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Summative Assessment of the Aura Innovation Centre (AIC)

Final Report

University of Hull

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1.0 Introduction

- 1.1 In March 2023, Lichfields were commissioned by the University of Hull to undertake a Summative Assessment of the Aura Innovation Centre (AIC), covering both capital and revenue aspects. The AIC which is a European Regional Development Fund (ERDF) programme.

Aura Innovation Centre

- 1.2 The AIC is a purpose-built facility which aims to facilitate collaboration between SMEs and the University research base to promote low-carbon innovation. The facility provides support to Humber-based businesses by giving them access to cutting-edge facilities, specialist support and physical space to innovate and collaborate, and ultimately deliver clean business growth.
- 1.3 The AIC contributes to ERDF Priority Axis 4: Supporting the Shift Towards a Low Carbon Economy in All Sectors. More specifically, the programme aligns with Investment Priority 4f: promoting research and innovation in, and adoption of, low-carbon technologies.
- 1.4 In March 2018 a European Regional Development Fund (ERDF) grant funding agreement was approved for a £9.5 million project, comprising £4m ERDF funds and £5.5m public sector match funding from the University of Hull and Green Port Growth Fund¹. This funding was delivered alongside a further £2.5m from the Regional Growth Fund (Round 2).
- 1.5 Capital investment totalled £8.15m and has included the AIC building located in Hessle's Bridgehead Business Park, workshop equipment as well as consumables to deliver collaborative research projects.
- 1.6 The initial project was intended to be delivered between March 2018 and April 2021; however a Project Change Request (PCR) was submitted in July 2020 for an extension to the business support element of the project and increased revenue funding of c.£1.8m to support with associated salary and overhead costs. The purpose of the extension, coined Aura Plus, was to enable a continuation due to Covid-19 and to deliver deeper and more sustained interventions with the objective of strengthening industry-academia collaborations.
- 1.7 The aim of Aura Plus was to build on the successful delivery experience to advance low carbon innovations to higher levels of Technology Readiness Levels (TRLs). The PCR was approved, extending project activity through to June 2023.

Scope of the project

- 1.8 The project comprises two key complementary areas that enable SMEs to adopt modern technologies and improve both their competitiveness and productivity: the capital build of the AIC facility and a wrap-around business support component.

¹ [About | Green Port Hull \(en-GB\)](#)

Project evaluation

- 1.9 Lichfields was commissioned to undertake an independent evaluation in accordance with the ERDF Summative Assessment Guidance.
- 1.10 A review of relevant project documentation and data was undertaken based on information shared by the Project Management Team at the University of Hull, including:
- ERDF Funding Application;
 - ERDF Claims Progress Reports;
 - ERDF Quarterly Monitoring Data;
 - AIC Logic Model;
 - Project Change Requests; and
 - Asset register;
- 1.11 The document and data review, alongside the inception meeting, informed the development of research tools for the primary research strands of data collection.
- 1.12 Consultations were undertaken with the core AIC management team, Innovation Managers, wider AIC project support staff and stakeholders actively engaged with promotion of the AIC. These consultations were undertaken via Microsoft Teams to understand their views on how the programme was run and the impacts that it was having on the beneficiary businesses.
- 1.13 Beneficiary e-surveys developed by Lichfields, covering aspects of delivery and the impact of the support on beneficiaries were disseminated by the AIC project team and Innovation Managers to gather feedback from those SMEs supported by the programme.
- 1.14 Finally, government guidance and good practice relating to economic impacts is used to fully capture the direct, indirect, and induced employment and GVA, both achieved to date and those predicted to materialise in the future as a result of the project. This value was then related to the investment to demonstrate the economic benefits of the project relative to the financial costs.
- 1.15 The Reporting structure is as follows:
- 1 **Project Context** – Assessing the rationale for the AIC project as well as the economic and policy context in which the project was delivered and the appropriateness of the delivery design;
 - 2 **Project Progress** – Assessing the lifetime progress of the AIC project against contractual expenditure and output targets, as well as the forecasted performance at project completion;
 - 3 **Project Delivery and Management** – Exploring the experience of implementing and managing the project and lessons learned from this;
 - 4 **Project Outcomes and Impact** – Assessing the outcomes and impacts attributable to the project for beneficiaries, the University, and wider stakeholders as well as an economic impact assessment; and
-

- 5 **Project Value for Money** – Analysing the cost-effectiveness of the project against intended and unintended outcomes and impacts.

2.0 Project Context

- 2.1 This section of the evaluation report seeks to set out the background of the AIC project, as well as outline its intended objectives, outputs, outcomes and impacts as per the project Logic Model (Appendix 1).

Aura Innovation Centre

- 2.2 The AIC is a purpose-built facility which aims to facilitate collaboration between SMEs and the University research base to promote low-carbon innovation. The facility provides support to Humber-based businesses by giving them access to cutting-edge facilities, world leading research and specialist support and physical space to innovate and collaborate.
- 2.3 Overall, the rationale for public investment is based on lessening the risks of innovation activity for SMEs, supporting them through the research, development, and innovation (RD&I) and commercialisation process to boost local growth. The centre seeks to act as a focal point between businesses and university providing skills, resources, and academic expertise.

Objectives, outputs, and intended outcomes

- 2.4 The facility provides support to Humber-based businesses by giving them access to cutting-edge facilities, world leading research and specialist support and physical space to innovate and collaborate. The objectives of the ERDF funds are to:

- Support low carbon innovation, foster research collaborations, and promote knowledge exchange;
- Deliver deeper and more sustained low carbon innovation support to beneficiary SMEs;
- Stimulate SMEs access to innovation expertise;
- Bring together UK and international leaders in wind energy and low carbon sectors enabling SMEs to benefit from low carbon supply chain opportunities;
- Host sector events and facilitate information exchange and networking; and
- Support SMEs to accelerate their innovations and progress collaborative low carbon research outcomes towards market readiness.

- 2.5 The projects target outputs are:

- 74 enterprises receiving support (C1);
- 11 new enterprises receiving support (C5); and
- 15 enterprises supported to introduce new to the firm products (C29).

- 2.6 The intended outcomes and impacts listed within the logic model are:

Intended Outcomes

- SMEs assisted to diversify services/products in low carbon arena via investment in R&D;
-

- Increased competitiveness of SMEs engaged in low carbon focussed R&D;
- SMEs assisted to develop new domestic and global markets as a result of introducing new low carbon products/processes/services; and
- Greater level of collaboration between SMEs and research institutions.

Intended Impacts

- Increased levels of investment in low carbon R&D by SME;
- A more innovative company base in the low carbon market place in the target areas;
- An increased number of SMEs engaged in the low carbon economy as a result of the project;
- A greater level of sustainable collaboration between SMEs and research and innovation establishments;
- Increased levels of inward investment from companies seeking to locate their low carbon business activities in the Humber; and
- Encourage and support the creation of new employment opportunities in the low carbon economy.

Scope of the project

- 2.7 The project comprises two key complementary areas that would enable SMEs to undertake innovation, to develop low modern technologies and improve both their competitiveness and productivity: the capital build of the AIC facility and wrap around business support.
- 2.8 The AIC business support element is focused on helping businesses to:
- Shape and define product ideas;
 - Access specialist funded support;
 - Access research experts and testing facilities; and
 - Bring together the skills and knowledge to accelerate ambitions.
- 2.9 Outcomes and benefits supported by these activities include:
- Reduce businesses carbon emissions and carbon footprint;
 - Generate savings in energy costs;
 - Increase efficiency;
 - Improve productivity levels;
 - Access to new markets; and
 - Provide beneficiary businesses with an enhanced competitive edge.

Economic Context

- 2.10 The proceeding paragraphs outline the economic context of the project delivery area (covering the Local Authority areas of Kingston upon Hull, East Riding of Yorkshire, North East Lincolnshire and North Lincolnshire) in terms of the resident population, economic
-

activity, business demography and productivity. Where possible, data for the project delivery area is benchmarked against the wider Yorkshire and Humber region as well as national figures.

Demographic Profile

- 2.11 The resident population of the delivery area in 2021 stood at 937,000, growing modestly by 1.7% over the period 2012-2021. The Yorkshire and Humber region exhibited modest growth of 3.1% over the same period, with the population of Great Britain growing 5.2%.
- 2.12 The proportion of working age (16-64) residents in the delivery area stood at 60.2% in 2021, which is below the Yorkshire and Humber region (61.8%) and Great Britain (62.9%). but lower than the wider AOI (63.1%) and Great Britain (62.9%). The absolute size of the working age population in the delivery area declined by 2.4% over the period 2012-2021. By way of comparison, the Yorkshire and Humber experienced modest growth of 0.4% and Great Britain experienced a rise in the working age population in the order of 3.2%.

Labour Market conditions

- 2.13 An analysis of ONS data indicates that the total number of jobs in 2021 within the delivery area stood at 452,000, which is a 9.7% increase relative to 2011 . This rate of growth is markedly lower than that observed across the wider region (10.5%), and Great Britain (13.1%) over the same period.
- 2.14 The same dataset provides a measure of the ratio of total jobs to working age residents in a given area. The latest available data (2021) shows that the local AOI had a job density of 0.81, indicating that for every 100 working age residents there were 81 jobs. The current employment density across the delivery area is broadly in line with the region (0.81) and the national average (0.85).

Unemployment

- 2.15 Data collected from the Annual Population Survey (2022) highlights that the economic activity rate (the share of working age residents (16-64) either in or seeking employment) stands at 77.8% in the delivery area. This is the same as the region, but marginally lower than the average across Great Britain (78.6%).
- 2.16 The same dataset also shows that model-based unemployment in the delivery area (3.4%) is lower than both the Yorkshire and Humber average (4.1%) and Great Britain (3.9%)..

Business Count

- 2.17 UK business count data shows that the number of businesses in the delivery area stood at 31,460 in 2022, representing a 22.7% increase since 2013. This rate of growth is marginally lower than the regional (28.3%), and national (28.0%) averages over the same period.

Employment Structure

- 2.18 An analysis of the most recent available data , provided in Table 2.1, indicates that the employment sectors with the greatest representation (by broad industrial group) in the delivery area are:

- Manufacturing (17.5%);
- Health (14.6%);
- Education (8.8%); and
- Retail (8.5%).

Table 2.1 Employment structure by sector

Sector	Delivery Area	Yorkshire and The Humber	Great Britain
Manufacturing	17.5%	11.5%	7.7%
Health	14.6%	14.4%	13.2%
Business administration & support services	7.3%	8.7%	8.6%
Education	8.8%	9.4%	8.6%
Retail	8.5%	8.2%	9.3%
Construction	5.5%	4.6%	4.9%
Accommodation & food services	6.4%	7.2%	7.1%
Public administration & defence	4.1%	4.5%	4.4%
Transport & storage	6.3%	5.6%	5.0%
Professional, scientific & technical	4.5%	6.5%	8.8%
Wholesale	3.3%	3.5%	3.7%
Arts, entertainment, recreation & other services	3.8%	4.2%	4.3%
Information & communication	2.0%	3.1%	4.3%
Motor trades	2.1%	1.8%	1.8%
Property	1.3%	1.6%	1.9%
Financial & insurance	0.8%	2.7%	3.4%
Mining, quarrying & utilities	1.1%	1.0%	1.3%
Agriculture, forestry & fishing	2.1%	1.5%	1.6%

Source: Business Register and Employment Survey

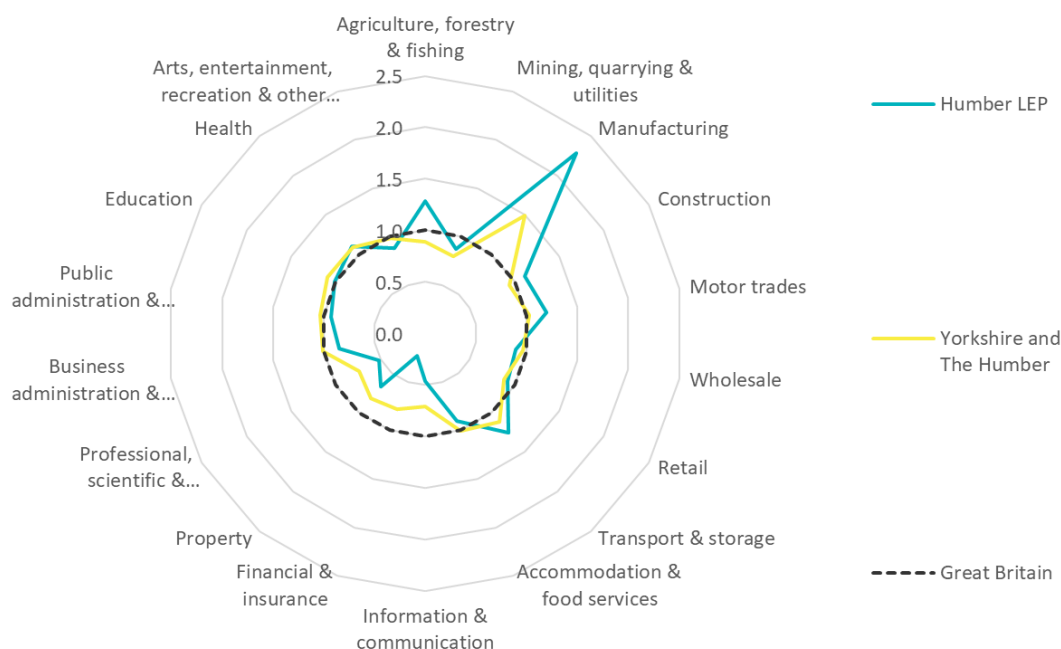
2.19

Location quotient ('LQ') analysis quantifies how prominent (as a percentage share of the overall employment base) a particular employment sector is in an area compared to the sector's representation at the national level. Figure 2.1 shows this spread of representation across all broad industrial groups, highlighting that the delivery area has a number of sectors that are over-represented compared to all comparator areas:

- Manufacturing (2.3 LQ; 17.5% Employment);
 - Agriculture, forestry & fishing (1.3 LQ; 2.1% Employment);
 - Transport and Storage (1.3 LQ; 6.3% Employment); and
-

- Health (1.1 LQ; 14.6% Employment);

Figure 2.1 Sector Location Quotients relative to National Employment



Source: BRES / Lichfields analysis

Policy Context

UK Innovation Strategy (2021)

2.20

The government published its UK Innovation Strategy in 2021. The government believes increasing innovation will enhance productivity across the economy, and in turn bring jobs, growth, and prosperity to all parts of the UK. The strategy focuses on how businesses can be supported to innovate by making the most of the UK's research, development, and innovation system by delivering against four key pillars:

- **Pillar 1:** Unleashing business – increased R&D; reduced complexities for innovative companies; British Business Bank's Life Sciences Investment Programme for growth-stage funding; review regulation; form a Business Innovation Forum.
- **Pillar 2:** People - revitalise the Innovator route to attract/retain high-skilled, globally mobile innovation talent; help to grow management skills development to boost business performance.
- **Pillar 3:** Institutions and places – independent review; Strength in Places Fund for R&D capacity and Connecting Capability Fund for university-business collaboration.
- **Pillar 4:** Missions and technologies – New Innovation Missions programme to address significant issues; identify the key seven technology families for future growth; launch new Prosperity Partnerships for industry, university and government research and investment.

