect and induced multipliers were composites, based on Scottish Input-Output Table data for each of the four sub-sectors that comprise Scottish Government's definition of Life Sciences. Those are: Research & development; Pharmaceuticals; Computers, electronics & opticals; Other manufacturing.

The national level multipliers were scaled down for use in calculating the impacts in the City-Region. The indirect multiplier was set at 25% of the Scottish one. That is lower than the 45% used in the other impact assessments in this report. That is because of the more specialist nature of many of the life sciences sector's purchases of goods and services. However, as in the other assessments the City-Region induced multiplier was set at 75%

Table 45 – Life Sciences: annual gross income impacts

Impact	City-Region (£)	Scotland (£)
Direct	4,425,741	5,310,890
Indirect	323,632	1,553,435
Induced	509,370	981,598
Total	**5,258,744**	**7,845,923**

The approach to the income calculations was essentially the same as for employment. The average income per direct FTE (c£35,400) was based on Scottish Government's analysis of 2014 Annual Business Survey data for the Life Sciences sector

Table 46 – Life Sciences: annual gross GVA impacts

Impact	City-Region (£)	Scotland (£)
Direct	9,242,240	11,090,688

Indirect	641,180	3,077,666
Induced	1,549,226	2,961,186
Total	**11,432,647**	**17,129,540**

As per the income impacts, direct GVA was calculated based on Scottish Government's analysis of 2014 Annual Business Survey data for the Life Sciences sector. The approach to the calculation of indirect and induced GVA mirrored that described earlier for employment.

Calculations

The gross impacts shown above were converted into net attributable impacts by taking three factors into account: Deadweight, Displacement and Attribution.

Table 47 – Life Sciences: factors used to convert gross to net attributable impacts

Factor	City-Region	Scotland
Additionality (1)	85%	80%
Non displacive additional company activity	90%	85%
Attribution to Life Sciences Programme (3)	60%	60%
Overall Factor-(1) x(2) x (3)	**46%**	**41%**

Additionality is assessed as very high. This reflects the unique nature of the provision of dedicated Life Sciences innovation support within the City-Region. The figure is slightly lower for Scotland as a whole. This reflects that some of the activity that bases itself in/moves to parts of Scotland outside the Highlands and Islands would likely have had a broader range of innovation and entrepreneurship support in that geography.

Displacement is very low-resulting in the very high factors for non-displacive activity. This reflects the strong forecast growth for digital health products and services in particular, plus the global nature of demand.

However, attribution of impacts to the Pathfinders is lower than for the other Programmes covered in the other Chapters of this report. That reflects the expectation that further public sector support, including HIE account management, will be required for the companies to achieve the direct employment numbers.

Table 48 – Life Sciences: total (direct, indirect and induced) net attributable impacts

Impact	City-Region	Scotland
Employment (FTE)	77	112
Annual Income (£)	2,413,763	3,201,137
Annual GVA (£)	**5,247,585**	**6,988,852**

Within the City-Region over half (46%) of the gross impacts are retained as net attributable ones. The corresponding figure within Scotland is slightly lower (41%).

The figures will understate the full impacts of the Life Sciences Programme as whole. That is, in particular, because they do not include the potential impacts of the soft landing spaces.

UK Impact

The results for the Life Sciences programme are shown below. The costs and benefits were calculated over an appraisal period of 12 years.

Table 49 – Life Sciences: UK level Cost Benefit Results

Central Estimate	
GVA (PV)	£9.5 million
Costs (PV)	£1.5 million
NPV	£8.0 million
BCR	6.3
Sensitivity Tests (BCR)	
Displacement of 80% rather than 60%	3.2
Impacts persist for one rather than three years	2.2
Both of the above	1.1

The BCR is high (over 6) under the central estimate. It remains above 2 if displacement is increased, or it is assumed that the impacts persist for one rather than three years. If both these factors are applied the BCR still remains above 1.

It is also the case that the GVA figures do not include any impacts from the Programme's soft landing space elements as these cannot be quantified.

Calculations

The following calculations were used to determine a UK level impact from the Scottish figures. Further details of these calculations can be found in 8.4.2.

1. Start with the gross annual Scottish level GVA impacts - £17,129,540
2. Multipliers were used to reflect the larger scale of the linkages within the UK economy compared to the Scottish one. The UK level multipliers used were: Indirect: 1.47 and Induced: 0.23. These were applied to produce the UK level gross impacts of £20,051,443.
3. To calculate the net attributable impacts at the UK level there was a need to allow for a higher level of displacement than at the Scottish level. The overall factor used to convert gross impacts to net attributable impacts at the UK level is c19%. This was applied to the total gross impacts of £20,051,443 giving a total UK level net attributable impact of £3,849,877.
4. A Cost Benefit Analysis was applied where UK level GVA impacts were calculated for each year of an appraisal period and compared with programme costs
5. The total discounted impacts PVB are £9,519,200.
6. The NPV is £8,011,837. That is calculated by subtracting the PVC (£1,507,363) from the PBV (£9,519,200).
7. The BCR is calculated by dividing the PVB by the PVC. Here it is £9,519,200/£1,507,363 which gives the BCR of 6.3 shown above.

How the Life Sciences projects links to other NIH Programmes

The Life Sciences businesses that increase their digital activity as a result of participating in the Programme will potentially benefit from available skills generated by the Technology Placements

Programme and the Coding Academy.

Other options considered

Table 50 – Life Sciences: other options considered

Option	Conclusion
Do nothing	Health and life science sector growth in the City-Region has underperformed when compared to the rest of the UK. This option was rejected as doing nothing would most likely see this trend continue and not address the challenge of over-reliance on one large company. There would be no 'unique' sector stimulus and a continued reliance in the region on one global company.
Procure an external provider	Procure an external provider to develop and drive all the component parts of the project that are outlined in preferred option summary. This option was rejected as the initiative is complex covering key themes of international, innovation and entrepreneurship with critical relationships to be identified and developed. Private sector would be a costly option – relationship building with the Enterprise network would be weak and the risk of private contractors failing to deliver and 'walking away' high.
Outsource project to NHS	Outsource project to NHS to develop and drive all the component parts (as per key objectives) of the project. This option was rejected as although the NHS is providing more focus on R&D activities, with NHS Highland for example being a particularly innovative team, their core focus would be on the Health service – just one element of the project.
Outsource project to UHI	Outsource project to UHI (as per key objectives) to develop and drive all the component parts of the project. Outsourcing to UHI has the opportunity to deliver synergy between the NIH and UHI School of health and Life Sciences City-Region Deal projects. This option was rejected as it would increase the risks associated with the delivery of the desired outcomes due to UHI acknowledged 'very modest' commercial opportunities with none, so far, taken to market.
Preferred option	This option was selected as offering the lowest risk, highest return on investment approach that has the best opportunity to deliver the key outcomes of the project

4.10 Food and Drink

Rationale/Market Failure

Food and drink is the largest of the Highlands and Islands growth sectors and makes a significant economic and social contribution throughout the region, with a turnover of £1bn reported in 2014. Information gathered by HIE in 2015 shows how highly represented the food and drink sector is throughout the City-Region, sustaining 12,700 jobs across 2,215 businesses, the vast majority of which are micro or small enterprises. However, the ongoing lack of investment in research and development is a significant issue for the Food and Drink sector specifically, and for the Scottish economy more generally.

A report commissioned by HIE on Business Cluster Specialisation in the Highlands and Islands found that premium food products is a strategic opportunity for the area but there is a fragmented innovation effort with limited cross-sectoral linkages. There are clear cross-cluster linkages with (marine) bioscience but also tourism and hospitality businesses and creative industries (packaging design, digital marketing, etc.). The cross-sector nature of the NIH provides a unique opportunity to exploit these linkages.

The NIH Food and Drink projects will seek to address the following market failures:

- SMEs, which make up a significant part of the sector, are less likely to engage in collaborative innovation
- tendency not to invest in longer term research
- a lack of engagement with, and investment in, Industry 4.0 applications such as digitisation, robotics and automation
- traditionally the Food and Drink sector has not turned to universities as potential solution providers to address innovation needs.

When assessing market failure and therefore the justification for intervention, research commissioned by HIE identified two different types of barriers/market constraints as the root cause of the market failure as opposed to the effect. In the context of the Food and Drink Technology Centre they are:

- issues relating to business start-up and growth
- issues relating to research and development and innovation

There is therefore a clear market failure rationale for the establishment of the Food and Drink projects.

Project development process

As part of the development process for these projects, HIE has commissioned a number of pieces of research. In November 2016, Upper Quartile consultants completed a feasibility report for the NIH Food and Drink projects. Following desk research and interviews with a wide range of stakeholders, it concluded that the proposed NIH Food & Drink proposal: “would address many of the needs and gaps of the food and drink base of companies”. In February 2018 HIE commissioned EKOS consultancy to build on the existing work and produce a Project Scope, Business Case and Economic Impact Assessment. This EKOS work has been reflected in the scope and impact assessment outlined in this document.

Outline of initiative

Food and Drink is a rapidly changing sector affected by consumer expectations and demands. In order to be more competitive, companies in the Highlands need to be more aware of those consumer trends and the needs of their final customers. Being responsive, progressive, and agile are considered key factors for food and drink businesses over the coming years. This means that change and trends need

to be embraced by small and large companies alike, for emerging opportunities to be identified, and for the Food and Drink sector as a whole to continue its transformation.

To meet the needs of businesses in the area and address market failure, the focus of the NIH Food and Drink projects will be on the following priorities. They have been categorised to show contribution towards the foundations of the Industrial Strategy.

Ideas – Stimulating and supporting a culture of innovation within food and drink businesses through access to expertise, events, networking and connections to other agencies and academia.

People – Fostering and developing an enterprising and entrepreneurial culture, in particular among young people. Supporting businesses to create high value jobs and improving migration of working age people to the area.

Infrastructure – Developing a centre specifically for the sector, that will provide access to facilities for product development and process improvement, as well as collaborative working and incubation spaces.

Business Environment - Creating the right environment for supporting business start-up and employment growth. Working with other agencies to connect businesses with the right knowledge, capability and expertise to address their specific innovation and business capability requirements.

Places – Build on key local strengths in the Food and Drink sector by supporting business to scale-up through access to new markets, finance and supply chain support.

To deliver these objectives the NIH Food and Drink project will deliver three elements:

1. **Food and Drink Technology and Innovation Centre** - will provide facilities for start-ups and growing businesses to support innovation and collaboration.
2. **Highland Food and Drink Network** - will underpin the work of the centre by bringing together businesses, to foster an appetite for industry innovation and growth using new technologies.
3. **Next Generation Programme** - will help young people to develop ideas and establish new food and drink enterprise.

Food and Drink Technology Centre

The Food and Drink Technology Centre will instil a strong ethos of ambition, innovation, entrepreneurship and collaboration in the business base. It will aim to attract the best young talent to the Highland Council area to develop and commercialise transformational products and services by offering a state-of-the-art facility close to a diverse range of high quality raw materials.

The Food and Drink centre will feature:

- incubation and acceleration space – flexible kitchen spaces that help new food and drink businesses to grow.
- technical facilities for product development and testing, including test and demonstrator kitchens – will enable businesses to test and develop new lines, new products and improvements in facilities without disrupting their day to day production output.
- technician and facilities management services – expertise such as food technicians that enables businesses to make the best use of the facilities available.
- space for business engagement/collaborative activities – will bring together businesses to collectively address challenges and exploit opportunities.
- events and workshop space – space for training and events such as showcasing opportunities and product demonstrations.

The Centre will act as a focal point for the Food and Drink sector, working with the Highland Food and Drink Network to encourage businesses to collaborate, build networks, connect with other avenues of support and training. It will work with and compliment other Food and Drink centres nationally, connecting Highland businesses to more specialist facilities and support.

Highland Food and Drink Network

To complement the centre, a network focussed on technology and innovation will also be developed. This will act as the catalyst for creating market and sub-sector focused collaborations, within industry, with academic and research institutions and with the public sector partners, to see what is possible in terms of new product development and market opportunities. This will reach out into businesses, ensuring business ambitions and challenges are understood and that activities have targets to achieve optimum impact. The Network will commence prior to construction of the centre, to stimulate demand and inform the final decisions on fit-out. It will build strategic networks between businesses using the space and others operating similar facilities, nationally and internationally.

Next Generation programme

This programme will be targeted on young people to help them develop ideas and establish new food and drink enterprises. Working with the NIH 30 under 30 project, it will encourage applicants to develop innovative new business opportunities in the food and drink sector, thus stimulating and supporting the development of new products and services and encouraging new business start-ups.

Market assessment

The table below presents Location Quotients (LQ) for business in the HIE region compared to Scotland. All areas have an LQ above 1 for food and drink, indicating a generally high number of Food and Drink businesses across the region. This and other findings from the EKOS analysis shows that F&D is an important part of the Highlands & Islands economy in terms of both businesses and employment.

Location Quotient of Food and Drink Businesses, 2017

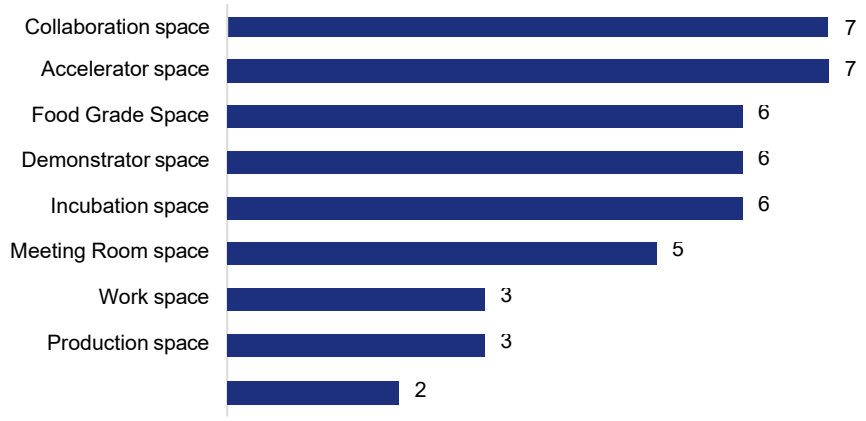
	Fishing	Aquaculture	Agriculture	Manufacture of Food Products	Manufacture of Beverages	Total Food & Drink
Caithness & Sutherland	3.5	2.7	3.5	1.0	1.5	3.4
HIE Area	4.3	5.5	2.2	1.6	2.2	2.4
Lochaber, Skye & Wester Ross	6.7	10.8	1.7	1.5	4.6	2.3
Highland	2.7	4.1	1.9	1.1	2.0	2.0
Inner Moray Firth	0.8	2.0	1.4	1.0	1.2	1.3

Source: UK Business Counts

EKOS carried out additional work, including research and direct engagement with businesses and stakeholders, to determine likely levels of demand for the major elements of the projects, with a particular focus on the Food and Drink Technology Centre. As part of the engagement exercise completed by EKOS, businesses were asked to consider a range of options for the types of spaces (i.e. physical infrastructure) which could be accommodated within the proposed Food and Drink Technology Centre, in order to get a sense of the spaces which were considered needed within the region.