- 2.21 Through these pillars, the strategy aims to both establish the right underlying policy environment and clearly signal those areas where government will take the lead.
- 2.22 The Strategy includes the importance of commercialising the ideas from the UK's research base including universities in Pillar 1, with enhanced technology transfer and improved access to universities for investors. Pillar 3 includes significant focus on university-business collaboration. Freeports are identified as locations for innovation.

Levelling Up White Paper (2022)

- 2.23 The Levelling Up White paper sets out the Government's proposed approach to levelling up the UK economy. It outlines the need for a multi-factor approach to transform places and boost local growth: strong innovation and a climate conducive to private sector investment; better skills; improved transport systems; greater access to culture; stronger pride in place; deeper trust; greater safety; and more resilient institutions.

UK's Build Back Better: our plan for growth (2021)

- 2.24 Build Back Better takes a transformational approach, tackling long-term problems to deliver growth that creates high-quality jobs across the UK, with a focus on three priorities: levelling up the whole of the UK; supporting the transition to net zero; and supporting a vision for Global Britain. With respect to the net zero priority, the framework outlines that the *"UK will continue to be at the forefront of tackling climate change and is already a world leader in clean growth. The UK will deliver the Ten Point Plan for a Green Industrial Revolution, leveraging significant private sector investment and supporting up to 250,000 highly-skilled jobs"*.
- 2.25 The three priorities will be achieved by delivering activity focussed on the following core pillars of growth:
- Infrastructure: stimulate short-term economic activity and drive long-term productivity improvements, and help achieve net zero via £12 billion of funding for projects through the Ten Point Plan for a Green Industrial Revolution;
 - Skills: support productivity growth through high-quality skills and training, including skills bootcamps, apprenticeships and further education investment; and
 - Innovation: support and incentivise the development of the creative ideas and technologies that will shape the UK's future high-growth, sustainable and secure economy.
- 2.26 In recognising the UK's significant progress towards the 2050 goal (100% carbon reduction from 1990 levels), the framework acknowledges that further significant investment will be needed. In support of this, *"Future policies will set a clear direction for millions of people and businesses, shifting incentives to favour low carbon technologies and tackling barriers to action. Moving decisively in areas of comparative advantage could generate new future-proofed jobs and export opportunities, and establish the UK as a global leader across the low-carbon economy."*
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Energy White Paper: Powering Our Net Zero Future (2020)

- 2.27 The Energy White Paper builds upon the National Infrastructure Strategy (summarised overleaf) and the Ten Point Plan, outlining the strategy the energy system must follow to achieve net zero. This is underpinned by three overarching themes:
- Transform energy: building a cleaner, greener future for the UK economy, people and planet;
 - Support a green economy: growing the UK economy, supporting thousands of green jobs across the country in new green industries and leveraging new green export opportunities; and
 - Create a fair deal for consumers: protecting the fuel poor, providing opportunities to save money on bills.
- 2.28 The White Paper also outlines the goal for “*electricity to be a key enabler for the transition away from fossil fuels and decarbonising the economy cost effectively by 2050.*” The electrification of vehicles and increased use of electricity for heating – replacing gas – means that demand could increase significantly, however, and the use of renewable energy sources has an important role to play in supporting this.

Humber Strategic Economic Plan (2014)

- 2.29 The Humber Strategic Economic Plan covered the four local authority areas of East Riding, Hull, North Lincolnshire and North East Lincolnshire. It set out the ambition for the Humber to become a centre for renewable energy with a resilient and competitive economy. Key strategic enablers were identified as:
- Creating an Infrastructure that Supports Growth – to strategic sites and along key growth corridors; and
 - Supporting Businesses to Succeed- access to the expert support they need to grow, create jobs and take advantage of new investment opportunities. A more entrepreneurial culture will be supported and the level of innovation amongst local businesses increased.
- 2.30 The Plan identified opportunities for growth, which include becoming a leading national and international centre for energy, particularly in relation to offshore wind. The Plan also refers to market failures constraining R&D spend and innovation in the Humber, with a need to increase the links between higher education and industrial networks.

EU Structural Funds

- 2.31 The Humber European Structural and Investment Fund (ESIF) brings the ERDF, European Social Fund (ESF) and part of the European Agricultural Fund for Rural Development (EAFRD) together into a single programme for growth for the Humber. The ESIF supports the key growth priorities of innovation, research and development, support for Small and Medium sized Enterprises, low carbon, skills, employment, and social inclusion. The total investment allocated to the Humber ESIF was £99.48m.
- 2.32 The University of Hull developed plans for the AIC in response to a Call for a low carbon innovation centre under Priority Axis 4 of the ERDF Operational Programme. Priority Axis
-

4 aims to support the shift towards a low carbon economy across all sectors, specifically 4f: promoting research and innovation in, and adoption of, low-carbon technologies. The Call specifically highlighted that:

“...opportunities exist around the low carbon agenda, OffShore Wind specifically, and the need to drive innovation, research and development activity in the Humber, this call seeks to strengthen and embed the Humber’s Knowledge assets through the provision of a Low Carbon Innovation Centre.”

- 2.33 By providing access to world-leading academic expertise and facilities, the AIC aims to drive innovation and growth of within this sector. The AIC aspires to be a link with, and for emerging SMEs and the knowledge base. The significant match funding from the university demonstrates strong alignment with the university’s strategic priorities, specifically a commitment to low carbon futures and knowledge exchange.
- 2.34 The AIC built on progress and momentum developed by the Aura consortium and the Green Port Growth programme.

Rationale

Economic Market Failure Rationale

- 2.35 The rationale for public investment must be evidenced by a clear case of a market failure, whether that be relating to issues of: public goods, externalities, asymmetric/imperfect information, imperfect competition and/or co-ordination problems.
- 2.36 A known barrier to innovation activity is that knowledge has the economic characteristic of being a public good. Whilst systems of patents and intellectual property aim to protect inventors and entrepreneurs, the social benefits of innovation exceed the private rewards which ultimately results in sub-optimal investment. By alleviating some of the risks associated with innovation, public funding can help SMEs to innovate.
- 2.37 Businesses may be unaware of the technology available to support product development, or be unaware of how to access, or undervalue the benefits of support to grow and improve their business. This is described as an imperfect information market failure. Evidence suggests this is particularly true for SMEs as they may not have the capacity to investigate these issues alongside day to day business operations. This issue is particularly prevalent in the low carbon/offshore wind sectors due to the rapid pace of development (both corporate and technological), leading to imperfect flows of information between stakeholders. Collaboration has been identified as key to innovation, particularly for smaller companies lacking resources. Public investment can help resolve this information failure by providing opportunities for SMEs to learn from, and work with experts and specialists, such as the academics and technicians who provide support at the AIC.
- 2.38 In addition, the AIC responds to insufficient competition; high start-up costs can deter entry by competitors, creating market power. The low carbon/offshore wind market is relatively young, and does not have a sufficiently large base of companies competing to ensure the market works efficiently. The AIC’s innovation support will directly increase supply chain capacity and sector growth, stimulating competition.
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- 2.39 The rationale for the AIC was underpinned by national and regional strategy. A 2018 review of the Humber's economy identified as one of its key themes 'A stable industrial structure with a need to look at the industries of the future'; the AIC positively contributes to this transition. Indeed, the Humber LEP has expressed a desire to capitalise on the presence of several global research-led organisations in the region, and using this expertise to establish itself as a centre for economic and technological innovation. The AIC also supports the national aim, set out in the Government's Industrial Strategy, to establish the UK's position as a world leader in the low carbon and offshore wind sectors. The Government has likewise promoted idea exchange and collaboration between businesses and universities, to boost productivity and knowledge by maximising use of academic expertise.
- 2.40 The AIC also responds to the specific needs and demands of local businesses. Managing the RD&I strand of the Green Port Growth Programme (2016-2018) demonstrated to the University that Humber businesses were typically risk-averse, particularly relating to investment in new technologies. A significant supply chain capacity deficit was also identified, which could be tackled effectively with targeted innovation support. Moreover, the Humber LEP's current Strategic Economic plan responds to criticism from SMEs that the business support landscape is confusing to navigate, by prioritising coordinated and streamlined approach.
- 2.41 To verify the existence of the market failure rationale, our beneficiary e-survey asked about the business reasons for accessing AIC support. The most frequent response was that business were looking to access R&D capacity currently not available within their business. Businesses also noted their desire to develop new or improved products/services. Together these confirm their desire of local SMEs to improve productivity and grow, but they lack the capacity and expertise in house to do so.

Aura

- 2.42 The Aura consortium was convened to respond to opportunities and needs of the offshore wind sector to sustain the region and the UK as a global leader in the sector. Established in 2016 it is a coalition of public and private sector partners. Led by the University of Hull, Aura brings together Humber Local Enterprise Partnership with manufacturers (Siemens Gamesa), developers (Ørsted), the wider supply chain, academia (Universities of Hull, Sheffield and Durham), innovation institutions (ORE Catapult) and training provider CATCH.
- 2.43 By tackling challenges faced by the sector, Aura aims to foster a collaborative cluster of low carbon innovation within the Humber. Recognising the national significance of its work, Aura is identified as a key delivery partner of the UK Government's Wind Sector Deal.
- 2.44 The Aura consortium has driven investment across a number of strands including an EPSRC funded Aura Centre for Doctoral Training (CDT) in Offshore Wind Energy and the Environment²; the development of a knowledge exchange tool: Offshore Wind Library (OWL) and the Aura Innovation Centre.

² led by the Energy and Environment Institute at the University of Hull, with partners Durham, Newcastle and Sheffield Universities.

Green Port Growth Programme

- 2.45 The AIC was developed to complement the Green Port Growth Programme creating legacy for the GPAP investment, building on its successes and learning from its development processes. The Green Port Growth programme's vision was to establish Hull and the East Riding of Yorkshire as a world class centre for renewable energy, creating wealth and employment for the region. The programme was supported via an investment of £25.7m from the Government's Regional Growth Fund.
- 2.46 The programme's key objectives were to secure long-term economic growth for the region by capitalising on the region's renewable energy opportunities. This included creating 1,300 jobs, upskilling local people, supporting local businesses to enter the renewable supply chain, securing significant inward investment and establishing Hull as a centre for RD&I for the renewables industry.

Rationale for Location

- 2.47 The location of the AIC was chosen to maximise strategic advantages. Its proximity to the Humber Bridge facilitates easy access from both banks of the Humber, and its presence within the Bridgehead Business Park ensures a network of businesses and wider facilities within the immediate surrounds of the Centre.
- 2.48 The University considered it beneficial to be off campus, to provide a 'front door' for businesses to the university. The aim was to provide a welcoming and collaborative environment for the business community. To overcome perceived issues of engagement on campus, which is considered to be uninviting and perhaps intimidating to visit.
- 2.49 The beneficiary e-survey identified that all beneficiaries indicated that the geographic location of the AIC was 'Excellent' or 'Good', and 100% of beneficiaries suggested that the accessibility of the AIC was 'Excellent'.

Chapter Summary:

- The AIC project was and remains aligned with strategic ambitions both regionally and nationally. The AIC plays an important role and function in supporting the Humber LEP's strength in relation to renewable energy and the 'Energy Estuary', supporting prosperity and sector specialism through innovation, commercialisation and facilitating industry-academia collaboration;
- The AIC project's role in promoting and support research and innovation in low carbon technologies as well as adoption through commercialisation is well aligned with local policy and strategic aims;
- The rationale for the AIC project was well defined at inception and the needs case for the centre and support has only been strengthened by emerging policy, and shifting economic landscape (notably energy cost crisis and Net Zero agenda);
- The location of the AIC is deemed appropriate, enhancing engagement with SMEs and academics alike. Beneficiary and consultation with businesses and academics identify that the accessibility and geographic location of the centre as 'Excellent' or 'Good'.