The main types of spaces considered needed were collaboration space, accelerator/incubation space, food grade space and demonstrator space, as shown in the diagram below. Businesses also identified laboratory space as particularly valuable, particularly for small to medium sized businesses who require such facilities, but are unable to afford their own dedicated facilities. Businesses reported that the testing of products is becoming particularly important as there are increasing government regulation around ingredients, nutritional values and packaging, and increased consumer focus on healthy food.

Physical Infrastructure

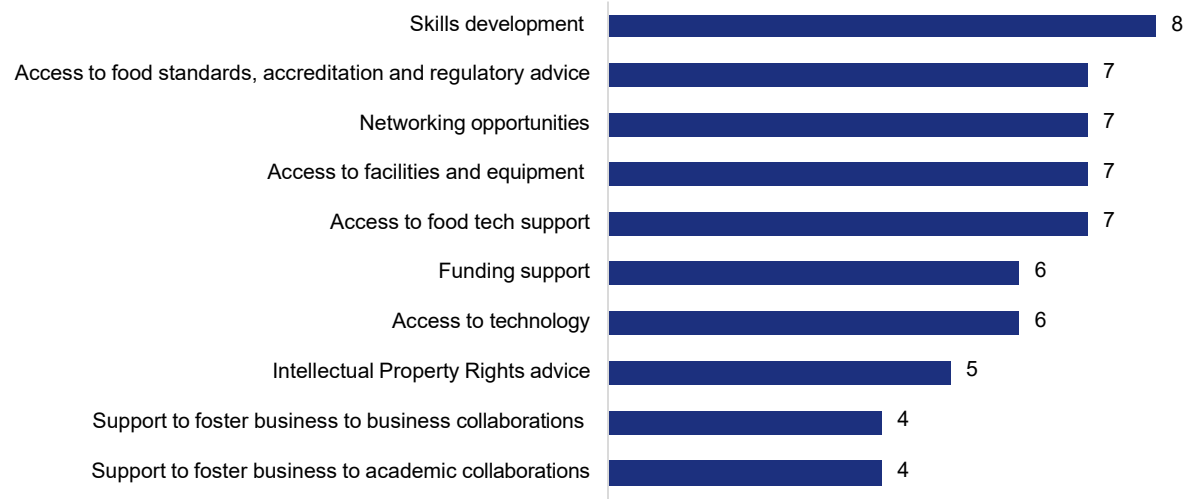


N=10

The ONS Business Demography provides further evidence of demand for business incubation services in the Technology Centre, with between five and ten new food and drink manufacturing businesses being founded every year in the Highlands, and between 20 and 30 in the wider HIE region.

In terms of non-physical support, the most commonly identified aspects were: skills development, access to food standards, accreditation and regulatory advice, networking opportunities, access to facilities and equipment and access to food tech support. These areas will be addressed by the Food and Drink Network, Technicians and specialists in the Centre and through connections to other facilities and organisations as described below.

Non-Physical Support Needs



N=10

Collaboration

The case for the NIH Food and Drink proposal is strong and persuasive. Initial conversations held with the other City-Region Deal Food & Drink projects were all positive, and indeed have assisted in helping to define the optimum form and model for the Highland Council area, both complementary and unique at a national level. The NIH food and drink projects will support businesses in the area and the focus will be on the innovation support required by the sector in the Highlands, such as product development, reformulation and the provision of incubation space. Specialist support such as sensory testing facilities and advanced manufacturing techniques will be delivered through partnerships with the Queen Margaret University, James Hutton Institute, the Rowett Institute, the Innovation Centres and others.

In addition, the NIH food and drink projects will work with existing initiatives such as Scotland Food & Drink, Scotland's industry leadership trade association, and the Food Innovation Network which aims to help improve the competitiveness of food and drink businesses right across the supply chain. It will support the work of the Food and Drink Sector Council which is a formal industry partnership with UK Government to create a more productive and sustainable food and drink sector. The NIH projects will act as the conduit through which businesses can access the expertise and information they need, nationally and internationally.

The programme will work with sister Food & Drink and Supply Chain support initiatives across Scotland and the UK, including a number of City-Deal supported projects. It will create and identify opportunities to collaborate through sharing expertise, knowledge and equipment, whilst maintaining its unique local identity and focus. This approach will create a level playing field for food and drink and supply chain companies across the country and add significant value to existing support mechanisms and opportunities for growth.

There are additional opportunities to collaborate with local and national governmental and partner organisations including the local authority (Highland Council), Scottish Enterprise, Scottish Development International and potentially VisitScotland and the National Health Service.

Linkages between the Food and Drink project and other NIH Programmes

Demand for the new/innovative products of programme participants will benefit from increased visitor activity stimulated by the Tourism Programme. The Next Generation Programme will work directly with 30 under 30 to enable entrepreneurs in the Food and Drink sector to access the benefits of that project.

In addition, we will further explore the many opportunities to link with the NIH Life Sciences and Creative Industries programmes through Smart Specialisation Clusters.

Approach taken to assessment of economic impact

The Food and Drink projects have been subject to a separate Economic Impact Assessment process. This was completed by EKOS consultants in July 2018 following additional work on project scoping. This EIA was revised in January 2019 following feedback from BEIS Economic Advisors. The methodology for this analysis is extracted from their report and outlined below. Quantity Surveyor costs for the construction of the Technology Centre were obtained by HIE though our procurement framework from Torrance Partnership. Section 8.8 has an additional sensitivity analysis requested by BEIS economic advisors in January 2019.

Estimating Gross Impacts

Gross economic impacts for the project have been estimated for each element of the project as follows:

- a physical hub (Highland Food and Drink Technology Centre) with:

    - six incubator units for start-up companies
    - a test kitchen for short term product development, testing work
    - a development kitchen facility for small batch development for further product testing/ launch
    - an events space
    - host desks for visiting companies/ support providers
    - meeting rooms;

- Highland Food and Drink Network running events, learning journeys and masterclasses and encouraging B2B (and possibly B2A) collaborations; and
- Next Generation Programme, providing support to young entrepreneurs seeking to set up new F&D companies.

Gross impacts from each of the main elements of the project were developed based on estimates of the numbers of participating companies and the likely impact arising from their participation, taking account also of:

- the likelihood that some of the companies in the incubator will also use the product development kitchens, creating a risk of double counting of impacts;
- the likelihood that some of the Next Generation Programme beneficiaries will also use the incubators, again raising a risk of double counting;
- the likelihood that not all companies starting up in the incubator or Next Generation Programme will survive, hence a need to account for this failure rate; and
- the likelihood that not all new products developed in the facilities will reach the market so there is again a need to account for this failure rate.

Other assumptions used in building the gross impact model are described below.

Incubators

As noted above, we have assumed six month leases in incubators to create churn, giving a maximum of 12 new start companies per annum, but with utilisation levels as per the income model. This results in a total of 49 new companies over a 10 year period. We have assumed that these will be companies with strong growth potential, and have used the following assumptions to estimate the gross effects:

- full impacts will be achieved three years post support;
- 33% of new start companies will fail within three years, broadly in line with data from the Business Demography (2016) dataset from ONS which reports three year survival rates for new start businesses in the Highlands as 65.4%, adjusted to reflect the high growth nature of the client base and the support received. This results in a total of 28 new companies created and surviving (totals may not sum due to rounding);
- an average of 4 new FTE jobs per new start company. This is in line with the average size of business in the sector. While these are new starts, they are high growth potential clients, and the impacts are taken three years post support. It is therefore not unreasonable to use this average figure in the absence of more specific data. This results in employment impacts of 111 FTEs; and
- we then used GVA per employee data to calculate the GVA impacts from the new start companies. This is based on GVA per employee in Manufacture of Food (SIC 10) in Scotland. For the HIE and Highland Council areas, data is only available for the Manufacturing of Food and Drink combined (Source: Scottish Annual Business Statistics, 2016), which is likely to be skewed by the inclusion of the whisky sector. Therefore, we have estimated the GVA and turnover per employee for these two areas based on the ratio between the two industry categories at the Scottish level. UK level data is sourced from ONS Regional Gross Value

Added (Balanced) Reference Tables and ONS Turnover in Production and Services, with employment data from the Business Register and Employment Survey (all 2016, uprated to 2018 prices).

The values used are shown in **the** table below, with the results of the gross impact assessment for the incubators in **the following table**

GVA AND TURNOVER PER EMPLOYEE ESTIMATES

	GVA per FTE	TO Per FTE
Highland	£48,976	£230,010
HIE	£57,489	£217,474
Scotland	£55,861	£200,168
UK	£61,338	£222,546

GROSS ECONOMIC IMPACTS: FDTC INCUBATORS

	No of Companies	No of New Starts Surviving After Three Years (66%)	FTEs	GVA
Highland	49	33	130	£6.4m
HIE	49	33	130	£7.5m
Scotland	49	33	130	£7.3m
UK	49	33	n/a	£8m

Development Kitchen Facilities

As noted, there are two product development kitchens: a small facility for product development/ prototyping and a larger facility for further development and small batch production runs.

In order to calculate the number of users of both facilities, we have calculate the total number of days each would be in use using a base line of 225 working days per annum and applying the utilisation assumptions from the income model. We then assumed the following average usage:

- companies using the product development kitchen will use the facility for an average of 15 days (3 weeks); This is based on consultation feedback from potential users and industry contacts; and
- companies using the next stage development kitchen will use the facility for an average of 30 days. This is based on consultation feedback from potential users and industry contacts and reflects the greater intensity of work required to take product ideas from prototype to the next stage of development towards production (6 weeks).

This allows an estimate of the total number of companies using the facilities. We have assumed that some of the incubator tenants will also make use of the product development kitchen (the conservative assumption is 50% of usage will be from incubator tenants given that the availability of the kitchen facilities would be expected to be a significant part of the attraction of the facility for tenants) and that 50% of these users will also go on to use the next stage development kitchen (this is in line with the product failure rate identified below). This then mitigates the double counting risk across these impacts.

We have assumed that one company using the product development kitchen or next stage development kitchen will develop one new product, and have assumed that **50% of these will fail** before reaching

the market[9]. For each product reaching the market we have assumed a turnover impact of £85,000. This is based on data from an evaluation of the Interface Common Interest Groups[10] project in which groups of food and drink businesses work collaboratively on R&D projects to develop new products. A sample of beneficiaries reported the creation of new products from the project, with an average turnover impact of c. £85,000. This is the closest evidence that we could find on the impacts of food and drink products and in the absence of other data, we have used this to inform our estimates. This may be regarded as a conservative estimate given that not all of the CIGs had developed products (at the time of the evaluation) and many had in fact evolved into peer-led business support groups.

Across the two facilities, this results in 32 new products developed, of which 50% are estimated to progress to commercial exploitation, creating a total turnover impact of £1.32m. Using turnover to GVA ratios derived from the sources noted above for GVA and turnover per employee, the results of the GVA impacts are summarised in the table below.

GROSS ECONOMIC IMPACTS: PRODUCT DEVELOPMENT KITCHENS

	No of New Products Developed	No of New Products Taken to Market	Gross Turnover	Gross GVA
Highland	32	16	£1m	£275k
HIE	32	16	£1.3m	£350k
Scotland	32	16	£1.3m	£375k
UK	32	16	£1.3m	£375k

Highland Food and Drink Network

Estimating the impacts of networks at the ex-ante stage is challenging, not least as there is a lack of reliable evaluation evidence on which to base any assumptions. In considering this, we have reviewed the findings of evaluations of the HIE creative industries trade networks (CITNs), and of Interface's Common Interest Groups (CIGs) for food and drink. Although neither can be considered to offer a direct comparator, the CITNs are a closer fit given the broader nature of the networks activities and objectives while the CIGs are a better comparator for innovation projects. In addition, the creative industries in the Highlands and Islands bear some structural similarities to the food and drink sector in that the sector is dominated by very small companies facing issues of isolation from collaborators and markets as well as issues with access to skills and investment. In fact, the most recent evaluation of the CITNs recommended consideration of a similar model for food and drink. As such, it is a reasonable comparator, particularly in light of the lack of other available evidence.

The Interface CIGs delivered a return on investment of 1: 9.6, and the CITNs 1: 9.3 (both for net impacts reported to date). In the case of the latter, 30 companies that had received less than seven hours of support reported a GVA impact of £0.5m, an average of £16,666 over a three year period. Using this as a benchmark, we have assumed three year impacts on a similar scale, based on the estimated number of participating companies. This is a reasonable assumption, given that the CITNs attracted a broad range of participating companies, many of which had only very limited involvement and engagement with the network.

This is summarised below.

[9] Information on the success rates of food and drink products is highly contested, and estimated failure rates vary from 33% to 80% However, a survey identified the success rate for new products launched by existing firms to be 61% (Markham, Stephen K. and Lee, Hyunjung. 2013. Product Development and Management Association's 2012 Comparative Performance Assessment Study. *Journal of Product Innovation Management* 30(3):408-429). We have adopted a more conservative estimate of 50% together with a modest turnover impact (£85K).

[10] *Evaluation of the Interface Food and Drink Common Interest Groups* (2015)

GROSS GVA IMPACTS: HIGHLAND FOOD AND DRINK NETWORK

	Estimated Gross GVA
Years 1-3 (average of 25 participating companies)	£0.4m
Years 4-6 (average of 38 participating companies)	£0.6m
Years 7-10 (average of 40 participating companies)	£0.7m
Total	**£1.7m**

Next Generation Programme

The impacts arising from the Next Generation programme will be driven by the formation of new businesses through the Programme. It will target young entrepreneurs with innovative ideas and high growth ambitions and some overlap with the incubator can be expected. We have therefore assumed that 25% of the clients in the Next Generation programme will be attracted to the incubator and to avoid double counting, we have assumed that these impacts will be captured through the incubator impacts already reported.

We have also based the impact estimates on:

- a total of 24 beneficiaries across the life of the Programme (less the 25% overlap with the incubator cohort);[11]
- a 67% survival rate for new companies after three years;[12]
- an average of four FTE jobs per company (as above): and
- turnover and GVA per employee figures as above.

The impacts are summarised below.

GROSS ECONOMIC IMPACTS: FDTC NEXT GENERATION PROGRAMME

	No of Companies	No of New Starts Surviving After Three Years (66%)	FTEs	GVA
Highland	18	12	48	£2.4 m
HIE	18	12	48	£2.8m
Scotland	18	12	48	£2.7m
UK	18	12	48	£3m

Combined Impacts

We have combined the impacts from each element to arrive at estimated gross impacts for the project as a whole, summarised below.

[11] There are 145 food and drink manufacturing businesses in the HIE region (Source: UK Business Counts), and a five year average of 19 new starts per annum (Source: ONS Business Demography). On this basis, 24 participants in the network over the life of the project seems a reasonable assumption given that it would include new starts and exiting businesses.

[12] This is in line with three year business survival rates of 67% in the region (Source: ONS Business Demography)

COMBINED GROSS ACTIVITY GVA AND TURNOVER IMPACTS

	Gross Turnover	Gross GVA
Highland	£50.6m	£10.7m
HIE	£48.3m	£12.3m
Scotland	£45.3m	£12.1m
UK	£49.2m	£13m

The following tables show the final gross impacts after multipliers are applied to determine direct, indirect and induced gross impacts. In-line with the method outlined in the draft Business Case, Scottish multipliers were taken from the Scottish Input/ Output tables and were the average of seven food and drink sectors[13]. UK Multipliers were taken from UK Input/ Output tables. Multipliers at the Highland and HIE levels were set at 50% and 65% of the Scottish level respectively, to reflect the lower multiplier effects at local levels.

GROSS COMBINED ACTIVITY TURNOVER IMPACTS

Impact	Highland	HIE	Scotland	UK
Direct	£50.6m	£48.3m	£45.3m	£49.2m
Indirect	£12.9m	£18.5m	£23.1m	£59.1m
Induced	£4.2m	£6.1m	£7.6m	£12.3m
Total	£67.7m	£72.9m	£75.9m	£120.7m

GROSS COMBINED ACTIVITY GVA IMPACTS

Impact	Highland	HIE	Scotland	UK
Direct	£10.7m	£12.3m	£12.1m	£13m
Indirect	£5m	£8.6m	£11.2m	£15.6m
Induced	£2.1m	£3.7m	£4.8m	£3.3m
Total	£17.9m	£24.6m	£28.1m	£31.9m

Construction Impacts

Construction activity will generate additional economic value for the economy in the form of new training and employment opportunities and contracting/supply chain opportunities for businesses in the local/regional/national economy. It is estimated that the capital costs, including both infrastructure and buildings will be £2.6m[14].

Our analysis of construction employment is derived from dividing the total capital costs by the average annual turnover required to sustain one job in the construction industry in Scotland, with the data from 2016 uprated to 2018 values. For every c. £135k spent on construction activities, one gross PYE[15] is created/sustained.

Based on the total estimated construction cost for the development proposal, this equates to 25 gross PYE construction jobs. Construction GVA impacts are presented below.

[13] Meat processing; Fish & fruit processing; Dairy products, Oils & fats processing; Grain milling & starch; Bakery & farinaceous; Other food

[14] These are preliminary capital costs, and are subject to future refinement.

[15] PYE employment takes into account the use of temporary, part-time and sub-contract works and equates this to a full-time position for a period of one year

GROSS CONSTRUCTION GVA IMPACTS

	Highland	HIE	Scotland	UK
Direct	£1m	£0.9m	£1.1m	£1.4m
Indirect	£0.4m	£0.6m	£1m	£1.7m
Induced	£0.2m	£0.3m	£0.4m	£0.4m
Total	£1.6m	£1.8m	£2.5m	£3.5m

It is important to note that the construction PYEs, salaries and GVA impacts are presented as one-off impacts and will not continue beyond the construction activity phase.

Staff Impacts

In addition to impacts created by FDTC activities, staffing of the facility will have economic impacts through the creation of four permanent new jobs, with combined annual wages of £137k. Annual GVA impacts are presented below.

GROSS ANNUAL EMPLOYMENT IMPACTS

	Highland	HIE	Scotland	UK
Direct	£0.3m	£0.3m	£0.3m	£0.3m
Indirect	£0.1m	£0.2m	£0.3m	£0.4m
Induced	£0.1m	£0.1m	£0.1m	£0.1m
Total	£0.5m	£0.6m	£0.7m	£0.7m

It should be noted that these are permanent positions, and impacts will persist throughout the operation of the FDTC.

NET ECONOMIC IMPACTS

Net impacts are calculated broadly in-line with the method used in the draft Business Case undertaken by Reference Consultants, with three factors taken into account:

- Deadweight - how much of the impacts would still occur if the participant companies did not receive support through the Food and Drink Programme. This is the counterfactual position;
- Displacement - how far the increased activity in supported companies would be at the expense of other businesses; and
- Attribution - how far the gross impacts shown above are attributable to support through the Food and Drink Programme, and how far they could require other public sector support in order to achieve them.

The factors for each geographic level are set out below.

Deadweight was judged to be low, with 80% of impacts being additional across all geographic areas. This is due to the unique nature of the support to be provided through the hub in the region. Displacement was judged to be low at the local level, and increases progressively at higher geographic levels. This reflects an expectation that international sales would form a significant part of the increased output. Attribution is judged to be high, reflecting the distinctive nature of the support that will be on offer at the hub, but also that service users will also likely be making use of a range of public sector support.

GROSS TO NET CONVERSION FACTORS

	Highland	HIE	Scotland	UK
Deadweight	80%	80%	80%	80%
Displacement	85%	75%	60%	25%
Attribution	75%	75%	75%	75%
Overall Factor	51%	45%	36%	15%

Net impacts for programme, construction and staffing impacts are presented below

COMBINED PROGRAMME NET GVA AND TURNOVER IMPACTS

Impact	Highland	HIE	Scotland	UK
Turnover	£34.5m	£32.8m	£27.3m	£18.1m
GVA	£9.1m	£11.1m	£10.1m	£4.8m

NET CONSTRUCTION IMPACTS

	Highland	HIE	Scotland	UK
GVA	£0.8m	£0.8m	£0.9m	£0.5m

NET ANNUAL EMPLOYMENT IMPACTS

	Highland	HIE	Scotland	UK
GVA	£0.3m	£0.3m	£0.3m	£0.1m

COST BENEFIT ANALYSIS

In considering the overall economic impact of the FDTC, it is necessary to take into account the persistence of impacts and discount to Net Present Value (NPV) in-line with the method used in the Reference report. We have also provided CBAs in terms of two different treatments of the costs. The first is based on the total gross costs to the public sector and does not take account of the income to the project. The second is based on the net costs to the public sector (i.e. total costs less income generated).

GVA impacts for supported businesses are assumed to be realised in full in the third year after support. There is assumed to be a gradual build up and fall off of impact over five years, as outlined below.

IMPACT PERSISTENCE

	Year 1	Year 2	Year 3	Year 4	Year 5
% of Impact	33%	66%	100%	66%	33%

Construction impacts are one-off impacts, which are realised during the construction period of years 1 and 2. Staffing impacts are annual impacts which will accrue in each year of operation.

Impacts are summed over a 15 year period from 2020 (accounting for ten year development period and five years of impact persistence) and discounted using the social time preference rate of 3.5%. NPV Impacts are presented below.

NET PRESENT VALUE GVA IMPACTS (2020-2035)

Impact	Highland	HIE	Scotland	UK
GVA	£23.5m	£28.1m	£25.8m	£12.2m

Cost Benefit Analysis

The total gross costs to the public sector (discounted) are £5.4m. Taking account of the income to the project, the total net public scot costs (discounted) would be £3.3m.

The discounted one-off construction and the continuous operational activities equate to cost benefit ratios as outlined below.

COST BENEFIT RATIOS

	Highland	HIE	Scotland	UK
Total Net Costs (£3.3m)				
Cost Benefit	£20.1m	£24.8m	£22.5m	£8.9m
CBR	6.05	7.44	6.76	2.67

Sensitivity Analysis

It is informative to build an element of sensitivity into the model in order to examine the effect of unanticipated variances. These variances can happen for a number of reasons, including:

- erroneous assumptions about the extent of demand for the project amongst potential beneficiaries;
- overly optimistic assumptions regarding costs and delivery timescales; and
- underestimating time to impact.

Therefore, we have built two elements of sensitivity into the model, a +/- 20% variance on impact and a +20%/40% variance on capital costs as can be seen in the following tables.

NET PRESENT VALUE GVA IMPACTS (2020-2035) SENSITIVITY

	-20%	Base Case	+20%
Highland	£18.8m	£23.5m	£28.2m
HIE	£22.5m	£28.1m	£33.7m
Scotland	£20.7m	£25.8m	£31m
UK	£9.8m	£12.2m	£14.7m

DISCOUNTED COST SENSITIVITY

Budget	20% Capital Overrun	40% Capital Overrun
Total Net Costs (£3.3m)		
£3.3m	£3.8m	£4.4m

The table below, presents the unadjusted Cost Benefit Ratio (base case), and the highest and lowest scenarios for the total net costs to the public sector (discounted £3.3m). The worst case scenario represents an overrun of 40% of capital costs and a reduction of 20% in net impacts, and the best case represents costs as per estimate and a 20% increase in net impacts.

COST BENEFIT RATIO SENSITIVITY: TOTAL NET COSTS (DISCOUNTED)

	Worst Case	Base Case	Best Case
Highland	3.53	6.05	7.26
HIE	4.38	7.44	8.92
Scotland	3.97	6.76	8.11
UK	1.44	2.67	3.21

As shown, on the basis of the discounted net costs (i.e. taking account of the income to the project) the project still delivers a CBR of more than 1 in all scenarios.

An additional sensitivity analysis was completed by EKOS under guidance from BEIS Economic Advisor. This can be found at Section 8.8.

Other delivery options considered

Table 57 describes the other approaches that were considered by HIE before the preferred option was selected.

Table 57 – Other delivery options

Option	Conclusion
Do nothing	Rejected as transformational innovation in the City-Region food and drink sector would be limited. Productivity, competiveness and productivity would fall further behind the rest of Europe. The City-Region would fail to develop and commercialise transformational products and services, and would not value from trading in high value markets. The City-Region would also fail to embed a culture of innovation and entrepreneurship in the food and drink sector.
Invest in alternative options	Rejected as the investment would be in activities that have a lesser degree of impact and smaller return on investment. The approach could attempt to do too much and lose focus and impact.
Invest in NIH Food and Drink Programme	Selected as an independent assessment of the NIH Food and Drink proposal has been undertaken, and has included input from a broad range of stakeholders, both regionally and nationally. This proposal being taken forward is considered to offer optimum opportunity to create significant growth, create a new culture of innovation and entrepreneurship, attract new young talent to the City-Region through unique and high value opportunities, and develop the reputation of the Highlands.

Food and Drink technology Centre Options

A number of alternate options were also considered by EKOS as part of their project scoping work on the Technology Centre.

Space	Option 1			Option 2			Option 3		
	No of units	Sq ft	Total	No of units	Sq ft	Total	No of units	Sq ft	Total
Incubator Units	6	300	1,800	8	300	2,400	10	300	3,000
Test Kitchen	1	750	750	2	800	1,600	3	800	2,400

Development Kitchen	1	900	900	2	1,200	2,400	3	1,200	3,600
Staff Office	1	500	500	1	500	500	1	750	750
Events Space	1	1,200	1,200	1	1,300	1,300	1	1,800	1,800
Hot Desks	8	125	1,000	10	125	1,250	12	125	1,500
Meeting Room	1	300	300	1	500	500	1	750	750
Meeting Room	1	200	200	1	300	300	1	500	500
Total	20		6,650	26		10,250	32		14,300

Based on the EKOS report, Option 1 was selected as the most viable option to keep costs within budget, while providing the necessary facilities required to deliver the project outcomes and impact. Option 1 was used as the basis for the project costs and EIA.

5 Commercial Case

5.1 Market demand

HIE is the economic development agency for the Highlands and Islands, and reaches deeply into the region's business base. HIE account manages around 600 enterprises, and engages with circa 2,000 organisations each year across the Highlands and Islands. With this level of insight into business demand, HIE is able to accumulate feedback from many sources and respond with agile support measures which are fit for purpose. We undertake regular programme evaluations and "business pulse" surveys to ensure we understand business challenges, and target our resources accordingly.

The NIH is expected to reach circa 1,650 businesses during the lifetime of the programme. The total number of microbusinesses and SMEs in the region is around 13,000. Although projects such as 30 under 30, Coding Academy and the Technology Placements will work across sectors, the majority of the projects within the programme will be limited to specific sectors.

A high proportion of the 1,650 will be in Tourism and Creative Industries where there is a greater focus on one-to-many, less intensive support. These sectors have a higher proportion of small enterprises and sole traders who are often not captured by official statistics as they are not registered for PAYE or VAT. For example, the BRES data for 2015 estimates 490 Creative industries businesses in the City-Region, yet HIE's own networks are connected to over 2,200 enterprises across the Highlands and Islands area. These factors have been taken into account when forecasting outputs for each project and how achievable the targets are. All targets were set by the heads of sector teams within HIE, who have considerable knowledge of the scale of the sector and likely demand for initiatives. To check the validity of these estimates, the consultant carrying out the EIA was asked to review targets against likely demand.

This review found that 30 under 30 and the Creative Industries project targets were readily achievable. It found that the Technology Placements and Tourism projects were achievable with appropriate marketing. The Coding Academy, Life Sciences and Food & Drink projects had potential challenges that would require additional engagement with businesses in those sectors to realise the anticipated outputs and outcomes. These challenges will be addressed by the NIH staff and others in the NIH programme team by ensuring deep engagement with businesses. The NIH also has a significant communications budget available to raise awareness and encourage businesses to make the most of the support available.

Engagement with businesses

Building on the business intelligence collected by HIE in the normal course of the agency's activities, the following has been undertaken by The Highland Council and HIE to date;

City-Region Deal Breakfast

In June 2016 a City-Region Deal Breakfast was attended by 60 people and positive feedback was received from consultations on the proposed structure of the NIH. Questions and points raised indicated plans were suitable and addressed the issues that businesses were currently facing.

Partnering with Scottish Council for Development and Industry (SCDI)

Additionally, HIE have been working in partnership with SCDI, a business membership organisation which is well represented in the City-Region, to organise a series of consultations on NIH plans. NIH was presented to the Highlands and Islands Board of SCDI in August, and feedback is reflected in current proposals. Over the course of September 2016, events in Thurso, Fort William and Inverness took place with around 10-15 business representatives attending each meeting. These were small events with innovative businesses to enable detailed consideration of the proposals. The feedback from these events was incorporated into the development process for the NIH projects.

5.2 Procurement / contracts

The majority of the NIH programmes will be managed by HIE and delivered through a series of tendered contracts. The exception to this is the Technology Placements project which HIE will deliver. A small number of proposed programmes will be delivered in a partnership between HIE and external parties, where they hold specialist knowledge. In developing these partnerships HIE will follow the rules defined by EU directives and Scottish procurement regulations. The following arrangements have been identified to support the delivery of each programme.

Table 58– Procurement Route

Project	Procurement Route	Approximate contract value
Technology Placements	HIE delivery	
30 under 30	Open tender	£2,000,000
Coding Academy	Open tender	£120,000 – Pilot £330,000 – Yrs 3-5
Digital Tourism Development	Global Market Insight Programme - open tender Digital boot camp - open tender DTTT - partnership agreement Content Campus - HIE delivery Technology Showcase – HIE delivery	£350,000 £125,000
Adventure Tourism Acceleration	Adventure Accelerator – open tender Adventure Connect - partnership agreement Adventure Think Tank - open tender	£825,000 £200,000
XpoNorth Digital	Open tender	£1,700,000
Life Sciences - Pathfinder	Open tender	£1,300,000
Life Sciences – Physical space	HIE delivery	
NHS Market Ready	Partnership with NHS	
Food and Drink TechHub	Open tender	£2,955,000
Food and Drink TechHub Network **Food and Drink Next Generation Programme**	Operational elements of the TechHub will be an open tender in conjunction with the TechHub Network and the Next Generation Programme.	£300,000 £380,000

Interactions with third parties and partners provide an opportunity for HIE to shape eventual procurement and ensure maximum benefit flows to local organisations.