3.0

Progress

3.1

This chapter presents the performance against expenditure and output targets as set out within the ERDF funding agreement.

Initial Contracted Expenditure

3.2

As detailed earlier, the original budget for the AIC project was £9.5m, as per the ERDF grant funding agreement, comprising £4m ERDF funds and £5.5m public sector match funding from the University of Hull and Green Port Growth Fund.

Table 3.1 AIC Programme Match Funding (Original GFA)

Financial Sources	Total Amount Original GFA
ERDF Investment	£4,000,000
University of Hull	£4,094,899
Green Port Growth Fund	£1,400,000
Total	£9,494,899

Source: Aura ERDF GFA

3.3

Table 3.2 provides a breakdown of the capital-revenue split of the AIC programme from the original GFA, broken down further to identify ERDF funding contribution and public match funding. The capital build element of the programme as detailed within the initial GFA was expected to be almost £8.2m, comprising £2.9m of ERDF capital funding and almost £5.3m public match funding. The revenue element of the programme was costed at over £1.3m, with £1.1m ERDF funding and almost £250,000 of public match funding.

Table 3.2 AIC Capital-Revenue split (Original GFA)

Financial Sources	Total Amount Original GFA
ERDF Capital	£2,900,332
Public Match Capital	£5,250,899
Total Capital	£8,150,662
ERDF Revenue	£1,099,668
Public Match Revenue	£244,569
Total Revenue	£1,344,237
Total	£9,494,899

Source: Aura ERDF GFA

Initial Output Targets

3.4

The project was initially contracted to achieve modest output targets, focussed on business engagement (C1 outputs), within this and through the research collaborations there was an initial target of five new to firm products being developed (C29 outputs).

Table 3.3 AIC Original ERDF Output Targets

Output Indicator	Target from Original GFA
C1 – Number of enterprises receiving support	28
C5 – Number of new enterprises supported	3
C29 – Number of enterprises supported to introduce new to firm products	5

Source: AIC Application

Project Change Requests

- 3.5 Over the lifetime of the project there has been four Project Change Requests (PCRs) submitted by AIC, adjusting some of the originally intended programme plans.
- 3.6 The first PCR, submitted in February 2019, altered the expenditure profile of the programme, while still maintaining the same total figures for capital and revenue spend. The main change was to salaries. Initially 5 dedicated AIC posts were due to begin in January 2018, but due to recruitment delays these posts had staggered starts from August to December 2018. With the resulting underspend, AIC requested two technician posts (both 0.5FTE) were included in the budget to provide ongoing technical support to users of the workshop.
- 3.7 The capital expenditure profile also changed, although again there was no change to the total cost. The reassessment was based on a final forecast from the construction company Hobson & Porter, who had successfully tendered for the work.
- 3.8 In January 2020 a Project Change Request (PCR) was submitted to align planned and actual spending profiles. No change was requested to the overall value of ERDF awarded to the project of £4,000,000 or the values of capital and revenue. ERDF Capital remained at £2,900,332 and ERDF revenue at £1,099,668. The PCR was approved in February 2020.
- 3.9 In June 2020 a project change request was submitted to move an underspend from the profiled capital expenditure to bolster key operational aspects of the delivery of revenue (innovation) support to beneficiary SMEs. The University sought to reduce the capital project value from £8,150,662 to £6,748,511, in ERDF terms the value is £602,415, and increase from £1,344,238 to £1,846,389, in ERDF terms the increase is £410,790.
- 3.10 The initial project was intended to be delivered between March 2018 and April 2021, however a Project Change Request (PCR) was submitted in July 2020 for an extension to the business support element of the project and increased revenue funding of c.£1.8m to support with associated salary and overhead costs. The purpose of the extension was to enable a continuation and to deliver deeper and more sustained interventions with the objective of strengthening industry-academia collaborations.
- 3.11 The aim of Aura Plus was to build on the successful delivery experience to advance low carbon innovations to higher levels of Technology Readiness Levels (TRLs). The PCR was approved, extending project activity through to June 2023.
-

Outputs and Results

- 3.12 Table 3.4 below demonstrates progress against contracted ERDF targets, as at Q4 2022 (latest available claims data), reflecting the final contracted target. The forecasted expenditure and output profile is also shown.

Table 3.4 Achievement against ERDF Expenditure and Output Targets

Indicator	Targets		Achieved at time of Evaluation		Forecasted Performance	
	Original	Adjusted	Number	% of target	Number	% of target
Capital expenditure £m	£8,150,662	£6,748,151	£6,706,440	99%	£6,748,511	100%
Revenue expenditure £m	£1,344,237	£3,585,477	£2,228,726	62%	£3,585,477	100%
C1 – Number of enterprises receiving support	28	74	49	66%	74	100%
C5 – Number of new enterprises supported	3	11	4	36%	11	100%
C29 – Number of enterprises supported to introduce new to firm products	15	15	24	160%	26	173%

Source: AIC Claims Data

- 3.13 The above table demonstrates that AIC has made significant progress against the majority of output targets and financial expenditure, particularly in the context of the project delivery being impacted by the Covid-19 pandemic. The project team is confident that the project will meet contracted targets by project closure.

Innovation Centre Capital Build

- 3.14 The c. 2500m² Aura Innovation Centre is located at Bridgehead Business Park, Hessle. The procurement of the construction contract was managed by the then Procurement and Estates Team at the University of Hull, with construction beginning towards the end of 2018. Contractor Hobson & Porter was awarded a £5.8m contract. Staff moved into the building in November 2019, with the AIC operational from January 2020. The AIC includes a workshop and demonstration/viewing area, co-working environments, and a variety of meeting spaces.
- 3.15 The building has an A rated energy performance certificate and was designated a BREEAM Excellent rating through its design, construction, materials sourced and use of local supply chains. The AIC is conveniently located with fast, easy access to the trunk road network, the Humber Bridge and excellent access to rail and bus connections.

Figure 3.1 AIC Facilities Map



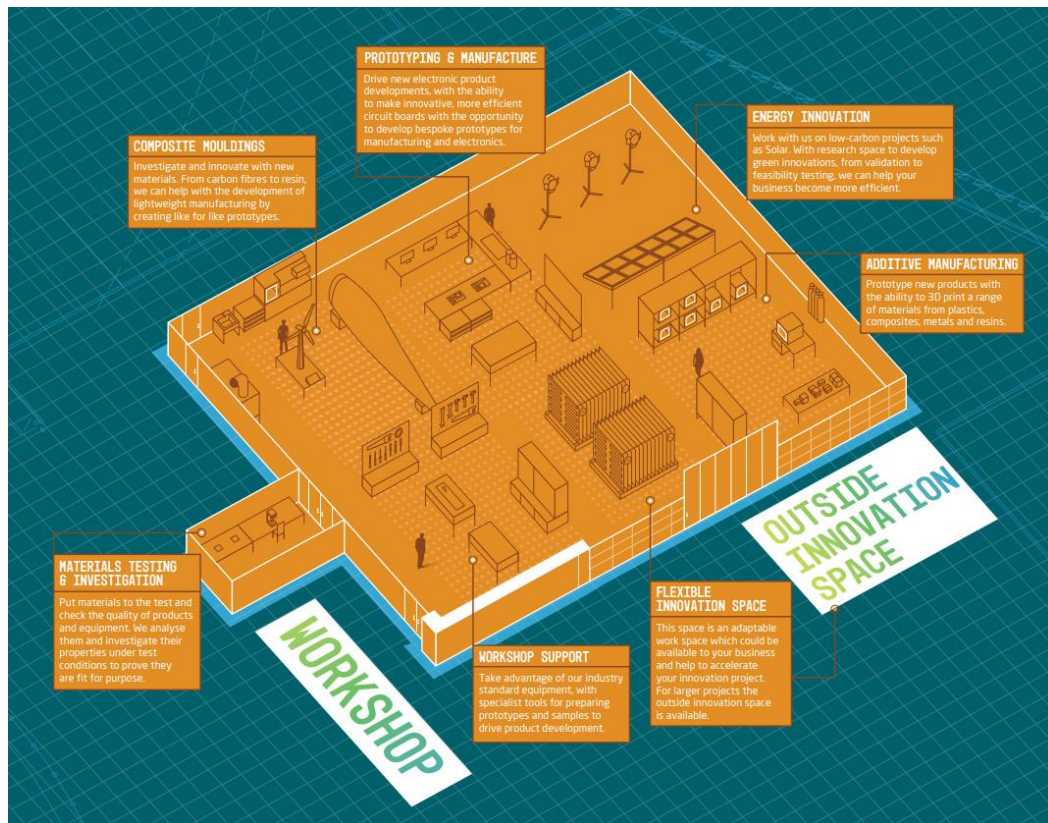
Source: AIC website

Workshop

3.16

The workshop space includes over £1.1 m of cutting-edge research facilities. This includes a state-of-the-art printed circuit board suite, augmented reality and large green screen area, virtual reality capabilities, materials characterisation suite, high-tech 3D printers capable of printing recycled plastic, carbon fibre and metal as well as a mechanical workshop area.

Figure 3.2 AIC Workshop Facilities



Source: AIC website

Feedback from beneficiary businesses, academics and stakeholders have praised the facilities at the AIC, describing them as ‘world-class.’ All respondents to the beneficiary e-survey indicated that the quality of facilities at the AIC were ‘Excellent’ or ‘Good’. Similarly all respondents believed the range of workshop facilities as being ‘Excellent’ or ‘Good’.

“Good set of equipment to fast prototype and characterise new products. Great management and networking support.” – AIC Beneficiary

Conference, Events and Meeting Space

- 3.17 The AIC offers state-of-the-art conference and events space, suitable for intimate or larger events. The AIC includes 7 events, conference and meeting spaces under one roof, including a mezzanine with views of both the workshop and technology demonstration area. Video conferencing capability enables events to be streamed for virtual attendees, providing flexibility.
- 3.18 The AIC has hosted a number of high-profile events that provide opportunities for international delegates to network with UK-based businesses, to learn more about the success of the of the Humber as a location for low carbon investment and to showcase the AIC’s role in delivering this success. These events include:
- Delegation of American State Senators (2023);
 - Delegation from Enterprise Singapore (October 2022);

- Department for International Trade offshore wind event attended by representatives from the USA, Norway, Brazil and Germany (June 2022); and
- Delegation from South Korea (June 2022).

3.19 Respondent feedback to the beneficiary e-survey identified that the quality and availability of meeting and shared working spaces was 'Excellent' or 'Good', beneficiaries commented on the quality of the events and meeting spaces as well as the IT facilities available for use.

'Modern building with the great IT set for presentations and business meetings.' – **AIC Beneficiary**

Sustainable Workspace

3.20 The AIC sustainable workspace offer has been designed with collaboration in mind, it offers low-cost flexible desk space for beneficiaries at the centre of the UK's energy estuary. Desk space licensees have access to high quality technology, conferencing and meeting spaces, high speed Wi-Fi, as well as on-site parking with EV charging points, secure cycle store and postal storage.

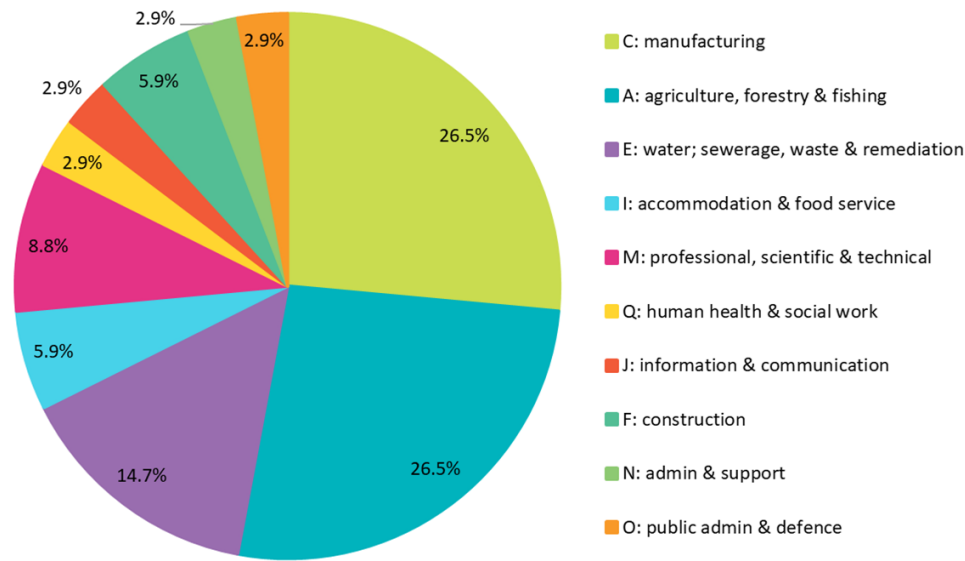
Beneficiary Profile

3.21 AIC monitoring data on beneficiary sign-up allows analysis to be undertaken to explore the profile of beneficiaries support by the project, in terms of sector representation, business size and geographical location.

Business Sector

3.22 Monitoring data showcases that the AIC project engaged with beneficiaries across a wide range of industry sectors. Manufacturing and Agriculture, Forestry and Fishing businesses were well represented, accounting for more than half (53 per cent) of beneficiaries.