The volume of tenders that will be issued as part of the NIH has the potential to overload the market. This will be offset by staggering procurements.

5.3 Risk register

Table 59 - Risk Analysis

Risk Description	Impact	Probability	Management
Market demand for new and expanded programmes is below expectations	High	Low	HIE has participated in dialogue with various businesses and also SCDI to ensure that programmes meet the correct demand. A full benefits realisation and monitoring strategy will be developed and implemented at a programme level to monitor the success of programmes.
NIH considered to be overlapping with existing enterprise agency activity in the City-Region	High	Low	As the project is being led by HIE, the lead enterprise agency in the City-Region, internal coordination will ensure that the project complements and accelerates, rather than duplicates, current HIE activity.
The NIH is perceived as centred on Inverness	Medium	Low	HIE has a track record of supporting development activity across the City-Region. The Hub is not a physical location and is focussed on providing dispersed support.
Lack of engagement with businesses	High	Medium	HIE has a wide range of important relationships with business membership organisations and networks, including the Chambers of Commerce and Federation of Small Businesses. These will be fully leveraged to engage with a diverse range of businesses from across the City-Region. The involvement of these organisations in the NIH Programme board will help offset these risks by engaging with business representatives.
Lack of engagement with young people	High	Low	HIE has close links with the UHI but needs to ensure a broader strategy to attract young people who have already left the City-Region to come back. It will be important to leverage networks already formed by HIE's current graduate placement programme.
Interdependencies with other City-Region Deal initiatives	High	Low	HIE will need to work collaboratively with the City-Region Deal and stakeholders to ensure alignment of ambitions and goals between the various projects and work streams. HIE will Participate in the City-Region project Board and Scottish National Programme Board.

6 Financial Case

6.1 Funding

The NIH builds on and accelerates HIE's existing plans to grow the Highland economy through investment in innovation and sector development, alongside attracting and retaining more young people to the City-Region. Each of these steps will enhance the competitiveness of small and medium sized enterprises in the City-Region.

The NIH is seeking £11m through the City-Region Deal to deliver the programme that will help achieve the objectives across the three themes, Young People, Enhanced Growth and Sectors and Place.

The NIH requires circa £15m of funding. Of this, £11m is sought from the City-Region Deal. In addition, £1.7 million of European funding (ERDF) has been secured for activity up to December 2018. HIE is in discussion with the Scottish Government regarding a further £1.3 million of ERDF funding as part of the second phase of the European funding programme. HIE is a lead delivery body in the ERDF programme and is involved in discussion with the structural funds division of the Scottish Government to ensure the allocation for the Highlands and Islands region is fully committed prior to the UK leaving the EU. Subject to approval by the HIE board, HIE expect to contribute a further £1 million towards the capital costs of the Food and Drink Technology Centre.

HIE will be responsible for the management of these funds and delivery of the programme.

Detailed below are the costs funding profile to deliver each of the programmes outlined within the Economic Case. More detailed budgets for each project have been included at 8.5.

6.2 Programme Cashflow

This table outlines spend and income across the whole NIH programme. More detailed project budgets can be found at 8.5.

Table 60 – Programme Cashflow

Projects	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	Project total	Strand Total
Young People & Technology										
Graduate Placements	£221,814	£319,790	£328,927	£326,743	£289,389				£1,486,663	
Coding Academy	£60,000	£60,000	£110,000	£110,000	£110,000				£450,000	
30 Under 30	£160,000	£315,000	£330,750	£340,750	£357,788	£357,788	£357,788	£169,992	£2,389,856	
									YP & Tech Total	**£4,326,519**
Life Sciences										
Physical space on Inverness Campus	£55,500	£60,500	£76,375	£67,250	£77,520	£34,625	£49,625		£421,395	
Pathfinder accelerator programme	£157,500	£240,000	£240,000	£220,000	£230,000	£215,000	£10,000		£1,312,500	
Smarter Communities' soft-landing project	£22,500	£40,000	£40,000	£35,000	£35,000	£25,000	£25,000		£222,500	
									LS Total	**£1,956,395**
Tourism										

Digital Tourism Development	£20,000	£90,000	£75,000	£35,000	£30,000				£250,000	
Adventure Tourism Acceleration	£118,000	£492,000	£382,000	£347,000	£112,000				£1,451,000	
									Tourism Total	**£1,701,000**
Creative Industries										
XpoNorth Digital	£209,000	£241,000	£246,000	£253,000	£242,000	£255,000	£266,000		£1,712,000	
									Creative Total	**£1,712,000**
Food and Drink										
Next Generation Programme		£50,000	£60,000	£40,000	£40,000	£40,000	£40,000	£30,000	£300,000	
Food and Drink Technology Centre (Capital)			£1,384,004	£1,200,000					£2,584,004.00	
Food and Drink Technology Centre (Revenue)		£15,000	£18,000	£75,039	£61,572	£64,923	£67,207	£69,255	£370,996	
Food and Drink Network			£50,000	£80,000	£70,000	£60,000	£60,000	£60,000	£380,000	
									F&D Total	**£3,635,000**
Staff Costs (Fixed)	£232,865	£214,486	£216,631	£218,798	£220,985	£111,597			£1,215,362	£1,215,362

NIH Communication Budget	£40,000	£25,000	£15,000	£20,000	£15,000	£15,000	£10,000			£140,000
Contingency	£26,944	£65,956	£69,614	£56,271	£41,394	£26,280	£20,065	£7,200		£313,724
Spend – Year totals	£1,324,123	£2,228,732	£3,642,301	£3,424,851	£1,932,648	£1,205,213	£905,685	£336,447		**£15,000,000**
Income breakdown	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**		
City-Region Deal	£981,465	£1,680,087	£1,741,270	£1,755,140	£2,111,075	£1,340,290	£1,023,481	£367,192	£11,000,000	
ERDF	£392,657	£983,645	£1,009,026	£614,672					£3,000,000	
HIE			£500,000	£500,000					£1,000,000	
Income-Year Totals	£1,374,122	£2,663,732	£3,250,296	£2,869,812	£2,111,075	£1,340,290	£1,023,481	£367,192		**£15,000,000**

Notes

This table details the income and expenditure for the City-Region Deal, ERDF and HIE funding only. Where private funding has been utilised this has been shown in table 61 on the following page.

6.3 Private Funding

A number of projects within the NIH will aim to bring in additional funding from businesses, individuals and sponsorship. This figure is expected to rise as the programme progresses and additional funding streams are exploited.

Table 61 – Private Funding

Private Funding	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
Technology Placements - Business Contribution	£291,402	£405,424	£416,464	£412,292	£362,972			£1,888,554
Coding Academy - Student fees + business contribution	£30,000	£30,000	£60,000	£60,000	£60,000			£240,000
Creative Industries - Academic Research and sponsorship			10,000	20,000	30,000	30,000	£30,000	£120,000
Food and Drink Technology Centre	£251,040	£253,350	£311,355	£311,355	£377,289	£417,813	£417,813	£2,340,015
							Total	**£4,588,569**

Technology Placements

The private finance for this project is the contributions made by businesses towards the salary of the technology graduate or student placement for the duration of their employment. How the private finance contributes to the project has been outlined in the Technology Placements budget in 8.5.

Coding Academy

The Coding Academy project features a contribution from students in the form of a course fee and a contribution from businesses when they recruit a graduate from the programme. How the private finance contributes to the project has been outlined in the Coding Academy budget in 8.5.

Creative Industries

The creative industries project will establish relationships with Glasgow School of Art which is expected to yield funding for research. The relationship with XpoNorth is expected to result in sponsorship income. The XpoNorth project is not dependent on the private funding for delivery, hence it has not been included in the expenditure outlined in 8.5. Any additional funding that does come in through this route will be used to expand the existing programme and organise additional events or other support.

Food and Drink

The food and Drink Technology Centre will generate income from rental of Incubator space, kitchens and meeting rooms. Additional private income is also expected to be secured from sponsorship.

6.4 State Aid

HIE will ensure that State Aid rules are adhered to for the NIH Programme. Our approach, which has been developed through extensive experience of delivering similar projects, is based on applying core principles which will apply across the programme as well as an individual assessment of the State Aid requirements of each project:

- Where contracts are required, they will be competitively tendered or procured in line with EU directives and Scotland's procurement regulations so that no State aid will be present at intermediary contractor level.
- Each project and element within the programme has been subject to an individual assessment of State Aid implications.
- Any competitive advantage or potential distortion of trade has been considered.
- Contractors delivering the projects will be assisted by HIE to ensure they are complying with State Aid requirements.
- Declarations will be in place for each project to ensure applicant businesses beneficiaries are eligible and compliant with State Aid rules.

Table 62 – State Aid

Project	State Aid	Value
Technology Placements	De minimis	
30 under 30	GBER - Article 22 - Start-up aid for young innovative small enterprises	
Coding Academy	Unemployed or Underemployed individuals may by NSA Businesses sponsoring a graduate – Article 31 Training aid or De minimis	
Digital Tourism Development	Tourism Webinar Programme – NSA Digital Bootcamps – De minimis Technology Demonstrator – De minimis Content Creation Campus – NSA Digital Tourism Think Tank Partnership - NSA	
Adventure Tourism Acceleration	Adventure Tourism Accelerator – NSA, De minimis, GBER Training Aid - Article 31 Adventure Connect Events - NSA or De minimis Adventure Tourism Think Tank - NSA	
XpoNorth Digital	NSA for majority of elements with Training Aid (GBER Article 31) for more intensive interventions	
Life Sciences – Physical Space	NSA or De Minimis	
Food and Drink Technology Centre	GBER - Article 18 Aid for Consultancy to SMEs, Article 25 Aid for Research and Development Projects, Article 26 Investment in Research Infrastructures.	
Food and Drink Network	NSA or GBER Article 27 Aid for Innovation Clusters	
Food and Drink Next Generation Programme	GBER - Article 22 - Start-up aid for young innovative small enterprises	

7 Management Case

7.1 Governance

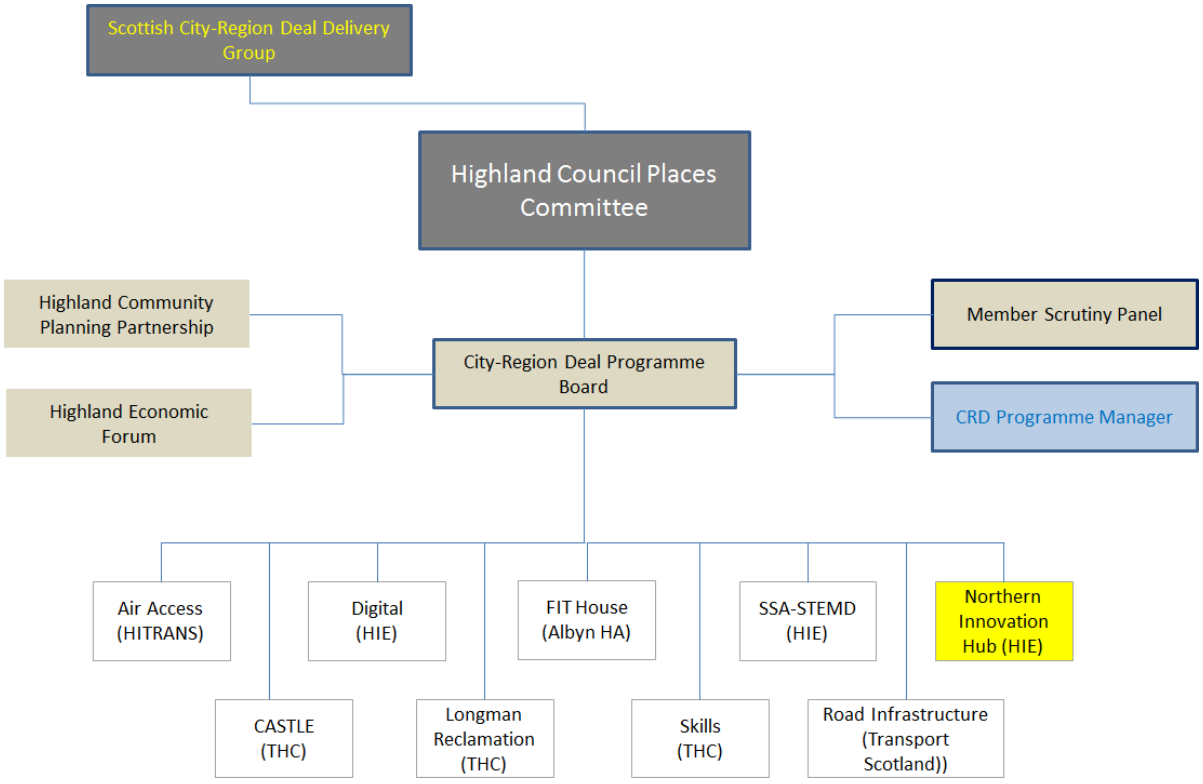
Stakeholders

The project has a range of stakeholders who are engaged with the regional economy at present, including the UK and Scottish Governments and agencies, specifically Highlands and Islands Enterprise and Innovate UK, as well as the Highland Council and existing networks across the City-Region with business communities.

Programme Board

The Inverness and Highland City-Region Deal Programme Board is responsible for all the City-Region Deal projects. There will also be a Scottish National Programme Board which will provide overall governance for the City-Region Deal projects.

Figure 5 - NIH fit with City-Region Deal structure



NIH Programme Board

Direct oversight of this project will be undertaken by the NIH Programme Board. The board will be established in May 2017 and will involve key stakeholders such as The Highland Council, Scottish Council Development Industry (SCDI) and Federation of Small Businesses (FSB). Its role will be to provide strategic oversight of the NIH, ensuring it is delivering the expected outputs and outcomes and continues to meet the needs of businesses in the City-Region.

Highlands and Islands Enterprise Management

This project will sit within the Sectors, Innovation and Programmes division in HIE and will draw on the expertise present in that team. An internal HIE programme team will be established to ensure effectively delivery and co-ordination with other HIE activity. The team will meet regularly and will be comprised of the NIH staff, the heads of the key sector teams and representatives from area teams, internal audit

and other relevant departments. It will ensure internal coherence with other HIE projects, the programme is on track to deliver the expected outcomes, the financial procedures are effective and proportionate, the relationships with partners are being managed and any emerging problems are addressed

NIH Staff Structure

As outlined in the diagram below**,** there will be an overall NIH Senior Project Manager appointed to ensure delivery of the objectives, provide high quality programme updates for funders and maximise benefits for the Highland area. The NIH manager will be managed by HIE's Sectors, Innovations and Programmes team. Three Development Managers will also be appointed, to support the Senior Project Manager, to carry out development work on specific initiatives and manage delivery of the procured contracts. These four new posts are expected to run for five years initially with a review to take place after the first full year of the NIH operating. The NIH staff will work closely with the sector teams within HIE who have developed these projects, to ensure that the programme is responsive, flexible and well-coordinated with other enterprise activity and development happening across the City-Region.

Senior Project Manager - The Senior Project Manager will be responsible for providing strategic oversight of the NIH programme. They will ensure that the necessary reporting requirements from the City-Region Deal and ERDF funding are adhered to and the programme is delivering the expected outcomes.

Technology Development Manager - This post will ensure effective delivery of the Technology Placement Programme and Coding Academy project.

Food & Drink and Life Sciences Development Manager - This Development Manager post will provide a contract management role for the Life Sciences and Food and Drink elements of the NIH.

Tourism Development Manager -This Development Manager post will coordinate and deliver the tourism elements of the programme.

7.2 Reporting

HIE will provide reports of progress against activity as defined in the funding agreement between HIE and the Highland Council.

All HIE programmes go through an appraisal process. Part of this involves HIE staff recording the expected outputs and outcomes of every project alongside relevant inputs. Measurement of outputs/outcomes for all interventions are recorded on HMS (HIE's project management system) at point of approval. For this project a specific measurement framework will be established to ensure the relevant ERDF indicators and agreed targets are reflected on HMS.

It will be the responsibility of the NIH Project Manager to monitor the progress of the project. This will include progress towards the achievement of targets. A standard suite of reports has been created to facilitate this monitoring process. The processes and procedures outlined above will ensure that HIE can realise the output targets noted in this document.

Given the nature of this innovative approach to delivery, the NIH will be the subject of an independent evaluation which will follow the progress of the initiative and capture the outputs as they emerge.

Sustainability

A priority for the NIH will be to secure and develop revenue streams that will ensure its continued viability and the organic economic development of the City-Region through innovation. Additional funding options, including European funding, are being secured. The management of the project by HIE, an organisation with a successful track record of delivery for and cooperation with businesses in the City-Region, ensures it is overseen by the critical player in economic development, which is vital for its sustainability. The project's focus on initiatives centered on young people also demonstrates the project's commitment to the long term sustainability of both the Hub itself and the wider regional economy.

Interdependencies

The table below illustrates the interdependencies for each of the Inverness and Highland City-Region Deals and the NIH.

Table 63 - NIH Interdependencies with City-Region Deal Programmes

Sector	Lead	Strategic	Economic	Commercial	Financial	Management	Overall
NIH	HIE						
Air Access	HITRANS	*				*	**Indirect**
Digital	HIE/THC	*	*	*	*	*	**Direct**
Housing/Assisted Living	THC					*	**Indirect**
STEMD Learning Centers	HIC/THC	*	*	*		*	**Direct**
UHI School of Health and Life Science	HIE	*	*	*	*	*	**Direct**
Inverness Castle	THC	*				*	**Indirect**
Land Regeneration	THC					*	**Indirect**
Skills	THC	*	*	*		*	**Direct**
Transport Infrastructure	TS/THC	*				*	**Indirect**

The interdependencies table above demonstrates that the NIH has a direct interdependency with a number of other City-Region Deal projects including Digital, STEMD Learning Centres and the School of Health and Life Science developed by UHI. These projects have clear linkages in terms of delivery and the opportunity to leverage the strengths of each partner. In particular, the UHI School of Health and Life Science project, with its focus on early stage commercialisation of university R&D (Technology Readiness Level (TRL) 1-5), could in some instances bridge across into The Pathfinder, which entirely focuses on late stage commercialisation and market launch (TRL6-9) building on HIE's core competence in business development, its extensive industry partnerships and experience in this complex sector.

HIE is currently working on initiatives such as the CAN DO health pilot, in partnership with NHS Scotland and the Scottish Government, to use innovative procurement to enable businesses located in the City-Region to gain a commercial foothold in the NHS. Together, these initiatives are synergistic and nationally significant. They are designed to address end to end weaknesses which currently impede growth in the sector and together will transform the Life sciences sector in the Highland area initially, and more widely across Scotland.

Given its scope and reach across sectors, the NIH has a range of indirect interdependencies with other City-Region Deal projects and has the opportunity to influence, support and augment delivery. For example, the Assisted Living project has a clear linkage to the programmes being delivered through NIH in relation to Life Sciences and Health Care. Equally, the Inverness Castle project which will be a game changer for the tourism sector has a clear linkage to the programmes building digital capabilities, industry clusters and future insights in the industry. NIH will work collaboratively with other projects and through the wider City-Region Deal structure to ensure these interdependencies maximise the impact of City-Region Deal funding.

8 Appendices

8.1 Appendix 1 – Project plan

Milestone	Description	Progress	Lead	Date
Interim project Manager appointed	Project manager appointed to oversee the development of the full business case	Interim Project Manager in place	HIE	Complete
PIN notice issued for 30 under 30	Prior Information Notice (PIN) issued for 30 under 30 project – to alert the market to the opportunity and	PIN notice drafted and being used by HIE procurement team	HIE	Complete
Final Business Case submitted	Full Business Case submitted for analysis to Department of Communities and Local Government and Department for Business, Energy & Industrial Strategy for analysis prior to UK Treasury appraisal	Outline Business Case submitted in September 2016. Discussions held with BEIS and CLG throughout February. Final Business Case submitted on the 8th March.	HIE	Complete
Funding agreement in place	Funding agreement between the Highland Council and Highlands and Islands Enterprise which defines the financial and reporting requirements for the NIH	Initial feedback from HIE received by THC. Detailed discussion underway with HIE legal team.	THC	August 2018
Appraisal paper submitted to HIE board	Appraisal paper for the NIH assessed by HIE board	Appraisal paper underway, Update paper provided to HIE Leadership team	HIE	Completed
Formal Project Board established	A project board will be established to oversee the programme with representatives from key stakeholders – THC, SCDI, HIE, FSB		HIE	Complete
Procurement support secured	HIE to contract with Scottish Government to bring in procurement support for up to a year to assist HIE's procurement team with the multiple procurements required for the NIH	Discussions have taken place with Central Government Procurement Shared Services and an agreement reached that a resource will be in place May/June	HIE	Complete

First round of procurements begin for project contracts	HIE launches procurement exercises for the projects comprising the NIH with a series of open tenders.	Procurement team have discussed requirements with project leads and produced procurement schedule and preparatory work	HIE	Complete
Initiative launches with press and social media activity	The NIH programme is launched with publicity around the Technology Placements and promotion of the wider programme	HIE are developing a communication strategy and investigating a central online portal to provide information on the NIH	HIE	Complete
Technology Placement project commences	Graduate and student technology placements will be directly delivered by HIE and will be launched shortly after approval	Development of application forms and guidance is underway.	HIE	Complete
NIH Staff recruited	Four Staff are recruited by HIE to oversee the NIH for 5 years	Roles have been defined. Job descriptions are being produced and will be subject to HIE's job evaluation process.	HIE	Complete
First set of project contracts awarded	The first contracts for the smaller programmes will be awarded. Coding Academy and elements of the tourism programme	Initial discussions on procurement requirements are complete. Preparatory work underway by HIE procurement team with schedule complete	HIE	Complete
Second set of programme contracts awarded	The larger contracts will begin to be awarded. Adventure accelerator, 30 under 30 and XpoNorth Digital.	Initial discussions on procurement requirements are complete. Preparatory work underway by HIE procurement team with schedule complete	HIE	Partially complete

8.2 Appendix 2 - Business Journey

The following demonstrates how a business based in the City-Region could utilise a number of projects within the NIH to help them innovate and grow.

'Highland Bytes' is a small games company based in Fort William and run by young local entrepreneur and software developer Stuart Braithwaite. The company has been running for a year and a half with a modest turnover of £60,000 - most of its business is currently drawn from subcontracting small bits of work from larger games companies in the central belt.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Highland Bytes attend a local workshop as part of the XpoNorth Digital project on creating a community of interest and exploring new funding models. Inspired by the possibilities, they decide to devote more time to developing their own innovative products. They contact the XPNorth Digital Advice Service and are supported to develop a viable business plan. Through the advice line they hear about the technology placements and take on a student for 12 weeks to help them create new product lines.	They use their community of 'customers' to help test and develop their new products and crowd fund additional finance to start the development process. Having developed a viable business plan showing high growth potential and with marketable products in development, Highland Bytes are accepted to the 30 under 30 accelerator. This intensive support allows them to develop their business skills further, reject ideas that are unlikely to be successful and access expert advice on successfully bringing a product to market.	Highland Bytes launch their first product and return to the XpoNorth project to access the Analytics Dashboard. This helps them monitor, analyse and develop their online community and build their brand by showing their strengths and weaknesses By using the enthusiasm they have developed for their new product they use the community to promote their product and business to their contact networks. This increases their reach from 100,000 to 2 million people.	To build on their successful products and with new developments in the pipeline, Highland Bytes feel confident enough to take on an additional software developer to work on new products and help further expand the business. To get the industry ready expertise they require, they recruit directly from the Coding Academy.	With a fast growing business, Highland Bytes attend the XpoNorth event where they meet international industry executives and begin to explore collaboration and private investment.	Following successful negotiation with private investors, Highland Bytes explore new global markets for their products and work directly with HIE account management and inward investment teams on the next stage of growth.
Turnover: £60,000 Employment: 2	Turnover: £70,000 Employment: 2	Turnover: £110,000 Employment: 2	Turnover: £160,000 Employment: 3	Turnover: £210,000 Employment: 3	Turnover: £280,000 Employment: 4

8.3 Appendix 3 - Market Failure Summary

Project	Main Market or Systems Failure
Technology Placement Programme	Capability Failure – Businesses are unable to access the skills and resources required to innovate Network Failure – Businesses are unable to transition into new technologies
30 under 30	Capability Failure – Entrepreneurs are unable to access the specialised support they require to grow their business in the City-Region Network Failure – Networks are fragmented by geography and the ability of businesses to collaborate is constrained
Coding Academy	Capability Failure – Poor availability of employees in the City-Region with the higher level skills required by businesses for digital innovation Institutional Failure – Insufficient provision of training in this specialised but critical area
Digital Tourism Development	Market power – Domination of the market by online agents with high costs for market entry Capability failure – Businesses in this sector are unable to access the skills they required to innovate Network Failure – Networks are fragmented by geography and the ability of businesses to collaborate is constrained
Adventure Tourism Acceleration	Capability failure – Adoption of technology in this sector is constrained by limited access to necessary skills Network Failure - Networks are fragmented by geography and the ability of businesses to collaborate is constrained
XpoNorth Digital	Market Power – Domination of online market, particularly in digital platforms is a barrier to innovation Externalities – Access to traditional sources of finance is problematic for creative businesses Capabilities – Skills shortages persist, particularly in digital technology
Pathfinder Business Accelerator	Externalities – SMEs in Life Sciences can struggle to turn research and innovation into growth opportunities Capability Failure – Businesses are unable to access the specialised support they require to grow
Life Sciences Soft Landing space	Infrastructure failure – Lack of affordable office space discourages investment in the City-Region
NHS Market Ready	Institutional Failure –SMEs struggle to secure business with the complex and highly regulated NHS
Technology Centre (TechHub)	Infrastructural failure – Shortfall in specialist R&D facilities in the City-Region for SMEs to develop new products Market power – A small number of large companies dominate the market causing barriers to market entry
TechHub Network	Network Failure - Networks are fragmented by geography and the ability of businesses to collaborate is constrained Capability Failure – Businesses in this sector struggle to access the skills they require to innovate
Next Generation Programme	Capability Failure – Entrepreneurs are unable to access the specialised support they require to grow their business in the City-Region Network Failure – Networks are fragmented by geography and the ability of businesses to collaborate is constrained

8.4 Appendix 4 – EIA impact methodology (Reference Economics – March 2017)

8.4.1 Approach to calculating Scotland and City-Region Impact

The main steps taken in the EIA to calculating the Scotland and City-Region impact for each project were as follows:

- Review expected outputs provided by HIE for each project and assess demand against the size of the target market and the results achieved by previous comparable projects.
- Utilise evaluation evidence from comparable projects to calculate totals for gross employment, gross income and gross GVA from direct, indirect and induced impact figures. Indirect and induced multipliers were based on data from Scottish Input-Output tables for the sectors relevant to the project.
- Convert gross impacts into the net impacts by taking three factors into account
    - Deadweight – how much of the impacts would still occur if the participant companies did not receive support through the project
    - Displacement – how far the increased activity in supported companies would be at the expense of other businesses
    - Attribution – how far the gross impacts are attributable to the project and how far they could require further public sector support

In this EIA "income" is defined as employee gross wages and salaries before deduction of income tax and National Insurance, and excluding employer's contributions.

8.4.2 Approach to calculating UK level impact

The scope and the approach adopted in the UK level impact are based on advice and guidance from Department for Business, Energy and Industrial Strategy (BEIS) analysts. The approach to calculating central estimates contains a number of elements used in the two UK Government commissioned evaluations which were used to determine method:

- Interim Evaluation of Growth Accelerator (BIS Research Paper No. 187, November 2014)
- Evaluation of the Business Support Helpline and GOV.UK (BIS Research Paper No. 193, December 2014)

The following sections outline the approach to calculating central estimates for the four quantifiable projects in the NIH – 30 under 30, Creative Industries, Life Sciences and Food and Drink. They also demonstrate how the two programmes evaluated by BEIS have enabled figures for the four programmes to be calculated by translating the approach to timings and persistence of impacts in the papers. For 30 under 30 this was based on the Growth Accelerator methodology due to the focus on high growth businesses. For the other three the Evaluation of the Business Support Helpline and GOV.UK has been used. The Creative Industries programme is used as an example in this section. Finally it looks more closely at the methodology and focus of the two research papers and why they are relevant for the specific outcomes of the NIH.

Approach to Calculating Central Estimates for the NIH

The approach taken to calculation of the NIH UK level GVA impacts was to draw on the Scotland level GVA impacts and incorporate a number of elements used in the two UK Government commissioned evaluations. To calculate a UK Level BCR for the 30 under 30, Creative Industries, Life Sciences and Food and Drink projects the following steps were taken:

1. The Scotland level GVA figures were converted to UK level impacts using indirect and induced multipliers. UK level displacement was applied and based on a number of considerations.
2. Following the process adopted by the UK Government commissioned evaluation documents, timing and persistence of impacts were calculated to provide GVA impact per year and determine an appropriate appraisal period. The GVA that was calculated for each year of the appraisal period was compared with programme costs.
3. As the programme costs are spread over a number of years, they were converted to 2017-18 prices using Treasury's GDP deflator. The costs used are the direct programme costs. Thus, they do not include staff costs, marketing or contingency.
4. As the GVA impacts were based on those for the Scotland level analysis, they were already in 2017-18 prices. The GVA impacts and costs were discounted to the base year of 2017-18 using a discount rate of 3.5%.
5. The total GVA impacts over the appraisal period were measured against the total programme costs to determine the BCRs as shown below. Given the degree of judgement involved in estimating displacement, varying the displacement factor has been used as a sensitivity test for the results of each programme shown in 4.2.