Figure 3.3 Beneficiary Profile – Sector representation



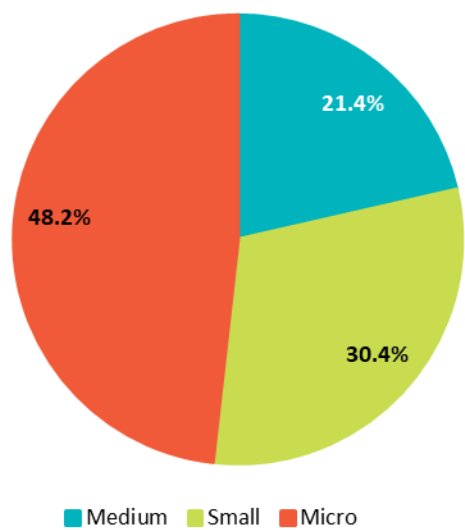
Source: AIC Monitoring Data

Business Size

3.23

The AIC engaged with businesses of varying size, both in terms of employment and turnover. Businesses engaged, in employment terms, ranged from sole traders through to organisations employing more than 200 staff. With respect to turnover, beneficiaries included start-ups with no registered turnover up to businesses with turnover of over £20 million. Figure 3.4 below demonstrates that the greatest proportion of businesses support were Micro (<10 employees), just under a third are considered a small business (<50 employees) and around a fifth were medium (<250 employees).

Figure 3.4 Breakdown of businesses by size



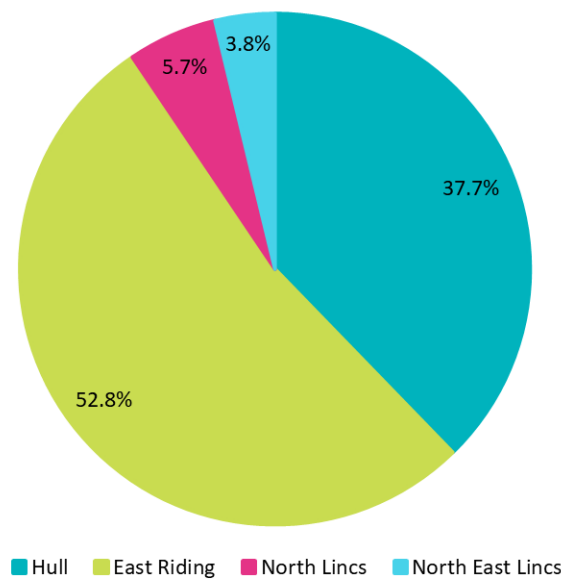
Source: AIC Monitoring information

Geographical Profile

3.24

AIC support was eligible for businesses across the Humber LEP area, covering the Local Authority areas of Hull, East Riding of Yorkshire, North Lincolnshire, and North East Lincolnshire. Analysis of monitoring data indicates that the vast majority of beneficiary businesses were located within either East Riding (52.8 per cent) or Hull (37.7 per cent). Although these Local Authorities are the closest geographical to the AIC, the limited engagement with businesses across North and North East Lincolnshire was disappointing.

Figure 3.5 Beneficiary Profile – Geographical Proportion (by Local Authority)



Source: AIC Monitoring Data

Chapter Summary:

- The challenges faced throughout the delivery of the AIC project cannot be understated, the Covid-19 pandemic presented significant challenges to the way in which businesses operated, how support could be accessed and the priorities of organisations. Despite this, the AIC project adapted quickly and responded well to these challenges. Where other projects struggled, the AIC was able to operate a programme of support for businesses in a safe manner whilst maintaining quality;
- Despite the challenges faced, the AIC project has made good progress against contracted output targets,
- The reduced capital spend of the project was reprofiled through the PCR process to deliver support to a wider number of beneficiaries (Aura Plus) – extending the reach of the project and engaging with significantly more SMEs than initially anticipated, demonstrating the commitment to supporting innovation and achieving the commercial ambitions of the AIC;
- Through the revenue support, the AIC engaged with a diverse range of beneficiary businesses both in terms of sector representation and business size extending as well as supporting those organisations within key regional sectors of employment and driving economic growth;

- Beyond the business support, the AIC facility has established itself as a prime venue for hosting events and conferences of significant importance, helping to promote the University and the region as a hub of excellence in supporting low carbon innovation and the wider renewables and offshore wind sectors;
- The AIC facility and the technology available to utilise are described as ‘world-class’ by beneficiaries accessing them. The AIC helps to bridge the gap for beneficiaries in access to technology and technical expertise that might not be otherwise available – increasing and improving the awareness of the capabilities of technology for adoption but also for testing products being developed for commercialisation.

4.0 Delivery and Management

4.1 This section of the report assesses the approach to delivery and management of the AIC project, focusing on:

- Project Delivery Model and resourcing;
- Governance and Management (including data and information monitoring);
- Programme Delivery (including challenges and best practice); and
- Contributions to ERDF Cross-cutting themes.

Delivery model

4.2 The delivery model for the revenue strand is based on Innovation Managers brokering and driving the relationship between industry and academics to progress collaborative research projects. Whilst core milestones, for example agreeing the research objectives, are common, the engagement is bespoke and driven by business need. The overarching delivery model works well however the administrative burdens of ERDF funding requirements take a considerable amount of the Innovation Managers resource which could be dedicated to programme goals.

4.3 The Innovation Managers identify the most appropriate academic to work on the research project. This is reported to be challenging using only a directory of academics, however some key relationships have helped further understanding about how to access the research expertise available.

4.4 The delivery model is considered to be appropriate, there is a strong integrated project team involved in the successful delivery of the project, supporting one another to keep on top of achieving aims. Innovation Managers provide a pivotal role in brokering and driving relationships between businesses and academics which is highly effective. However, more administrative support should be considered to reduce administrative burden taken on by Innovation Managers.

Project Resourcing

4.5 The project is resourced by a dedicated management and delivery team, comprising:

- Operations Manager / Project Manager;
- Innovation Managers (x2);
- Innovation manager for a period to successfully manage the Humber net zero survey (x1)
- Marketing Manager (part-funded by ERDF);
- Meeting and Events Co-ordinator
- Workshop Supervisor;
- Technicians;

Non-ERDF Funded Team

- Aura Director;
- Senior Administrator;
- RD&I Strand Lead;
- Technical Manager;
- Talent and Skills Lead
- Recep & Facility Co-ordinator; and
- Admin/Audit Support.

- 4.6 The AIC team also has further input support from the wider University of Hull Central Services support function where required.

Project application, contracting and set up

- 4.7 The programme application was submitted to ESIF in February 2018 and approved in March 2018. The initial project was intended to be delivered between March 2018 and April 2021; however, a Project Change Request (PCR) was submitted in July 2020 for an extension to the business support element of the project and increased revenue funding of c.£1.8m to support with associated salary and overhead costs. The purpose of the extension was to enable a continuation and to deliver deeper and more sustained interventions with the objective of strengthening industry-academia collaborations.
- 4.8 The aim of Aura Plus was to build on the successful delivery experience to advance low carbon innovations to higher levels of Technology Readiness Levels (TRLs). The PCR was approved, extending project activity through to June 2023.
- 4.9 The procurement of the construction contract was managed by the then Procurement and Estates Team at the University of Hull, with construction beginning towards the end of 2018. Contractor Hobson & Porter was awarded a £5.8m contract. Staff moved into the building in November 2019, with the AIC operational from January 2020.
- 4.10 The opening and early stages of the AIC was impacted by the Covid-19 pandemic and the subsequent lockdowns; however, the team did what they could do operate in these circumstances and key research projects were still able to go ahead at a reduced capacity and in line with government guidance. It was felt that the project made good progress despite the situation and once lockdown restrictions were eased the project was able to bounce back and be used in the way it was initially envisaged. Academic users and businesses praised the way that this period was handled, with a complete shutdown avoided.

Governance and management

Leadership and Culture

- 4.11 The AIC leadership team have built on the foundations of Aura and the project design proposed within the application and have articulated a clear strategy for the centre. The team agree there is a common understanding of what targets are and how they are going to be achieved.
-

- 4.12 Feedback from beneficiaries, academics, and stakeholders agreed that the project well managed and that the project followed a clear structure, that responded well to identified needs. The project roles and responsibilities were well defined which helped the project run smoothly and overcome challenges.

The project is well managed, they have been very good at marketing, and pulling information together. – AIC Stakeholder

Structures and Process

- 4.13 The team have adopted the University's tried and tested management processes around for example risk management, recruitment, and tendering. Overall, the structures and processes implemented by the AIC were considered to be well developed. The project team had well defined processes in place which only improved throughout the project delivery.
- 4.14 Beneficiary businesses were asked to identify the extent to which they agreed that project administration was straightforward. All beneficiaries surveyed, either completely agreed or agreed.
- 4.15 Beneficiary respondents felt that the project team were supportive through the administrative process which helped to reduce burden. It was noted by one beneficiary that timescales could have been more clearly set out and tracked throughout to ensure that project milestones were monitoring more closely, however another beneficiary felt that outputs had been well communicated.

'Project administration and operation teams are of great help.' – AIC Beneficiary

'Communication of outputs was very helpful.' – AIC Beneficiary

'Great management and networking support.' – AIC Beneficiary

'It would have been helpful if timescales had been more clearly set out at the beginning of the project and clearly tracked against.' – AIC Beneficiary

- 4.16 It was commented by an academic user that the ERDF processes were complex and burdensome, taking some focus away from time that could have otherwise been committed to the research project. This is a common theme with ERDF projects, however, the team were felt to have offered support on this and the project processes were refined and made as efficient and as effective as possible throughout the project lifecycle.

'I think that the ERDF process is overly complex and administratively burdensome and could be simplified with the same outcomes' – Academic

Monitoring and reporting

- 4.17 As with all ERDF-funded programmes, the management team is required to follow monitoring and reporting processes. This entailed detailed paperwork and administrative tasks. The delivery team agreed that the monitoring and reporting processes in place were effective, aided by the teams' experience in delivering ERDF programmes, and had helped the programme to meet its targets.
- 4.18 In terms of programme management information about projects and contacts, the development of the CRM system 'Auracle' has proven very useful. The bespoke system

seeks to capture engagement and project progress, for business development and management purposes.

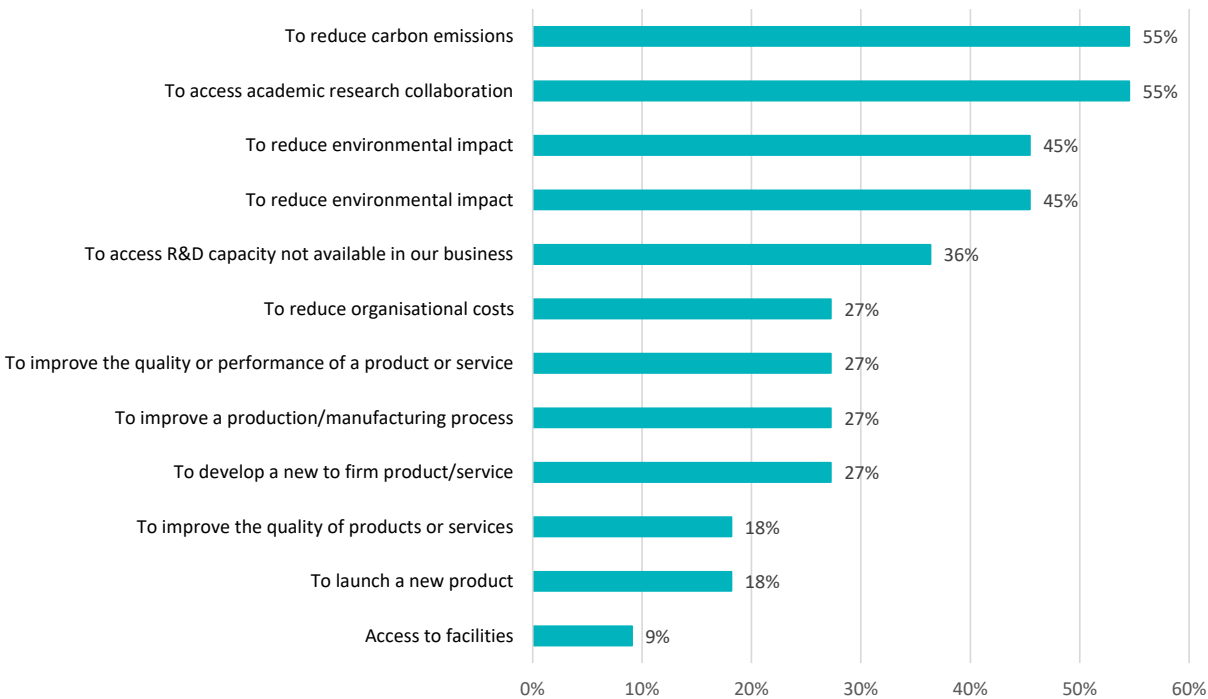
Recruiting beneficiaries

- 4.19 The project works closely with key stakeholders to signpost support to potential beneficiaries. Stakeholders felt that they had good working relationships with the team at the AIC, and that the project was well aligned to wider strategic ambitions of their organisations and wider Humber economy.
- 4.20 Stakeholders recognise the important role that AIC plays within the region for supporting shared low carbon aims and the renewables sector and that AIC had a strong reputation around the Humber region. It was evident that stakeholders felt they had forged closer working relationships with the University, in many cases developing on existing relationships. Stakeholders see themselves as playing an important role in sharing knowledge as well as signposting the AIC.
- 4.21 The AIC has been used to host a number of events that have showcased the facilities and as a front door to the potential support on offer. In particular, Energy Breakfast events were considered to be an effective introduction to the AIC, as well as fostering business networking and encouraging collaboration. There were a number of beneficiaries who were also recruited via referral from the SparkFund, showing the cross pollination between the other ERDF project's delivered by the University.
- 4.22 The AIC has an active social media and web presence which help to increase the audience and engagement. The AIC website is professionally designed providing information on the project, the facilities of the AIC, key events, and case studies and offers an appropriate front door to the centre for prospective beneficiaries. The website generated significant traffic throughout the project delivery.