Approach to calculating timing and persistence of impacts and Cost Benefit analysis

The GVA impacts calculated at Scotland level are not for a single impact year, given that the activities are spread across a number of years.

Rather, the impacts are for the *third year* after which the business/individual has been assisted, as is standard practice in economic impact assessments undertaken for HIE. For example, the impacts for a business assisted in Year 5 of the NIH activities will be realised in full three years later.

To calculate timing and persistence of impacts two different approaches were adopted by the EIA and an example of each approach has been detailed below.

30 under 30 used the approach of the Growth Accelerator Programme. The impacts begin in the year following the one in which the assistance is given-i.e. impacts in Year 2 from assistance provided in Year 1. They then build up on a straight line basis until Year 4. Thereafter they continue for a further two years although they do not increase beyond the Year 4 level.

This persistence of impacts for five years for the 30 under 30 is based on the programme attracting high growth businesses-i.e. the same basis as the Growth Accelerator Programme. The same approach is adopted for the impacts from the assistance provided in Year 2, Year 3 and so on-building up over a three year period and then continuing at that level for a further two years. This staggering of funding and impacts results in an appraisal period of 13 years in order to include the impacts that commence in Year 9.

A different approach was adopted for the other three programmes (Creative Industries, Life Sciences and Food and Drink). On a more conservative basis impacts are assumed to persist for three rather than five years. This reflects that these three programmes are less explicitly targeted at high growth businesses than 30 under 30. The Creative Industries project has been used below as an example of the approach.

30 under 30 – Impact Calculations

The starting point for the calculations is the annual Scottish level GVA impacts.

30 UNDER 30: GROSS ANNUAL GVA IMPACTS: SCOTTISH LEVEL	
Impact	**£**
Direct	14,962,500
Indirect	6,793,537
Induced	4,730,635
Total	26,486,672

It shows that the indirect (Type I) multiplier was 1.45, with an induced multiplier of c0.22.These multipliers were adjusted to reflect the larger scale of linkages within the UK economy compared to the Scottish one. The UK level multipliers applied were: Indirect: 1.79 and Induced: 0.24.

These produce the UK level impacts

30 UNDER 30: GROSS ANNUAL GVA IMPACTS: UK LEVEL	
Impact	**£**
Direct	14,962,500
Indirect	11,820,375
Induced	6,406,038
Total	33,188,913

To calculate the net attributable impacts at the UK level there was a need to allow for a higher level of displacement than at the Scottish level. Displacement at the UK level is taken as 80% resulting in the 20% figure shown for *Non displacive activity of recruits*.

30 UNDER 30: FACTORS USED TO CONVERT GROSS GVA IMPACTS TO NET		
Factor	**Scotland**	**UK**
Additionality (1)	80%	80%
Non displacive activity of recruits (2)	50%	20%
Attribution to 30 Under 30 (3)	70%	70%
Overall Factor-(1) x(2) x(3)	28%	11%

Thus, the overall factor to convert gross impacts to net attributable impacts at the UK level is c11%. This was applied to the total gross impacts of £33,188,913 giving a total UK level net attributable impact of £3,717,158.

Persistence of Impacts

UK level GVA impacts were calculated for each year of an appraisal period and compared with programme costs. The latter are spread over a number of years and so were converted to 2017-18 prices using HM Treasury's GDP deflator. The GVA impact figure of £3,717,158 is already in 2017-18 prices.

	Single Year Impact (A)								
	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Total GVA impact
	248,321	**488,881**	**513,325**	**528,845**	**555,288**	**555,288**	**555,288**	**271,923**	**3,717,158**
Year of Impact (B)									
Y1									**0**
Y2	82,774								**82,774**
Y3	165,547	162,960							**328,507**
Y4	248,321	325,921	171,108						**745,350**
Y5	248,321	488,881	342,217	176,282					**1,255,700**
Y6	248,321	488,881	513,325	352,564	185,096				**1,788,186**
Y7		488,881	513,325	528,845	370,192	185,096			**2,086,339**
Y8			513,325	528,845	555,288	370,192	185,096		**2,152,746**
Y9				528,845	555,288	555,288	370,192	90,641	**2,100,253**
Y10					555,288	555,288	555,288	181,282	**1,847,145**
Y11						555,288	555,288	271,923	**1,382,499**
Y12							555,288	271,923	**827,211**
Y13								271,923	**271,923**

The Single Year Impact (A) shows that 7% (£248,321/£3,717,158) of the single year GVA impact arises from the spend in Year 1. That is because 7% of the programme spend occurs in Year 1. Likewise, 13% (£488,881/£3,717,158) of the single year GVA impact arises from the spend in Year 2 because 13% of the programme spend occurs in that year, and so on for each of the eight years in which programme spend occurs.

In terms of the Year of Impact (B) the impacts begin in the year following the one in which the assistance is given-e.g. impacts start to occur in Year 2 from assistance provided in Year 1. They then build up on a straight line basis until Year 4. Thereafter, they persist for a further two years although they do not increase beyond the Year 4 level.

Thus, from the assistance given in Year 1 the profile of the GVA impacts is:

- Year 2: £82,774.
- Year 3. £165,547.
- Year 4. £248,321.
- Year 5. £248,321.
- Year 6: £248,321.

Thus, the impacts occur over a five year period and are assumed to cease at the end of Year 6. The same process is applied to assistance to businesses provided in Year 2, and then Year 3, and so on. As a result impacts in an individual year occur from a number of years' assistance. For example the total impact in Year 5 (£1,255,700) arises from assistance given in each of Years 1, 2, 3 and 4.

Cost Benefit Analysis

The costs shown below are in constant 2017-18 prices across the eight years of expenditure. They are then discounted at 3.5% by multiplying each year's cost by the relevant figure in the "TDR" row. For example, in Year 4 the undiscounted cost of £321,538 is multiplied by the discount factor of 0.9019 to give a discounted cost for that year of £289,995. The total discounted costs (PVC-Present Value of Costs) is £1,985,408.

The undiscounted impacts (i.e. GVA) for each year correspond to the totals in the right hand column of the impact table for 30 under 30 shown above. For example, the Year 9 impact is £2,100,253.

	30 Under 30															
	Year	1	2	3	4	5	6	7	8	9	10	11	12	13		
	TDR	1	0.9662	0.9335	0.9019	0.8714	0.842	0.8135	0.786	0.7594	0.7337	0.7089	0.6849	0.6618		
		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30		BCR
	Impacts															5.9
Undiscounted		*0*	*82,774*	*328,507*	*745,350*	*1,255,700*	*1,788,186*	*2,086,339*	*2,152,746*	*2,100,253*	*1,847,145*	*1,382,499*	*827,211*	*271,923*		
Discounted		0	79,976	306,662	672,231	1,094,217	1,505,653	1,697,237	1,692,058	1,594,932	1,355,250	980,053	566,557	179,959	11,724,78	PVB
	Costs															
Undiscounted-2017-18 Prices		*160,000*	*308,461*	*318,094*	*321,538*	*330,865*	*324,457*	*318,173*	*152,791*	*0*	*0*	*0*	*0*	*0*		
Discounted		160,000	298,035	296,941	289,995	288,316	273,193	258,834	120,094	0	0	0	0	0	1,985,408	PVC
															9,739,376	NPV

The flow of impacts is discounted on the basis used for discounting the costs. The total discounted impacts (PVB-Present Value of Benefits) are £11,724,785. The Net Present Value (NPV) is £9,739,376. That is calculated by subtracting the PVC (£1,985,408) from the PVB (£11,724,785).

The Benefit Cost Ratio (BCR) is calculated by dividing the PBV by the PVC. In this case it is £11,724,785/£1,985,408 which gives a BCR of 5.9.

Creative industries – Impact calculations

The gross impacts at the Scottish level for the Creative Industries programme are:

CREATIVE INDUSTRIES: GROSS ANNUAL GVA IMPACTS: SCOTTISH	
Impact	**£**
Direct	4,079,137
Indirect	1,541,007
Induced	749,353
Total	6,369,496

It shows that the indirect (Type I) multiplier was 1.38, with an induced multiplier of approximately 0.13. These multipliers were adjusted to reflect the larger scale of linkages within the UK economy compared to the Scottish one. The UK level multipliers used were: Indirect: 1.67 and Induced: 0.15. These were applied to produce the UK level impacts.

CREATIVE INDUSTRIES: GROSS ANNUAL GVA IMPACTS: UK LEVEL	
Impact	**£**
Direct	4,079,137
Indirect	2,733,022
Induced	999,117
Total	7,811,275

To calculate the net attributable impacts at the UK level there was a need to allow for a higher level of displacement than at the Scottish level. Displacement at the UK level taken as 80% resulting in the 20% figure shown for *Non displacive additional company activity*.

CREATIVE INDUSTRIES: FACTORS USED TO CONVERT GROSS IMPACTS TO NET ATTRIBUTABLE IMPACTS		
Factor	**Scotland**	**UK**
Additionality (1)	87%	87%
Non displacive additional company activity	55%	20%
Overall Factor-(1) x(2)	48%	17%

This shows that the overall factor to convert gross impacts to net attributable impacts at the UK level is c17%. This was applied to the total gross impacts of £7,811,275 (as per Table 5), giving a total UK level net attributable impact of £1,359,162.

Persistence of Impacts

Creative Industries UK level GVA impacts were calculated for each year of an appraisal period and compared with programme costs. The latter are spread over a number of years and so were converted to 2017-18 prices using HM Treasury's GDP deflator. The GVA impact figure of £1,359,162 is already in 2017-18 prices.

	Single Year Impact (A)								
	Y1	Y2	Y3	Y4	Y5	Y6	Y7		**Total GVA impact**
	165,926	191,331	195,300	200,857	192,125	202,445	211,178		**1,359,162**
Year of Impact (B)									
Y1									**0**
Y2	55,309								**55,309**
Y3	110,617	63,777							**174,394**
Y4	165,926	127,554	65,100						**358,579**
Y5	110,617	191,331	130,200	66,952					**499,100**
Y6	55,309	127,554	195,300	133,905	64,042				**576,109**
Y7		63,777	130,200	200,857	128,083	67,482			**590,399**
Y8			65,100	133,905	192,125	134,963	70,393		**596,486**
Y9				66,952	128,083	202,445	140,785		**538,266**
Y10					64,042	134,963	211,178		**410,183**
Y11						67,482	140,785		**208,267**
Y12							70,393		**70,393**

As an example, the Single Year Impact (A) shows that 12% (£165,926/£1,359,162) of the single year GVA impact arises from the spend in Year 3. That is because 12% of the programme spend occurs in Year 3.

In terms of the Year of Impact (B) the attributable impacts begin in the year following the one in which the assistance is given-e.g. impacts start to occur in Year 2 from assistance provided in Year 1. They then build up on a straight line basis until Year 4. However, they reduce in Year 5 and Year 6, after which they are assumed to be zero.

Thus, from the assistance given in Year 3 the profile of the GVA impacts of the Creative Industries project is:

- Year 4: £65,100.
- Year 5. £130,200.
- Year 6. £195,300.
- Year 7. £130,200.
- Year 8: £65,100.

Cost Benefit analysis

The costs are shown in constant 2017-18 prices across the seven years of expenditure. They are then discounted at 3.5%, multiplying each year's cost by the relevant figure in the "TDR" row. For example, in Year 2 the undiscounted cost of £235,997 is multiplied by the discount factor of 0.9662 to give a discounted cost for that year of £228,020.

	Creative Industries															
	Year	1	2	3	4	5	6	7	8	9	10	11	12	13		
	TDR	1	0.9662	0.9335	0.9019	0.8714	0.842	0.8135	0.786	0.7594	0.7337	0.7089	0.6849	0.6618		
		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	NPV	BCR
	Impacts															2.3
Undiscounted		0	55,309	174,394	358,579	499,100	576,109	590,399	596,486	538,266	410,183	208,267	70,393	0		
Discounted		0	53,439	162,797	323,403	434,916	485,084	480,290	468,838	408,759	300,951	147,641	48,212	0	3,314,329	PVB
	Costs															
Undiscounted-2017-18 Prices		209,000	235,997	236,587	238,736	223,790	231,245	236,549	0	0	0	0	0	0		
Discounted		209,000	228,020	220,854	215,316	195,011	194,708	192,432	0	0	0	0	0	0	1,455,342	PVC
															1,858,988	NPV

The total discounted costs (PVC-Present Value of Costs) are £1,455,342.

The undiscounted impacts (i.e. GVA) for each year correspond to the totals in the right hand column of the Creative Industries impact table. For example, the Year 7 impact is £590,399. The flow of impacts is discounted on the same basis used for discounting the costs as described earlier. The total discounted impacts (PVB-Present Value of Benefits) are £3,314,329.

The Net Present Value (NPV) is £1,858,988. That is calculated by subtracting the PVC (£1,455,342) from the PBV (£3,314,329).

The Benefit Cost Ratio (BCR) is calculated by dividing the PVB by the PVC. Here it is £3,314,329/£1,455,342 which gives a BCR of 2.3

UK Growth Accelerator and 30 under 30

Introduction

The information presented below brings together the key elements from the *Interim Evaluation of Growth Accelerator* (BIS Research Paper No. 187, November 2014) and explains their relevance in the context of the 30 under 30 programme and its desired impacts.

About UK Growth Accelerator

Growth Accelerator was a UK Government-backed service to help England's brightest businesses realise their growth ambitions and potential. Launched in May 2012 it had been operating for around two years when the evaluation study was undertaken in 2014. There are a number of similarities between the methodology and aims of Growth Accelerator and the NIH 30 under 30 project including:

Nature of Support

The Growth Accelerator programme aimed to provide a comprehensive business support package to SMEs with potential to achieve high growth across all sectors. That was defined as ones having the potential to achieve yearly employment growth of more than 20 per cent on average over a three year period. A selection process was used to ensure that companies supported through the programme had high growth potential. Four strands of support were provided through the programme:

1. Specialist business coaching tailored to addressing businesses specific needs. This covered *Business Development Coaching*, *Access to Finance* and *Growth through Innovation*.

2. Grants to contribute to the cost of leadership and management development. This was to a value of £2,000 of matched funding for training for each senior manager.

3. Access to external sources of help-e.g. business advice, business/investor networks.

4. Access to a network of Growth Accelerator alumni-i.e. other high-growth business leaders.

30 under 30 takes a similar approach with businesses selected through a competitive process. It will provide 30 high growth/young businesses with intensive business and financial support for 12 months.

It will also offer networking and knowledge exchange opportunities with training, access to expertise and peer support.

Approach to Impact Calculations in Growth Accelerator

As set out above NIH has estimated UK GVA level impacts, based on the time horizons set out in Growth Accelerator. In the report, impacts were calculated at the level of the UK economy. Only direct impacts were covered. Indirect and induced impacts were excluded "due to the difficulties in estimating this"-although these difficulties are not spelled out.

To estimate the impact of the service on employment and turnover self-reported expectations were used. The firms were asked to estimate their turnover and employment in three years' time. If a firm reported that it was expecting to grow it was asked what proportion of this growth could be attributed directly to the effects of Growth Accelerator.

Firms provided forecasts of turnover and employment for the three year period following participation. However, the appraisal period was extended to five years. That was based on research that shows that the benefits of business support services can persist for longer than three years. However, while impacts were included for Years 4 and 5 these were at the same level as for Year 3. That was seen as being "consistent with the empirical finding that in most cases high growth is episodic and is rarely sustained for longer than 2 to 3 years".

To account for outliers the top 5% and bottom 5% of companies in terms of forecast turnover growth were removed from the impact calculations.

The impact assessment also assumed that assisted businesses would close at a yearly average rate of c2%. This was seen as being realistic given that the majority of assisted businesses were established ones-i.e. more than five years old. The low rate of closure was also attributed to research showing that that 82% of high growth businesses survive for at least ten years.

GVA was estimated by applying a GVA: job ratio from the Annual Business Survey. The stream of GVA impacts for each of the five years, and the programme costs, were discounted to the base year (2013-14) at a rate of 3.5%.

From Gross to Net Additional Impacts

Gross impacts were reduced to net additional impacts by applying the following factors, each of which were calculated from survey responses of assisted businesses:

- Attribution of forecast business growth to Growth Accelerator: 51%.
- Deadweight: 29%. That is stated as being "roughly comparable with other similar business support schemes".
- Displacement: 71%.

No allowance was made for the effects of any future public sector support that companies might require to achieve the forecast impacts for Year 3.

The net additional GVA per business was £114,000. Across almost 14,000 assisted businesses this resulted in a total of £1,600 million GVA. When compared to the costs to the UK Government this resulted in a very high BCR for the Growth Accelerator of 12.5:1.

The evaluation notes that "self-reported estimates can over-estimate the benefits" and that further assessment would be required in due course to see how far the actual impacts for businesses match their forecasts.

It also refers to the difficulties that companies can have in accurately assessing attribution and displacement. Sensitivity analysis was undertaken by assuming lower rates of attribution or that the impacts of assistance persist for only three rather than five years. In both cases the BCR for the Growth Accelerator falls from 12.5 to 5.2; still a very positive implied outcome. This BCR is slightly lower than that calculated for the 30 under 30. This can be attributed to differences in the two programmes and the methodology used to make the calculations. Whilst the approach to calculating BCRs for 30 under 30 drew on elements of the approach adopted by the Growth Accelerator, it was felt that deriving a BCR for 30 under 30 from Scottish GVA figures (using the process outlined at 8.4.2) would give a more accurate figure than translating directly from the Growth Accelerator BCR.

The evaluation report concludes that "the methodology used does have limitations and caution is required in interpreting the findings, but we have sought to adopt a conservative approach throughout which does increase the confidence in the findings".

Business Support Helpline and GOV.UK Website and Creative Industries programme

Introduction

GVA impacts for the Creative Industries programme reflect the approach taken in the *Evaluation of the Business Support Helpline and GOV.UK* (BIS Research Paper No. 193, December 2014). The research included a survey of businesses that had used the GOV.UK website and/or called the Helpline.

About The Website and Helpline

The GOV.UK website provides access to the Government's business support services. It aims to provide straightforward information to businesses that may not be available elsewhere, or is not easily accessible from other sources.

The Business Support Helpline complemented GOV.UK. It provided bespoke information and signposting to customers who had queries that they could not answer from using the website alone. The Helpline offered two tiers of support (Tier 1 for light-touch support and Tier 2 for more in-depth business support). The reasons for companies calling the Helpline were most commonly related to starting a business and funding.

The creative industry faces a number of significant challenges including access to finance. Through the Creative Industries programme a combination of advice and business support services will be offered including: direct advice, mentoring support, internships, workshops and help with measurement and analysis. The main outputs of this will be an increased Number of Enterprises receiving intensive support to develop innovative products, services or processes and Net attributable employment (direct, indirect and induced).

From actions taken as a result of the assistance received through the Helpline (and in some cases also information received through GOV.UK) established businesses reported the following positive business performance effects:

- Turnover: 30% of companies (Helpline and GOV.UK) and 32% of companies (Helpline only).
- Employment: 16% (Helpline only) and 28% (Helpline and GOV.UK).
- Export sales: 12% (Helpline and GOV.UK) and 13% (Helpline only).

Approach to Impact Calculations: GOV.UK

The impact assessment covered, first, cost savings to business due to users saving time and monetary expense from accessing support through using the GOV.UK website. Second, it assessed

the economic impacts due to businesses experiencing growth as a result of additional actions taken to improve the business. The following information covers this second form of impacts.

Impacts were calculated at the level of the English economy. Only direct impacts were included, with no allowance for indirect and induced effects.

To estimate the impact of the service on employment and turnover firms were asked whether these would grow either in the current year, the next year or the next two to three years. The report notes that the number of respondents providing a quantitative estimate in response to some questions was low.

It was assumed that the impacts would persist for three years based on previous research findings. Thus, the appraisal period was for a total of five years as some of the impacts would not start until Year 3.

GVA was estimated by applying a GVA: turnover ratio from the Annual Business Survey. The result was an average of £1,500 GVA per user. The stream of impacts for each of the five years, and the programme costs, were discounted to the base year at a rate of 3.5%.

From Gross to Net Additional Impacts: GOV.UK

The gross impacts from GOV.UK were reduced to net additional impacts by applying the following factors, each of which were calculated from the survey responses of assisted businesses:

- Additionality of support and subsequent actions: 23%.
- Displacement: 82%.

In sum, net additional impacts were 4% of gross impacts.

No allowance was made for the effects of any future public sector support that companies might require to achieve their forecast future impacts.

Across the population of users over the five year appraisal period there was an Present Value (PV) of £66 million benefits. As no costs were available for the GOV.UK site the report could not produce a BCR. To determine a BCR for the NIH Creative Industries project the impact assessment drew on elements of the approach adopted by GOV.UK, However, it was felt that using the process where Scotland level GVA figures were used as a starting point, would give a more accurate BCR figure than adapting from the GOV.UK GVA figures. The availability of programme costs for the NIH made a BCR calculation possible.

Sensitivity analysis was undertaken. That included assuming that the impacts of assistance would persist for only one rather than three years. This showed the PV of benefits falling from £66 million to £23 million GVA.

Approach To Impact Calculations: Helpline

The approach to calculating the economic impacts of the Helpline support was generally the same as for the impacts of GOV.UK. The gross impacts were:

- Pre-start businesses: between £8,400 (Helpline only) and £8,800 GVA (Helpline and GOV.UK)
- Established businesses: between £1,200 (Helpline only) and £2,400 GVA (Helpline and GOV.UK).

It was assumed that:

- GVA impacts in established businesses persist for three years.
- New businesses will, on average, survive for four years.

Again, the costs and impacts were assessed over a five year appraisal period and discounted back to the base year.

From Gross to Net Additional Impacts: Helpline

Gross impacts were reduced to net additional impacts by applying the following factors, each of which were calculated from the survey responses of assisted businesses:

- Additionality of support and subsequent actions, between 21% (Helpline only) and 24% (Helpline and GOV.UK).
- Displacement, between 56% (Helpline only) and 79% (Helpline and GOV.UK).

Thus, net additional impacts ranged by 5% and 9% of gross impacts.

No allowance was made for the effects of any future public sector support that companies might require to achieve their forecast impacts.

The PVs of benefits were:

- Helpline alone: £31 million.
- Helpline and GOV.UK users: £25 million.

Sensitivity analysis was undertaken. That included assuming that the impacts of assistance persist for only one rather than three years. That results in the PV of benefits falling to £8 million (Helpline only) and to £7 million (Helpline and GOV.UK users).

8.5 Appendix 5 – Project budgets

Technology Placements budget

Activity	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Graduate Placements	£216,000	£250,000	£260,000	£256,500	£224,000	£1,206,500
Student Placements		£56,420	£54,832	£55,428	£51,512	£218,192
Residential Training	£5,814	£13,370	£14,095	£14,815	£13,877	£61,972
Employer contribution (see 4.3 – private contributions)	£291,402	£405,424	£416,464	£412,292	£362,972	£1,888,554
Total spend	£513,216	£725,215	£745,391	£739,035	£652,361	**£3,375,218**
Income						
City-Region Deal	£110,907	£159,895	£164,463	£207,215	£289,389	£931,869
ERDF	£110,907	£159,895	£164,463	£119,529		£554,794
Employer contribution (see 6.3)	£291,402	£405,424	£416,464	£412,292	£362,972	£1,888,554
Total income						**£3,375,218**

30 Under 30 budget

Activity	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	Total
Support package costs - advice, mentoring and training	£105,000	£210,000	£220,500	£220,500	£231,525	£231,525	£231,525	£105,000	£1,555,575
Management and administration	£25,000	£50,000	£52,500	£62,500	£65,625	£65,625	£65,625	£27,158	£414,033
International Opportunity		£10,000	£10,500	£10,500	£11,025	£11,025	£11,025	£11,025	£75,100
Marketing and Promotion	£15,000	£10,000	£10,500	£10,500	£11,025	£11,025	£11,025	£5,025	£84,100
Expenses	£10,000	£20,000	£21,000	£21,000	£22,050	£22,050	£22,050	£11,000	£149,150
Events and venue costs	£5,000	£15,000	£15,750	£15,750	£16,538	£16,538	£16,538	£10,000	£111,113
Total Spend	£160,000	£315,000	£330,750	£340,750	£357,788	£357,788	£357,788	£169,208	**£2,389,071**

Income									
City-Region Deal	£80,000	£157,500	£165,375	£215,969	£357,788	£357,788	£357,788	£169,208	£1,861,414
ERDF	£80,000	£157,500	£165,375	£124,781					£527,656
Total Income									**£2,389,071**

Coding Academy budget

Activity	2017/18	2018/19	2019/20	2020/21	2021/22	Total
Staffing, premises, Travel & Subsistence, learning materials and equipment	£86,500	£86,500	£163,000	£163,000	£163,000	£662,000
Employer engagement	£500	£500	£1000	£1000	£1000	£4,000
Total spend	£87,000	£87,000	£164,000	£164,000	£164,000	**£666,000**
Income						
City-Region Deal	£60,000	£60,000	£110,000	£110,000	£110,000	£450,000
Private students & employer contributions (See 6.3)	£27,000	£27,000	£54,000	£54,000	£54,000	£216,000
Total income						**£666,000**

Tourism budget

Activity	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	Total
Global Market Insights	£72,000	£72,000	£72,000	£72,000	£72,000	£360,000
Digital Leaders Boot Camp		£25,000	£35,000	£35,000	£30,000	£125,000
Technology Showcase		£20,000	£20,000			£40,000
Content Creation Campus		£25,000				£25,000
Adventure Tourism Acceleration	£36,000	£320,000	£250,000	£175,000	£40,000	£821,000
Digital Tourism Think Tank Partnership	£20,000	£20,000	£20,000			£60,000
Adventure Connect Events		£40,000		£40,000		£80,000

Adventure Tourism Think Tank	£10,000	£60,000	£60,000	£60,000		£190,000
Total Spend	£138,000	£582,000	£457,000	£382,000	£142,000	**£1,701,000**
Income						
Digital Tourism						
City-Region Deal	£20,000	£90,000	£75,000	£35,000	£30,000	£250,000
ERDF						
Adventure Tourism						
City-Region Deal	£59,000	£246,000	£191,000	£219,875	£112,000	£827,875
ERDF	£59,000	£246,000	£191,000	£127,125		£623,125
Total Income						**£1,701,000**

Creative Industries budget

Activities	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
Staffing, advisors, office, T&S	£58,000	£100,000	£110,000	£110,000	£110,000	£120,000	£120,000	£728,000
Development and set up costs	£30,000	£5,000	5,000	£10,000	£5,000	£5,000	£5,000	£65,000
Internship costs		£8,000	£8,000	£8,000	£8,000	£8,000	£8,000	£48,000
Dashboard development and maintenance	£50,000	£15,000	£10,000	£13,000	£10,000	£10,000	£13,000	£121,000
Workshops	£20,000	£35,000	£35,000	£35,000	£37,000	£37,000	£37,000	£236,000
Direct advice	£7,000	£13,000	£13,000	£13,000	£13,000	£13,000	13,000	£85,000
In-depth support	£5,000	£10,000	£10,000	£15,000	£15,000	£15,000	£15,000	£85,000
Events, partnerships and associated costs	£10,000	£12,000	£12,000	£12,000	£12,000	£15,000	£15,000	£88,000
XpoNorth costs		£15,000	£10,000	£10,000	£5,000	£5,000	£5,000	£50,000
Promotion	£14,000	£10,000	£5,000	£7,000	£7,000	£7,000	£7,000	£57,000
Technical advisors	£10,000	£10,000	£12,000	£12,000	£12,000	£12,000	£12,000	£80,000
Evaluation			£8,000				£8,000	£16,000
Other costs	£5,000	£8,000	£8,000	£8,000	£8,000	£8,000	£8,000	£53,000
Total Spend	£209,000	£241,000	£246,000	£253,000	£242,000	£255,000	£266,000	**£1,712,000**
Income								

City-Region Deal	£209,000	£241,000	£246,000	£253,000	£242,000	£255,000	£266,000	£1,712,000
ERDF								
Total Income (City-Region Deal +ERDF)								**£1,712,000**
Additional Private funding (See 6.3)			£10,000	£20,000	£30,000	£30,000	£30,000	£120,000

Life Sciences budget

Activity	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
Physical space								
Pathfinder fit out & makers space	20,000		15000		15,000		10,000	
Rent	15,000	35,000	35,000	35,000	35,000	21,000	21,000	
Rates / utilities	7,500	17,500	18,375	19,250	19,520	9,625	9,625	
Service charge	8,000	8,000	8,000	8,000	8,000	4,000	4,000	
Conference / digital equipment	5,000			5,000			5,000	
Section Sub total	55,500	60,500	76,375	67,250	77,520	34,625	49,625	421,395
Pathfinder Accelerator & NHS Market Ready								
Commercial Service Provider	125,000	220,000	220,000	200,000	200,000	200,000		
Mentoring /events	2,500	5,000	5,000	5,000	5,000	5,000		
Pathfinder Soft landing stations	15,000				15,000			
Marketing (general)	15,000	15,000	15,000	15,000	10,000	10,000	10,000	
Section Sub total	157,500	240,000	240,000	220,000	230,000	215,000	10,000	1,312,500
Soft Landing								
Conference /events	7,500	15,000	15,000	10,000	10,000	5,000	5,000	
Project / partner development	5,000	10,000	10,000	10,000	10,000	10,000	10,000	
SME support for soft landing	10,000	15,000	15,000	15,000	15,000	10,000	10,000	

Section Sub total	22,500	40,000	40,000	35,000	35,000	25,000	25,000	222,500
Total Spend	235,500	340,500	356,375	322,250	342,520	274,625	84,625	**1,956,395**
Income								
City-Deal	£117,750	£170,250	£178,188	£204,406	£342,520	£274,625	£84,625	£1,372,364
ERDF	£117,750	£170,250	£178,188	£117,844				£584,031
Total income								**£1,956,395**

Food and Drink budget

Activity	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26		Total
Next Generation Programme		£50,000	£60,000	£40,000	£40,000	£40,000	£40,000	£30,000	£300,000	
Food and Drink Technology Centre (Capital)			£1,384,004	£1,200,000					£2,584,004	
Food and Drink Technology Centre (Revenue)		£15,000	£18,000	£75,039	£61,572	£64,923	£67,207	£69,255	£370,996	
Food and Drink Network			£50,000	£80,000	£70,000	£60,000	£60,000	£60,000	£380,000	
Total Costs		£65,000	£1,512,004	£1,395,039	£171,572	£164,923	£167,207	£159,255		
City-Region Deal	£25,000	£250,000	£310,000	£214,607	£350,000	£300,000	£285,000	£190,000		£1,924,607
ERDF	£25,000	£250,000	£310,000	£125,393						£710,393
HIE			£500,000	£500,000						£1,000,000
Total Income										**£3,635,000**

8.6 Appendix 6 – Outputs and Outcomes

Programme output summary

Output	Project totals (unique enterprises)	Total
Number of Enterprises receiving modest support to develop innovative products, services or processes	Tourism - 300 enterprises Creative Industries – 545 enterprises	845 enterprises
Number of Enterprises receiving considerable support to develop innovative products, services or processes	Life Sciences - 46 Enterprises Tourism - 30 enterprises Food and Drink - 75 enterprises Creative Industries - 175	326 enterprises
Number of Enterprises receiving intensive support to develop innovative products, services or processes	Life Sciences - 170 enterprises Tourism - 100 enterprises Technology Placements - 100 enterprises 30 under 30 - 210 enterprises Food and Drink - 30 enterprises Creative Industries – 15 enterprises	625 enterprises
Number of enterprises cooperating with research institutions	Life Sciences - 20 Enterprises Food and Drink - 10 enterprises	30 enterprises
	Total unique enterprises	1,650

Note –The total figure for unique enterprises supported in the table above is lower than the sum of those above. This is to account for the business that will benefit from more than one strand within the programme.