Beneficiary motivations for accessing AIC support

- 4.23 Figure 4.1 demonstrates the motivations behind beneficiaries engaging with the AIC support and what they were originally hoping to get out of the project. The most common motivations were centred around reducing carbon emissions and environmental impact as well as accessing academic research collaboration support and R&D capacity otherwise not available in the business. Perhaps surprisingly, the least common motivation was for access to AIC facilities, however this was an element of support that has stood out for businesses.

Figure 4.1 Beneficiary reasons for participation



Source: AIC Beneficiary survey

Beneficiary feedback

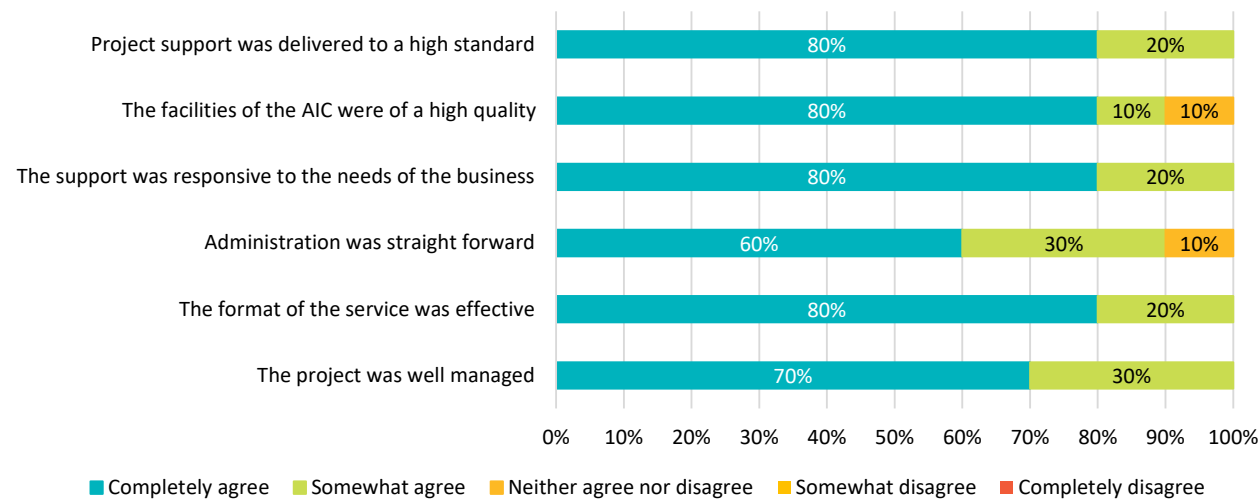
4.24

All beneficiaries surveyed indicated that the project was delivered to a high standard, praising the project team for the way in which information was translated in a comprehensive and easy to understand manner. Beneficiaries also felt that the project team had managed the project well and provided helpful support with the administrative requirements associated with ERDF funded projects, which can often dissuade businesses from taking part in projects.

‘Easily digestible information presented in a ‘matter of fact’ way.’ – AIC Beneficiary

‘Project administration and operation teams are of great help.’ – AIC Beneficiary

Figure 4.2 Beneficiary feedback on elements of project delivery



Source: AIC Beneficiary Survey

- 4.25

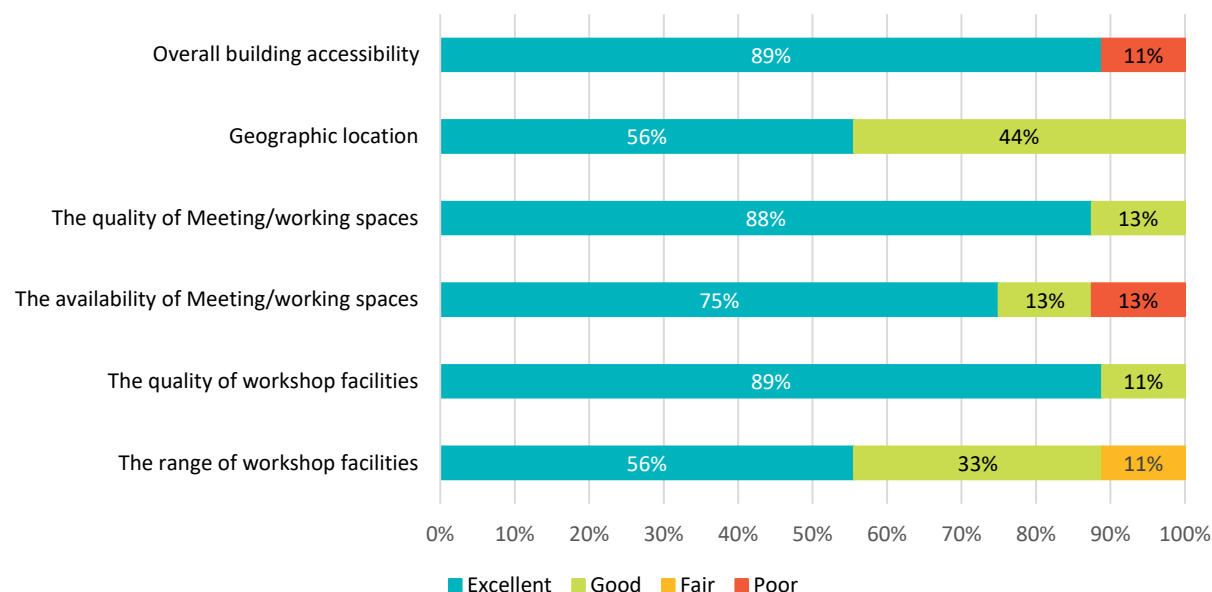
Respondent beneficiaries were asked to identify whether they had previously accessed any other business support, half of respondents indicated that they had. Feedback from those beneficiaries that had previously accessed alternative support suggested that the AIC offer was an improvement.

'AIC support was very comprehensive, easy to understand and has added real value to our organisations. Other support we have received regarding our Net Zero aims has been very regimented and 'by the book'.' – **AIC Beneficiary**
- 4.26

All beneficiaries surveyed felt that the AIC project was very effective in meeting the needs and objectives of their businesses, with all businesses also indicating that they strongly agreed that accessing the support represented a worthwhile contribution of time and resource from their business.
- 4.27

Feedback relating to the AIC facility itself was very positive, with the vast majority of beneficiaries indicating that the range and quality of facilities at the AIC were of a high-quality, and the accessibility and location was convenient for their business in accessing support. The quality and availability of meeting spaces were appropriate. Many businesses suggested that they were continuing to engage with the AIC beyond their initial support, and those that have not suggested that they would be keen to use the AIC and its facilities in the future.

Figure 4.3 Beneficiary Feedback on the AIC facility



Source: Beneficiary Survey

'We have developed a good relationship with Dave Dawson so we continue to look for avenues to develop projects with AIC, which could include using the facilities at the centre, for example in developing materials.' – **AIC Beneficiary**

We would look to approach AIC when designing new products where we do not have in house the capability or equipment. – **AIC Beneficiary**

Challenges

4.28 One of the key challenges faced by the project was the multiple lockdowns and restrictions over 2020 and 2021 as a result of the Covid-19 pandemic. This had an impact on SME activity in terms of completing projects and research work, however activity significantly progressed throughout the quarter with all University labs reopened.

4.29 The greatest challenge cited by beneficiaries related to project timescales and delays as well as the administrative requirements at times being onerous. Another challenge cited by a beneficiary business was industry specific knowledge gaps with the research staff on their research collaboration project. It should be noted, however, that over half of beneficiary businesses surveyed indicated that there were no challenges with the support that they received.

'At times we found communication around populating the bill of materials and breaking down the different project stages to be a bit difficult. So, in this sense, the challenge would be the demand on our time to collate and sometimes re-collect information during a very busy period that fell at the same time as the research project.' – **AIC Beneficiary**

'There were some delays when we had to go through the SME authorisation process.' – **AIC Beneficiary**

'Timescales could be shorter, some of the administration was quite long winded.' – **AIC Beneficiary**

‘Formal reporting on progress more often would have been helpful certainly.’ – AIC Beneficiary

‘Within the project, at times we felt that more industry-specific knowledge for the researcher would have benefited the project so that we could be a bit more guided through new territory for us.’ – AIC Beneficiary

Good practice

- 4.30 Regular contact with academic expertise across the University helped to develop close working relationships. The project team’s communication and fostering of relationships with internal and external colleagues of the benefits the AIC facility helped to promote the project, this was also aided by the AIC’s involvement in a number of climate action campaigns and attending industry events.

Contribution to ERDF cross-cutting themes

Environmental Sustainability

- 4.31 Environmental sustainability is a theme throughout out the delivery and operations of the AIC, given the nature of the project objectives towards low carbon and green innovation. The project leads by example, implementing environmentally sustainable processes as much as possible.
- 4.32 The AIC building and its operations is an exemplar of a low carbon build and has been certified with BREEAM Excellent rating. Environmentally beneficial actions considering energy use, waste and resource efficiency include:
- Energy use: solar panels on the roof and movement sensor lighting;
 - Waste reduction: Recycling stations;
 - Sustainable travel: bike storage, electric car charging and considering a pool electric vehicle for the team to use;
 - Office practices such as not using single use plastics for events, minimising printing via careful planning of marketing collateral, using digital where possible and only use FSC paper.
- 4.33 A ‘green investment’ programme was implemented partway through delivery to reduce carbon emissions, including installation of solar panels, energy efficient lighting and hand dryers and water conservation devices and technology the AIC and the wider University of Hull campus. The AIC was also added to the University system for disposing of waste in as close to carbon neutral way as possible.
- 4.34 Across the research programme all projects have environment sustainability at their core. Examples include:
- Facilitating reforestation;
 - Exploring geothermal feasibility;
 - Reducing the use of chemicals in farming practices;
 - Utilising carbonaceous waste for feedstock;
-

- Improving air quality;
- Reducing waste in plastics production processes;
- Advanced plastics recycling e.g. 3D printing filament;
- Reducing carbon emissions from transporting goods: smaller, lighter goods, closer to point of sale.

Equality and Diversity

- 4.35 The project operates with consideration to equal opportunities, the University has a wide range of infrastructure, policies, and action plans in place, supporting day-to-day work practice. The project is underpinned by the University's Equality and Diversity Policy alongside support from the Equality and Diversity Advisor.
- 4.36 The AIC has been built with equality and diversity in mind and has dedicated disabled parking bays, disabled access toilets, lift access to each floor, along with refuge areas and an Evacuation Chair in case of emergencies.
- 4.37 New staff receive equalities and diversity training as part of their induction. In-depth on-line training is undertaken by all staff, with refresher training every 2 years. Those involved in recruitment must have received recruitment & selection training (including mandatory requirements around equalities & diversity legislation), and equalities & diversity training, prior to interviews taking place. All AIC Team staff therefore have a good understanding of equality and diversity issues in undertaking their roles on the project and have all attended the University Central Induction Day during which a session focussed specifically on equality and diversity.

Chapter Summary:

- The project faced initial setbacks as the opening of the centre and initial stream of business support activity coincided with the Covid-19 pandemic which brought about initial delays;
- The project adapted well to the changing way of working presented by Covid-19, adopting safe working practices which adhered to government guidance to ensure that the centre and support could go ahead;
- Despite the unprecedented backdrop of challenges faced throughout the project delivery, the AIC project was considered by beneficiaries, project staff, academic users, and wider stakeholders as being overwhelmingly successful;
- The delivery model for support is considered appropriate and helped to deliver high-quality support that appropriately responded to the needs of beneficiary businesses. Beneficiaries felt that the support was comprehensive and easy to understand;
- The AIC project established positive and lasting relationships between academics and businesses, with many beneficiaries indicating that they had or intend to continue working with the academic they received support from or using the AIC facilities in the future;

- The project was considered to be effectively managed by the team, delivering a clear strategy underpinned by a common understanding of the targets and route to achievement. The project benefitted from positive leadership as well as tried and tested management processes for ensuring administration was as smooth as possible aiming to reduce the burden;
- The project management information systems and 'Auracle' CRM system proved to be useful for effective monitoring and reporting, capturing user engagement and progress for business development and management purposes.
- Marketing and recruitment processes were well established, with the AIC working closely with key stakeholders to signpost support to potential beneficiaries. Strong relationships benefitted the project and ensuring initial buy-in.
- The AIC facility provided a 'front door' to the University and showcase the potential support on offer. The AIC's dedicated website and active social media presence also provided a professional gateway to prospective beneficiaries in understanding the support available and case study examples, with the website and social media pages generating significant traffic throughout the project delivery;
- The existing processes and policy systems in place at the University of Hull ensured that the project operated effectively within the consideration of ERDF cross-cutting themes. The project led by example in terms of environmental sustainability, implementing environmentally sustainable practices and processes such as waste reduction and efficient energy usage. The University-wide Equality and Diversity Policy was accorded to throughout the delivery of the project.

5.0

Outcomes and Impact

5.1

This chapter looks at the outcomes and impact of the AIC project. It covers:

- The impact upon beneficiaries and programme team, as gleaned from the e-survey and consultations;
- The potential wider impacts;
- The potential to maximise future outcomes;
- The potential for outcomes to have occurred without the programme (counterfactual);
- Economic impact assessment; and
- The strategic added value

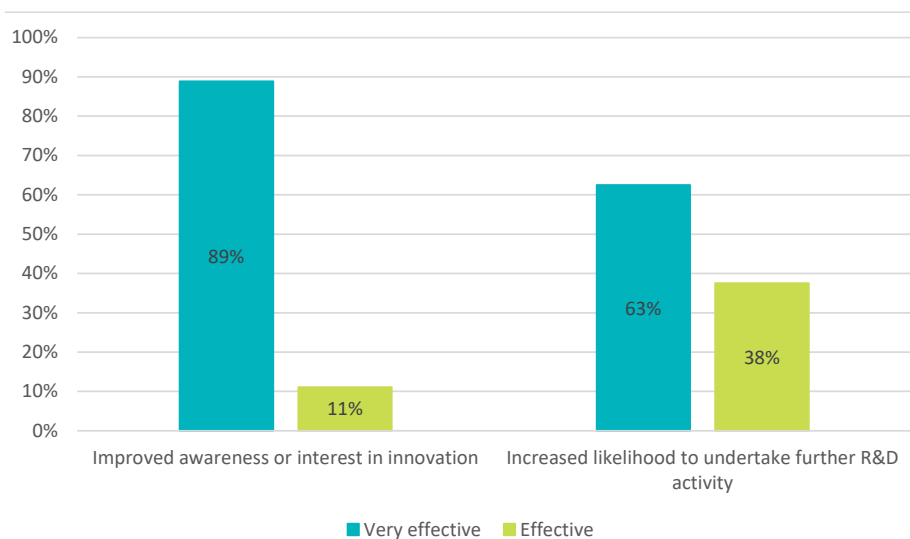
Outcomes and impacts for beneficiaries

Improved awareness and appetite for innovation

5.2

One of the key outcomes of the AIC support has been the increased engagement in innovation activity from businesses within the Humber LEP area. All supported beneficiaries reported that the project had been effective in improving their awareness and interest in innovation activity, with all of these also reporting that they would be more likely to undertake further R&D activity.

Figure 5.1 Awareness in innovation



Source: Beneficiary e-survey

Improved Environmental Performance

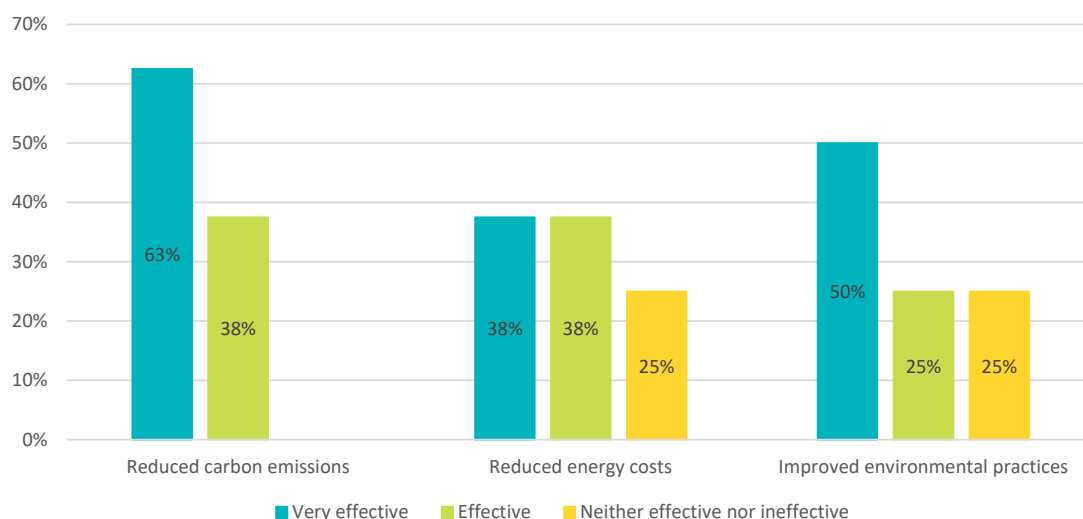
5.3

The AIC successfully supported beneficiary businesses to reduce their carbon emissions, which in turn contributed to reduced energy costs at a time where many businesses have faced significant rises in energy costs. All beneficiary respondents highlighted that the project had been very effective or effective in helping to reduce carbon emission. Similarly,

three-quarters of beneficiaries believed the AIC project had been effective in reducing energy costs and improving their environmental practices.

‘A greater understanding of the implications to our business regarding Climate Change. Attended the Climate Change Essentials course.’ – AIC Beneficiary

Figure 5.2 AIC contribution to improved environmental performance and costs

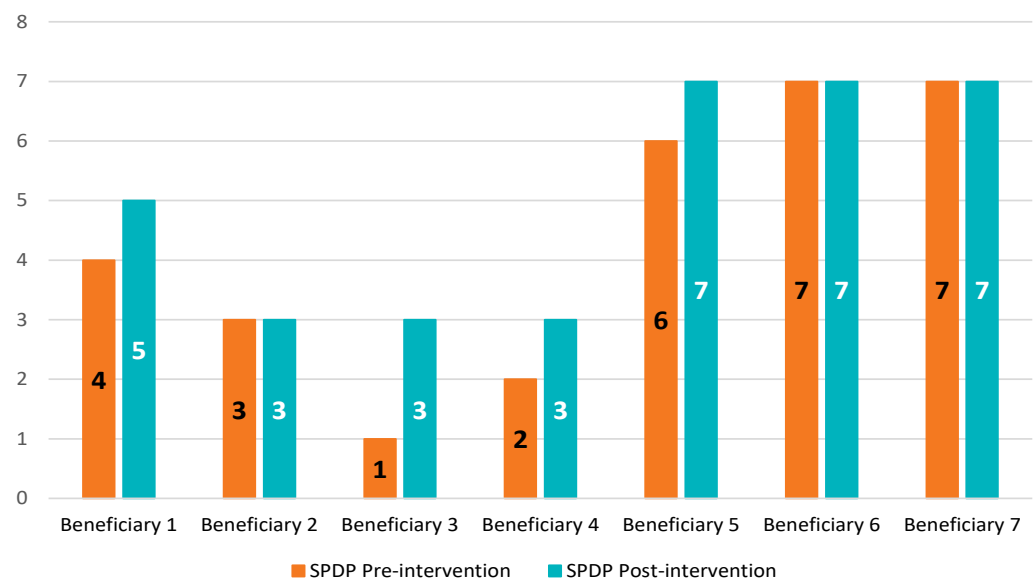


Source: Beneficiary e-survey

Supporting Product/Process Development

- 5.4 The AIC support helped businesses to develop further their products and processes, beneficiaries were asked to identify what SPDP level they were at prior to AIC intervention and what level they are at following support from the project. Beneficiary businesses reported increases in the commercial stage of products and processes, highlighting that the project successfully supported with bringing products closer to market. Many beneficiary businesses suggested that they lacked the in-house capacity and capabilities and that the AIC had been vital in helping to bridge those gaps.
- 5.5 The AIC has supported many businesses to develop a wide range of technologies and products including:
- Immersive and VR;
 - EV fleet technologies;
 - Transport and logistics innovations;
 - Sustainable agriculture;
 - Nanofibers; and
 - Microplastics.
-

Figure 5.3 Standard Product Development Process Level Pre-intervention and Post-intervention

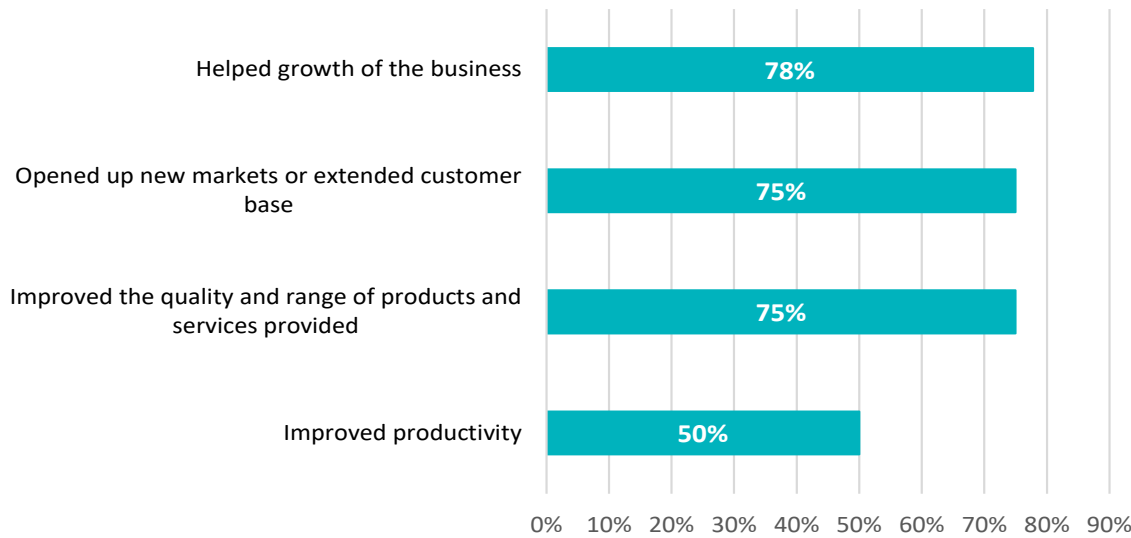


Source: AIC Beneficiary Survey

Business Impacts

5.6 The AIC positively contributed to beneficiary businesses achieving a number of business impacts. Over three-quarters (78%) of respondents indicated that the AIC support had helped them to achieve growth within the business in terms of turnover and employment. Similarly, three-quarters of beneficiary respondents reported opening up new markets or extending their customer base, as well as improving the quality and range of products and services provided. Half of respondents indicated that the project had led to improved productivity.

Figure 5.4 Business Impacts

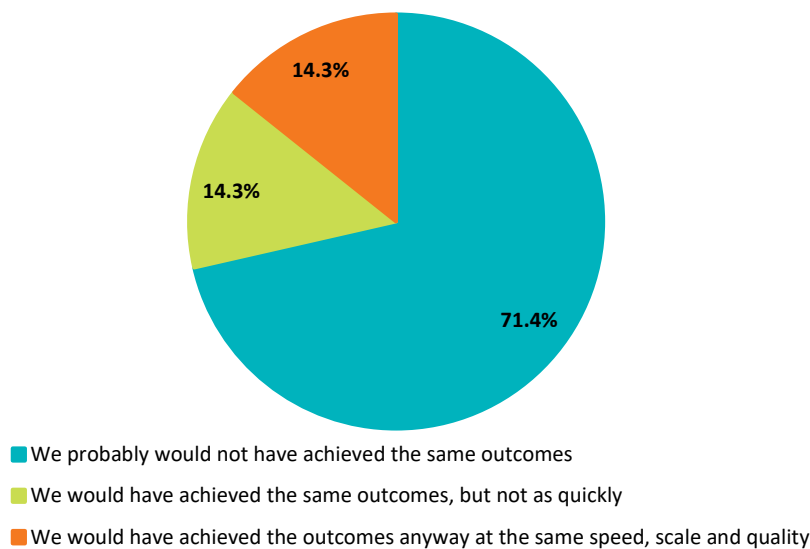


Source: AIC Beneficiary Survey

Counterfactual

5.7 Businesses were also asked to identify whether they would have achieved the same outcomes in absence of AIC support. Beneficiary businesses overwhelmingly (71.4%) indicated that they would not have achieved the same outcomes without support, a number of beneficiaries indicated that they would have achieved the same outcomes but not as quickly, suggesting that the project helped to accelerate businesses in achieving desired objectives.

Figure 5.5 Likelihood to achieve outcomes in absence of AIC support



Source: AIC Beneficiary Survey

‘AIC helped manage and fund a research project to determine the emissions associated with last mile parcel deliveries to home or to a collection point.’ – AIC Beneficiary

Outcomes and impacts for the project team and stakeholders

- 5.8 Consultation with the project team, academics, and wider stakeholders identified key outcomes and impacts of the AIC from the perspective of representatives of the organisations involved directly with the AIC.