Output classification:

Modest: Single event, one day of support or comparable level of intervention
Considerable: Series of events or greater level of intervention, up to five days equivalent
Intensive: Long-term support with intensive intervention greater than five days or equivalent

Programme outcome summary

Outcome	Project totals	Total
Employment (direct, indirect and induced) City-Region	Life Sciences – 77 Creative Industries – 100 Technology Placements – 22 Coding Academy – 39 30 under 30 - 182	426
Employment (direct, indirect and induced) Scotland	Life Sciences – 112 Creative Industries – 78 Technology Placements – 19 Coding Academy – 32 30 under 30 – 156	498
Number of innovation Active enterprises	Life Sciences - 80 enterprises Tourism - 110 enterprises Technology Placements - 75 enterprises Coding Academy – 45 enterprises 30 under 30 – 105 enterprises Food and Drink – 50 enterprises Creative Industries – 175 enterprises	640 innovation active enterprises

8.7 Appendix 7 – NIH fit with UK Industrial Strategy Green paper

Pillar	Nature of Linkage	Programmes
Investing in science, research and innovation	Possibility of Industrial Strategy Challenge Fund supporting leading edge healthcare and medicine	Life Sciences
	Possibility of Industrial Strategy Challenge Fund supporting manufacturing processes and materials of the future	Technology Placements, Food and Drink
	Innovation includes effective adoption of technology throughout businesses	Technology Placements, Coding Academy, Tourism (Digital), Creative Industries, Life Sciences (Accelerators), Food and Drink
	Innovation includes improvements in management and workforce skills	30 Under 30, Coding Academy, Tourism Creative Industries, Life Sciences (Accelerators)
Developing skills	Boosting STEM skills	Coding Academy, Tourism (Digital), Creative Industries
	Shortage of high-skilled technicians below graduate level Particular shortages in sectors that depend on STEM skills Supporting people to up-skill and re-skill across their working lives Testing new approaches to lifelong learning	Coding Academy, Tourism, Creative Industries
Supporting businesses to start and grow	Facilitate the growth of businesses and social enterprises with the greatest potential to grow	30 Under 30, Life Sciences, Tourism (Adventure Tourism Accelerator), Food and Drink
	Having the leadership and management skills to make the right decisions	30 Under 30, Tourism (Digital Leaders Boot Camp), Life Sciences, Food and Drink (Next Generation)
Encouraging trade and inward investment	Improving market access for exports	Creative Industries (XpoNorth event) Life Sciences (Reciprocal Landing Spaces) Food and Drink (TechHub network)
Cultivating world-leading sectors	Build on our areas of competitive advantage-references to specific sectors	Creative Industries , Life Sciences
	The challenge for industries, sectors-and government policy-is how to maximise the benefits of collaboration between firms in a sector without the Government directing a sector	Tourism (Thinks Tanks, Technology Showcase, Adventure Tourism Accelerator), Creative Industries (Regional Workshops) Life Sciences (Accelerators, Landing Spaces), Food and Drink (TechHub, TechHub Network)
	Developing and growing the strengths of particular clusters	Tourism (Adventure Tourism Accelerator, Adventure Tourism Think Tank)
Driving growth across the whole country	Build on the particular strengths of different places and address factors that hold places back	All Programmes
	Test new approaches to closing the skills gap	Coding Academy
	Schemes to support the retention and attraction of graduates	Technology Placements

8.8 Appendix 8 - NEW GREEN BOOK UPDATED EIA

Introduction

This appendix presents an updated economic impact appraisal based upon new guidance from HM Treasury's Green Book. This consists of the following amendments to the method:

- the removal of indirect and induced multiplier effects at the Scotland and UK spatial levels;
- the amending of UK level employment impacts from the creation of new jobs, to a Turnover/ GVA uplift from an economy average to a food & drink manufacturing average. This is due to the UK being considered a full employment economy, and any job created will be at the expense of a job elsewhere in the economy. Thus, any impacts are due to uplift in productivity, and we have used turnover/ GVA uplift as a proxy measure.

Estimating Gross Impacts

Gross economic impacts for the project have been estimated in line with the method in chapter eight, with the exception of UK impacts. GVA and turnover uplift were calculated based upon the difference between turnover per employee in Manufacture of Food (£187,071) and the turnover per employee in the wider economy (less financial services, part of agriculture and the public sector) (£146,516)[16].

Turnover uplift is therefore the difference between these figures and GVA uplift is a ratio of Manufacture of Food turnover to GVA, and applied to the Turnover uplift.

The updated values used are shown in **Table C.1**, below, with the results of the combined gross impacts in **Table C.2**.

TABLE C.1: GVA AND TURNOVER PER EMPLOYEE ESTIMATES

	GVA per FTE	TO Per FTE
Highland	£48,976	£230,010
HIE	£57,489	£217,474
Scotland	£55,861	£200,168
UK	£11,318	£40,555

TABLE C.2: COMBINED GROSS ACTIVITY GVA AND TURNOVER IMPACTS

	Gross Turnover	Gross GVA
Highland	£50.6m	£10.7m
HIE	£48.3m	£72.3m
Scotland	£45.3m	£12.1m
UK	£16.8m	£4.1m

Tables C.3 and C.4 show the final gross impacts after multipliers are applied to determine direct, indirect and induced gross impacts. In line with the method outlined in the draft Business Case, Highland and HIE multipliers were taken from the Scottish Input/ Output tables and were the average of seven food and drink sectors[17] and at 50% and 65% of the Scottish level respectively, to reflect the

16 Annual Business Survey (ABS) coverage excludes certain areas such as the financial sector & parts of agriculture and the public sector

17 Meat processing; Fish & fruit processing; Dairy products, Oils & fats processing; Grain milling & starch; Bakery & farinaceous; Other food

lower multiplier effects at local levels. In line with the new Green Book Guidance, only direct impacts were considered at Scottish and UK levels.

TABLE C.3: GROSS COMBINED ACTIVITY TURNOVER IMPACTS

Impact	Highland	HIE	Scotland	UK
Direct	£50.6m	£48.3m	£45.3m	£16.8m
Indirect	£12.9m	£18.5m	£0	£0
Induced	£4.2m	£6.1m	£0	£0
Total	£67.7m	£72.9m	£45.3m	£16.8m

TABLE C.4: GROSS COMBINED ACTIVITY GVA IMPACTS

Impact	Highland	HIE	Scotland	UK
Direct	£10.7m	£12.3m	£12.1m	£4.1m
Indirect	£5m	£8.6m	£0	£0
Induced	£2.1m	£3.7m	£0	£0
Total	£17.9m	£24.6m	£12.1m	£4.1m

Construction Impacts

Construction impacts have been amended in a similar manner, with multipliers removed at the Scottish and UK levels and impacts from jobs created at the UK levels calculated based upon the turnover/ GVA uplift from a job in the whole economy. GVA impacts are presented in **Table C.5**.

TABLE C.5: GROSS CONSTRUCTION GVA IMPACTS

	Highland	HIE	Scotland	UK
Direct	£1m	£0.9m	£1.1m	£0.4m
Indirect	£0.4m	£0.6m	£0	£0
Induced	£0.2m	£0.3m	£0	£0
Total	£1.6m	£1.8m	£1.1m	£0.4m

It is important to note that the construction PYEs, salaries and GVA impacts are presented as one-off impacts and will not continue beyond the construction activity phase.

Staff Impacts

As with programme and construction impacts, staffing impacts have been amended to exclude multipliers in Scotland and the UK and amend GVA and turnover impacts at the UK level, **Table C.6**.

TABLE C.6: GROSS ANNUAL EMPLOYMENT IMPACTS

	Highland	HIE	Scotland	UK
Direct	£0.3m	£0.3m	£0.3m	£0.1m
Indirect	£0.1m	£0.2m	£0	£0
Induced	£0.1m	£0.1m	£0	£0
Total	£0.5m	£0.6m	£0.3m	£0.1m

It should be noted that these are permanent positions, and impacts will persist throughout the operation of the FDTC.

Net Economic Impacts

Net impacts are calculated in the same manner as in Section 8, with one exception. Given that the changes at the UK level are primarily driven by displacement effects, so displacement at this step has been amended to be in line with the Scottish level.

The factors for each geographic level are set out in **Table C.7**.

TABLE C.7: GROSS TO NET CONVERSION FACTORS

	Highland	HIE	Scotland	UK
Deadweight	80%	80%	80%	80%
Displacement	85%	75%	60%	60%
Attribution	75%	75%	75%	75%
Overall Factor	51%	45%	36%	36%

This allows the calculation of the counterfactual GVA based on the deadweight, less displacement, plus multiplier effects, as shown in **Table C.8**, below. Updated net impacts for programme, construction and staffing impacts are presented in **Tables C.9, C.10 and C.11**.

TABLE C.8: COUNTERFACTUAL GVA (2020 - 2035)

Impact	Highland	HIE	Scotland	UK
GVA	£2.7m	£3.7m	£0.5m	£0.2m

TABLE C.9: COMBINED PROGRAMME NET GVA AND TURNOVER IMPACTS

Impact	Highland	HIE	Scotland	UK
Turnover	£34.5m	£32.8m	£16.3m	£6m
GVA	£9.1m	£11.1m	£4.3m	£1.5m

TABLE C.10: NET CONSTRUCTION IMPACTS

	Highland	HIE	Scotland	UK
GVA	£0.8m	£0.8m	£0.4m	£0.1m

TABLE C.11: NET ANNUAL EMPLOYMENT IMPACTS

	Highland	HIE	Scotland	UK
GVA	£0.3m	£0.3m	£0.1m	£0m

Cost Benefit Analysis

TABLE C.12: NET PRESENT VALUE GVA IMPACTS (2020-2035)

Impact	Highland	HIE	Scotland	UK
GVA	£23.5m	£28.1m	£11.1m	£3.7m

TABLE C.13: COST BENEFIT RATIOS

	Highland	HIE	Scotland	UK
Total Net Costs (£3.3m)				
Cost Benefit	£20.1m	£24.8m	£7.8m	£0.4m
CBR	6.05	7.44	2.33	0.12

Sensitivity Analysis

It is informative to build an element of sensitivity into the model in order to examine the effect of unanticipated variances. These variances can happen for a number of reasons, including:

- erroneous assumptions about the extent of demand for the project amongst potential beneficiaries;
- overly optimistic assumptions regarding costs and delivery timescales; and
- underestimating time to impact.

For this updated model we used a different method of sensitivity analysis:

- +/- 20% on the outputs from the incubators, test kitchen, development kitchen, F&D network and Next Generation programme to account for uncertainty around occupancy and output. Staffing and construction impacts are unaffected;
- +/- 10% on additionality factors, deadweight, displacement and attribution as there is some uncertainty around these factors; and
- +40% capital cost overrun.

Updated sensitivity analysis can be seen in **Tables C.14, C.15, C.16 and C.17**.

TABLE C.14: NET PRESENT VALUE GVA IMPACTS (2020 -2035) SENSITIVITY

	Worst Case	Base Case	Best Case
Highland	£13.2m	£23.5m	£38.7m
HIE	£15.2m	£28.1m	£47.7m
Scotland	£5.8m	£11.1m	£19.4m
UK	£1.9m	£3.7m	£6.5m

TABLE C.15: DISCOUNTED COST SENSITIVITY

Budget	20% Capital Overrun	40% Capital Overrun
Total Net Costs (£3.3m)		
£3.3m	£3.8m	£4.4m

TABLE C.16: COST BENEFIT RATIO SENSITIVITY: TOTAL NET COSTS (DISCOUNTED)

	Worst Case	Base Case	Best Case
Highland	2.98	6.05	10.62
HIE	3.57	7.44	13.32
Scotland	0.74	2.33	4.82
UK	-0.41	0.12	0.95

TABLE C.17: COST BENEFIT RATIO SENSITIVITY: 40% NET COST OVERRUN

	Worst Case	Base Case	Best Case
Highland	2.08	4.45	7.97
HIE	2.54	5.51	10.04
Scotland	0.38	1.62	3.54
UK	-0.50	-0.07	0.60

On the basis of the discounted net costs (i.e. taking account of the income to the project) the CBR remains good at the Highland and HIE levels, however, Scottish and UK impacts are low, particularly at the UK level.

The revised ratio analysis supports the wider, long-term economic benefits to accrue at the local and regional levels. However, under this revised approach, on the basis of the discounted net costs, while the CBR remains sound for both the Highland and Highlands & Islands geographies, the impacts are lower for the Scottish and UK levels.

This contrasts with the previous methodology which reported a CBR of one or above at the UK level across all scenarios presented, even in the worst case scenario. This additional sensitivity analysis, incorporating the methodological changes outlined, has reduced the impact at the Scotland and UK levels, given the removal of indirect and induced multiplier effects for these spatial areas (amongst other factors).

The project will deliver a number of socio-economic benefits across all geographies, some of which will not be captured in the revised CBR analysis alone. Supporting business growth, innovative practices and collaboration efforts will result in a more productive and prosperous regional economy able to make an increased contribution to Scotland's economic output and beyond.