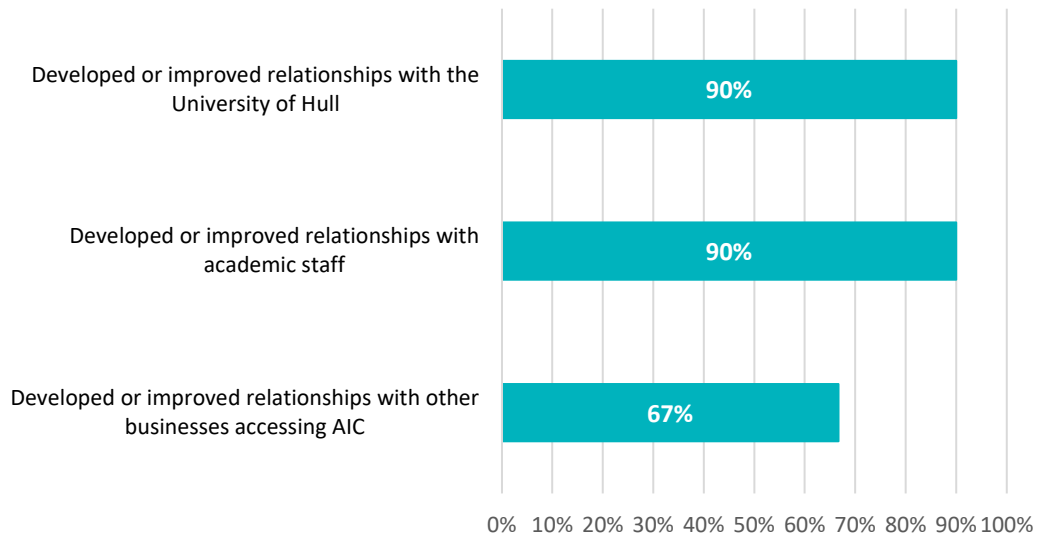
Improved Academia-Industry Relationships

- 5.9 One of the key outcomes of the AIC project for the project team and stakeholders has been the new, and improved, relationships fostered between the University and industry partners as well as business-business relationships helping to support and foster supply chain relationships.
- 5.10 Almost all beneficiary respondents suggested that they had developed or improved relationships with the University of Hull as well as academic staff delivering research collaboration support. Similarly, a large number of beneficiaries indicated that they had continued to work with the AIC beyond their initial support, suggesting that lasting relationships had been support through the project.

'Development of collaborative links with local SMEs. Produced first level of research capabilities.' – **Academic**

'Thanks for the AIC support which has enabled a number of vital links to industry, resulted to the very profitable collaborations. In particular I am very pleased with links creation and a project management on the collaboration with E4Structure Ltd. This has allowed expansion of my business network and the technology development at higher TR level.' – **AIC Beneficiary**

Figure 5.6 Business relationships



Source: AIC Beneficiary Survey

Raising the Humber's Profile

5.11 The AIC has been selected many times to host delegates on international trade missions to the area. This highlights the AIC's importance to the Humber's low carbon proposition, as well as its role as a physical focal point for the industry. These events provide opportunities for international delegates to network with UK-based businesses, to learn more about the success of the of the Humber as a location for low carbon investment and to showcase the AIC's role in delivering this success. This makes a significant contribution towards raising the profile of the Humber amongst prospective inward investors, increasing the likelihood of the area being included on initial 'longlists' for future investment opportunities.

5.12 Since the start of 2022, the AIC has hosted:

- Delegation of American State Senators (2023);
- Delegation from Enterprise Singapore (October 2022);
- Department for International Trade offshore wind event attended by representatives from the USA, Norway, Brazil and Germany (June 2022); and
- Delegation from South Korea (June 2022).

5.13 The AIC has positively contributed to raising the profile of the Humber, acting as a key asset for the area in terms of supporting innovation and low carbon ambitions. Consultations with the project team and stakeholders suggested that the AIC had developed a strong, recognisable, and respectable brand and that the project delivery was well-aligned with policy and strategy ambitions.

'Yes - a huge amount of reputation, direct and indirect income as well as a powerful brand in the academic and industry communities in Aura which is respected and recognised.' – **AIC Stakeholder**

'Overall – very successful project, well thought through, built upon previous funding projects, aligned with policy and strategy, lots of projects come in off the back of the project.' – **AIC Stakeholder**

Wider outcomes and impacts

- 5.14 The AIC also had a contributed to a number of wider outcomes and impacts which are detailed in the following paragraphs:

New Market Opportunities

- 5.15 The AIC assists Humber SMEs in identifying opportunities to penetrate the low carbon supply chain. 'Meet the Buyer' events hosted by the AIC help to stimulate ideas regarding how products/technologies can be amended or repurposed to meet the needs of low carbon businesses. Networking events help to identify potential synergies between different organisations' products/activities which, through collaboration, could respond to a challenge or opportunity facing low carbon industries.
- 5.16 This activity is important. However, the AIC's real added value lies in providing the expertise and research facilities to develop new products/refine existing products to respond to identified market opportunities. This enables local businesses to expand into new market spaces and – as a result – create new revenue streams.
- 5.17 The AIC facility has been accessed more widely beyond those beneficiaries directly engaged in the AIC ERDF programme. Table 5.1 below highlights usage of the AIC since opening in 2020, the numbers have grown year-on-year supporting the AIC's ambitions of facilitating collaboration between SME's and University research base. In total, 323 SME's have been engaged over the period through events at the AIC additional to the other ERDF projects.

Table 5.1 AIC usage 2020-2022

	2020	2021	2022
Meetings and events	116	199	316
Attendees	533	1,649	3,779
Visitors to AIC	612	1,194	2,400

Source: AIC monitoring information

Supply Chain Opportunities

- 5.18 The Humber's low carbon cluster includes major inward investors with large supply chains. This creates significant opportunities for local businesses to increase their revenues. However, established supply chains can be difficult to penetrate, whilst the procurement requirements of the large OEMs – which can be more rigorous than SMEs are used to – can also represent a barrier.
- 5.19 Support provided by the AIC has played a key role in better positioning Humber SMEs to access supply chain opportunities. This relates to opportunities in the low carbon cluster and those linked to the significant programme of investment in flood defences taking place across the area. Aura's work is primarily focussed on technical innovation, ensuring that SMEs understand the challenges facing the low carbon cluster and collaborating with them to explore how these can be addressed. 'Meet the Buyer' events hosted by Aura help to
-

support this work, by helping SMEs to better understand: the issues OEMs are working to resolve or capitalise on; and the scale of the market opportunity.

Inward Investment

- 5.20 The AIC is one of the first purpose-built facilities tailored to the specific needs of low carbon innovation. It represents a nationally significant R&D asset, as well as providing a physical focal point for the low carbon sector in the Humber. As a result, the AIC has played a key role in strengthening the Humber 'brand', as well as the proposition that the HEYLEP and local authority partners put forward when competing to land new inward investment.
- 5.21 In addition, Aura has helped to strengthen the appeal of the Humber as a location for low carbon investment by playing a critical role – in collaboration with Marketing Humber – in creating a unique innovation ecosystem. This has been achieved by bringing together large industrial businesses, SME supply chains and key academic scientists with a focus on low carbon innovation. BP, a significant player in the Humber's chemicals sector, were part of a global network of investors facilitated by HSBC's international sustainable finance team. This impressive network of investors comes together several times a year at the London HQ of HSBC. The group represents over 50 different funders, covering the full financial spectrum of investment, from SEED capital, Venture and Debt finance. Aura was invited via BP to join this group and present some of the emerging projects in the Humber as examples of new technologies being incubated within the new and emerging green sector.
- 5.22 The investor network had particular interest in investing not just in technologies and specific green projects, but instead looking increasingly for 'green places' where there is a critical mass of innovation activity via a green investment cluster. The network described significant value in regions like the Humber and the way in which Aura and Marketing Humber had curated the emerging projects and how they have come about via the collaboration of the AIC. It was seen as a way of de-risking green investments, and many felt the model of Aura should be deployed in other areas of the UK and Europe.
- 5.23 The positive impact of Aura can be seen in the key role that it has played in facilitating inward investment by major OEMs including Siemens Gamesa and Ørsted, as well as the wider Green Port Hull initiative. This is considered further below:
- **Siemens Gamesa:** has invested a total of £500 million in developing a state-of-the-art offshore wind turbine manufacture, assembly and servicing facility in Hull, creating more than 1,200 direct jobs.³ As part of the negotiation process, Siemens Gamesa identified the need for a low carbon innovation centre in the Humber to help de-risk their investment and support the development of a low carbon supply chain. Aura and the AIC were delivered in response to this commitment and were therefore central to Siemens Gamesa's decision to locate in Hull.
 - **Ørsted:** has invested in a state-of-the-art East Coast Hub, with 400 staff, located in Grimsby. The Hub provides a base for the installation and maintenance of Ørsted's offshore wind farms, which include Hornsea One and Two (the largest offshore wind farms in the world). It is estimated that the company has invested in – or enabled – investment in infrastructure and assets totalling £9.5 billion and contributed £816

³ <https://greenporthull.co.uk/what-we-do/siemens-gamesa>

million of GVA to the Humber economy over the past decade⁴. A senior leader from Ørsted became a founding member of the Aura Advisory Board.

- **Green Port Hull:** the Green Port Hull initiative was catalysed by investment by major OEMs such as Siemens Gamesa and Ørsted. The *Green Port Impact Assessment Report*, published in 2018 estimated that Green Port Hull had created or safeguarded almost 3,600 jobs in the Humber and generated more than £150 million in additional GVA.

AICs Added Value

5.24

AIC's focus on providing support to SMEs, where levels of innovation are typically lower⁵, makes an important contribution to unlocking R&D in the Humber. The role played by Aura in addressing some of the key barriers to innovation is summarised below:

- **De-risking innovation:** the AIC provides a hub for facilitating innovation activity, as well as access to leading-edge technologies that might otherwise be cost prohibitive for businesses to purchase in order to test/prove a product.
- **Access to dedicated R&D space:** the AIC provides access to dedicated, purpose-built spaces, allowing SMEs to outsource innovation activity. This helps to minimise the risk of disruption to production lines.
- **Access to specialist advice/expertise:** partnering with the AIC allows SME businesses to benefit from academic expertise and industry experience (including within some of the largest companies in the Humber) which may not be available in-house.
- **Networking and knowledge sharing:** by providing dedicated spaces to network and collaborate, Aura helps to bring together businesses with an interest in the low carbon economy. This encourages them to exchange ideas and explore potential synergies/opportunities for joint working which help to stimulate innovation.
- **Commercial focus:** SMEs typically favour rapid solutions to challenges and this can conflict with the tendency of academics to work to longer timescales. By bringing together academia and industry – and placing a clear focus on advancing the Technological Readiness Level (TRL) of products and processes – the AIC provides a commercially-focussed approach to innovation.

Chapter Summary:

- The AIC project supported beneficiaries in improving their awareness and interest in innovation activity as well as increasing likelihood to undertake further R&D activity;
- Beneficiary businesses reported improvements in environmental performance through reduced carbon emissions, energy costs and improved sustainable practice;
- The AIC project helped beneficiary businesses to further develop their products and processes, helping to bring products closer to and closer to market;

⁴ *Economic Impact Study of Ørsted Investments in the Humber region (2022)*

⁵ *UK Innovation Survey 2021* found that 44% of SMEs were innovation active between 2018 and 2020, in comparison with 58% of large businesses

- The AIC support positively contributed toward business impacts, including employment and turnover growth, productivity gains, improving the quality and range of products and services as well as opening access to new markets;
- The counterfactual evidence indicates that the majority of beneficiaries supported would not have achieved the same outcomes in absence of the support, either at all or at the same pace;
- The AIC project was considered by the project team and stakeholders to have improved relationships between the University and industry. A number of beneficiaries indicated that they had continued working with the project academic beyond their support, indicating that the project has been successful in fostering lasting relationships;
- The AIC has helped to contribute towards raising the Humber profile as a place of excellence for low carbon innovation. The AIC has hosted events and conferences of significant importance to the region, supporting inward investment ambitions;

6.0 Economic Impact Assessment

- 6.1 This section provides a detailed step by step approach to the assessment of economic impacts owing to the project delivery. As per government guidance, both gross and net impacts are calculated. In order to calculate net impacts each factor of additionality is considered.

Benefits arising from AIC support

- 6.2 To estimate the impact of the whole project on the Humber LEP economy, the estimates from the sample of AIC survey responses are extrapolated to all 74 businesses that are expected to be supported by the project as per the latest completed ERDF claims data.
- 6.3 GVA impacts have been calculated using a 'turnover route to GVA' method. This is a common approach which aims to capture the GVA impacts associated with business support interventions.

Turnover route to GVA: Change in beneficiary turnover is captured and the factors of additionality are applied. This turnover is then converted to GVA using a ratio of £ of GVA per £ of Turnover. A national ratio of 0.62:1 used in the assessment is calculated using ONS Annual Business Survey data.

Gross Change

- 6.4 The first step of the impact assessment is to calculate the gross change by comparing businesses current employment and turnover with the baseline position prior to receiving support from AIC. Table 6.1 provides details of the average gross employment and turnover change, as observed from pre-intervention to present.

Table 6.1 Gross Change in Employment and Turnover

Employment	FTE
Average employment uplift per business	7.7%
Average gross increase in employment per business (considering baseline employment data in monitoring data)	2.60 FTE
Total gross uplift in employment (extrapolated to 74 business's)	194.9
Turnover	£
Average turnover increase per business	4.3%
Average gross increase in turnover per business (considering baseline turnover data in monitoring data)	£209,000
Total gross uplift in turnover (extrapolated to 74 business's)	£15.5 million

Source: AIC Business Survey

- 6.5 Across respondent businesses, AIC beneficiaries reported an uplift in employment of 7.7%, when considering the wider baseline turnover data of beneficiaries within project monitoring information data this translates to an average gross uplift of 2.60 FTEs per supported beneficiary. Extrapolating this to the 74 beneficiaries supported by the AIC project results in an estimated gross uplift of 194.9 FTEs.
-

6.6 Across respondent businesses, AIC beneficiaries reported an uplift in turnover of 4.3%, when considering the wider baseline turnover data of beneficiaries within project monitoring information data this translates to an average gross uplift of £209,000 per supported beneficiary. Extrapolating this to the 74 forecast beneficiaries is equivalent to a gross turnover uplift of almost £15.5 million.

Additionality

6.7 In keeping with government guidance, this impact analysis considers the following additionality factors:

- **Deadweight:** Outputs/outcomes that would have been secured anyway without support from the project;
- **Displacement:** Existing business activities in the area that no longer take place due to the project;
- **Leakage:** Benefits that accrue outside of the area of impact being considered.
- **Multiplier Effects:** Further economic activity associated with additional income and supplier purchases.

6.8 To account for these factors, the business survey incorporated questions relating to the additionality of job creation and turnover impacts. This included their judgment about the level of attribution in terms of report growth in employment and turnover as a result of the support, as well as the location of their staff, competitors and customers.

6.9 It should be noted that survey respondents often find it difficult to quantify and estimate employment or turnover change attributable to any business support received. On this basis, the additionality factors are benchmarked against additionality estimates from recognised secondary sources based on meta studies for business support interventions. These authoritative sources are HCA Guidance and BEIS Research. This process seeks to sense check assumptions.

6.10 The HCA and BIS reports are both ‘meta-analyses’ drawing on a large number of studies to report typical values, as well as indicating the range of higher or lower estimates.

Table 6.2 Economic additionality factors and benchmarking

Additionality Factor	AIC Survey (May 2023)	‘Ready Reckoners’ Additionality Guide (2014)	BIS Additionality Research (2009)
Deadweight – Employment	83.6%	Above beneficiary survey average (36%)	Mean, Regional, Business development & Competitiveness: 47.2%

Additionality Factor	AIC Survey (May 2023)	'Ready Reckoners' Additionality Guide (2014)	BIS Additionality Research (2009)
Deadweight – Turnover	85.7%	Above beneficiary survey average (36%)	Mean, Regional, Business development & Competitiveness: 47.2%
Displacement	19.5%	Below Low (25%)	Mean, Regional, Business development & Competitiveness: 19.5%
Leakage – Employment	25.0%	Above Medium (25%)	Mean, Regional, Business development & Competitiveness: 16.3%
Leakage – Turnover	16.3%	Above Medium (25%)	Mean, Regional, Business development & Competitiveness: 16.3%

Source: HCA / BIS / Lichfields analysis

- 6.11 Our estimate of deadweight for AIC is 83.6% for employment and 85.7% for turnover. Table 6.2 would suggest that these values are somewhat high compared to national benchmarks. It should however be noted that attribution ranged from 0% through to 50% and the average deadweight figure above presents the average of the sample. Individual impacts are calculated on a business-by-business basis and are extrapolated to the population in the aggregated analysis.
- 6.12 The displacement adopted is a proxy value from the BIS guidance, therefore the value adopted is in line with meta-analyses of comparable interventions.
- 6.13 Leakage of impacts for the AIC project are comparable to regional estimates for similar business support interventions, at 25.0% for employment (derived from e-survey responses) and 16.3% for turnover (applying a BIS sub-regional proxy). As could be expected, leakage figures are relatively low, which can be attributed to the wide geographical area being assessed (encompassing the Humber LEP), meaning benefits are less likely to 'spill out' into other areas.
- 6.14 As well as the additionality factors described above, it is also important to consider for multiplier effects, which capture the indirect impacts in the economy. The multiplier used in this analysis is taken from HCA additionality guidance (2014) which suggests a multiplier of 1.25 at the sub-regional level for 'Business Development and Competitiveness' interventions.

Net additional impacts and forecasted impacts

- 6.15 Once the additionality factors above are applied, the net additional impacts can be derived. Where an individual survey respondent has not provided response data to additionality factors, averages from the wider sample are used as proxy values. The estimated net additional FTE and GVA impacts that have been realised to date, and those anticipated, are given in Table 6.3. To reflect the degree of estimation, these figures are rounded.
- 6.16 Based on AIC beneficiary responses, a net additional employment figure of 0.3 FTEs per business supported is estimated. In addition, considering anticipated future employment,

forecasted employment benefits are estimated at an additional 0.3 FTEs per business supported.

- 6.17 Extrapolating the above to the total number of businesses assisted through the AIC project translates to current net additional impacts of 24.2 FTEs and future net additional impacts of 21.2 FTEs. This results in a combined immediate uplift of 45.4 FTEs resulting from the project support.
- 6.18 Average net turnover per business is estimated at £25,000 for current benefits, based on beneficiary response data for the most recent full financial year. Applying a national GVA:Turnover ratio of 0.62 (from ABS data) translates to an average GVA uplift of £15,700 per supported business. Considering forecasted turnover data based on future order book, a further GVA uplift of £53,700 per business supported is anticipated within the next financial year.
- 6.19 Extrapolating the above to the total number of businesses assisted through the AIC project translates to a current net additional GVA impact of £1.1 million and future net additional GVA impacts of £4.0 million. This results in £5.2 million of GVA impacts resulting from the project support. This provides a conservative estimate of the potential impacts of the project. This is because further future impacts over a wider time-horizon that may be positively influenced by the project are not captured.

Table 6.3 AIC net economic impact

Employment	FTE
Current net additional employment per business (FTE)	0.3
Current net additional employment impact (FTE) (Extrapolated to 74 business assists)	24.2
Forecast net additional employment per business (FTE)	0.3
Forecast net additional employment impact (FTE) (Extrapolated to 74 business assists)	21.2
Total net additional employment	45.4
Turnover	£
Current net additional turnover per business	£25,200
Current net additional turnover impact (Extrapolated to 74 business assists)	£1.9 million
Forecast net additional turnover per business	£86,200
Forecast net additional turnover impact (Extrapolated to 74 business assists)	£6.4 million
Total net additional turnover	£8.2 million
GVA	£
Current net additional GVA per business	£15,700
Current net additional GVA impact (Extrapolated to 74 business assists)	£1.1 million
Forecast net additional GVA per business	£53,700
Forecast net additional employment impact (Extrapolated to 74 business assists)	£4.0 million
Total net additional GVA	£5.1 million

Source: Lichfields analysis

Benefits arising from AIC construction

Direct Employment

- 6.1 The procured construction cost for the AIC totalled £5.8 million. Using labour coefficients from the Housing and Communities Agency ('HCA') Calculating Cost per Job Best Practice Guidance Note (2015) it is possible to estimate the number of direct construction jobs supported by the Proposed Development over the course of the construction phase. Taking account of the composition of the AIC, as a 'private commercial' coefficient is considered the most appropriate for calculating the number of direct construction jobs. This coefficient assumes that £1million of construction value (in 2011 prices) will support 10.0 direct Full-Time Equivalent ('FTE') construction jobs per annum.
- 6.2 To use the coefficient, the construction cost of £5.8 million has been deflated to 2011 prices using the latest UK Government GDP Deflator (2023). Applying the private commercial coefficient to the deflated construction cost of £5.2 million and then dividing the result by the length of the construction phase (1 year), indicates that the construction of the AIC could be expected to have supported 85 gross direct FTE jobs over the construction phase.

Indirect Employment

- 6.3 Construction typically involves purchases from a range of suppliers who, in turn, purchase from their own suppliers further down the supply-chain. The relationship between the initial direct spending and total economic effects is known as the 'multiplier effect', which demonstrates that an initial investment can have a larger economic impact as this expenditure is diffused through the economy. The construction sector is recognised as being a part of the UK economy where there is a particularly large domestic benefit in the supply chain.
- 6.4 In this context, businesses in the Humber LEP and the wider region are expected to have benefited from trade linkages established during the construction phase of the development. As a result, further indirect jobs are likely to have been supported in the impact areas through suppliers of construction materials and equipment.
- 6.5 Using ONS Input-Output Tables (2016) as a base, Lichfields has calculated the number of indirect FTE jobs per annum that are likely to have been generated in the construction of the AIC. Taking account of the one-year construction period, the AIC is estimated to generated 95 indirect temporary FTE jobs in total (person years).
- 6.6 It should be noted that the above analysis is based upon the application of a Type I multiplier⁶ and therefore makes no allowance for any induced employment effects associated with the AIC; that is, jobs generated within the local economy as a result of expenditure by those in direct or indirect employment associated with the AIC's construction. On this basis, the total employment effect derived above is considered to represent a conservative estimate.

⁶ Type I multipliers consider the indirect effects which arise through an increased output within the supply chain

Total Employment

- 6.7 Having regard to the preceding paragraphs, it is estimated that the construction of the AIC could have supported approximately 180 direct and indirect FTE jobs. A breakdown of the full calculation is presented below in Table 6.4.

Table 6.4 AIC construction employment impact

	Employment (FTE)
Direct Employment	85
Indirect Employment	95
Total Employment	180

Source: Lichfields analysis

Economic Output

- 6.8 The net additional jobs supported by the construction of the AIC also generated additional economic output (Gross Value Added ('GVA')). GVA is a commonly used measure of productivity and economic performance. It represents the difference between what is produced as output (goods and services) and the inputs required to support the production of those outputs (e.g., raw materials, semi-finished products etc.) In measuring economic growth, economists typically assess the quarterly (or annual) change in GVA for a given area.
- 6.9 Based on recent Experian data (2023), the construction sector in the Yorkshire and Humber region is estimated to generate an average GVA per FTE worker of £61,130 per annum. Applying this to the direct employment effects of the scheme, it is estimated that the construction of the AIC could have generated £5.2 million of direct GVA. Applying an indirect GVA multiplier for the construction sector of 2.20⁷ to the direct GVA above, it is estimated that a total of £6.3 million of wider direct and indirect GVA. A summary of the resultant construction related GVA is highlighted in Table 6.5.

Table 6.5 AIC construction GVA impact

	GVA
Direct GVA	£5.2 million
Indirect GVA	£6.3 million
Total GVA	£11.5 million

Source: Lichfields analysis

Total economic impact

- 6.10 The aggregate economic impact of the AIC project considering the capital development of the centre and the revenue business support is summarised in Table 6.6 below. The combined impact of the project is estimated to have supported the creation of 253.4 FTE jobs and £16.6 million of GVA. This is a significant contribution to the Humber economy, creating job opportunities and supporting towards economic output.

⁷ ONS UK input-output analytical tables – industry by industry

Table 6.6 Aggregate AIC project impacts

	Impact
Net additional employment (FTE)	253.4
Net additional GVA	£16.6 million

Source: Lichfields analysis

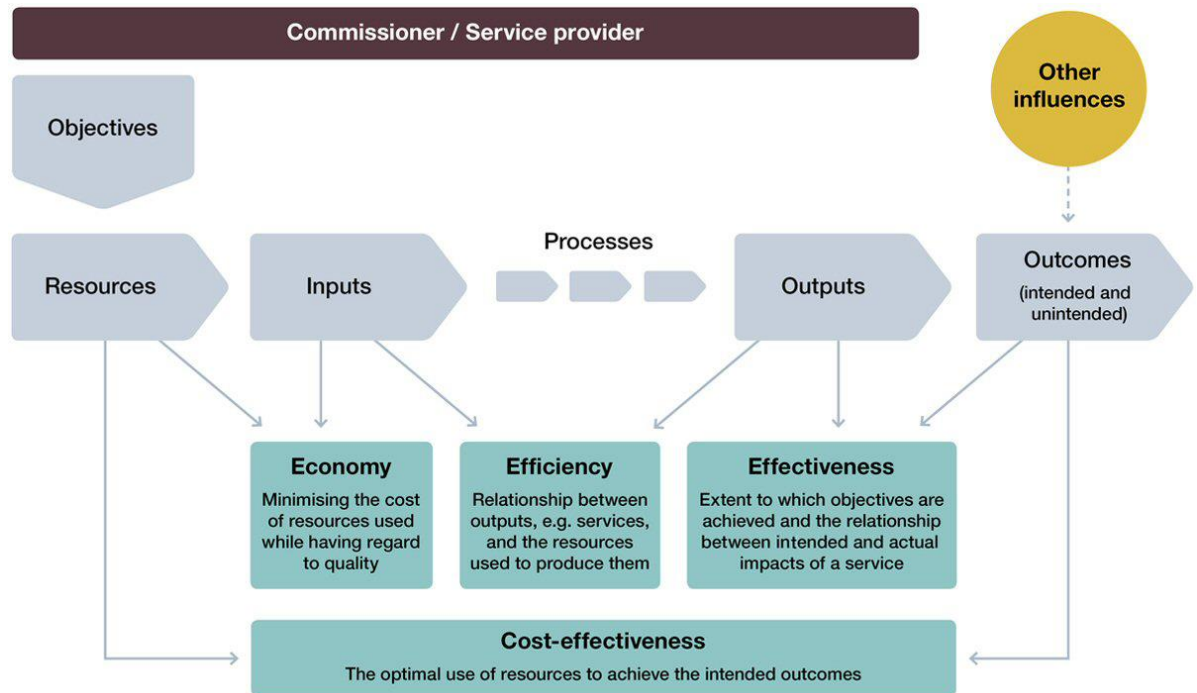
Chapter Summary:

- The AIC project has delivered significant economic impacts to Humber economy, in terms of creating employment opportunities and economic output;
- The AIC project is estimated to have created 253.4 FTE jobs, including 43.4 FTEs through business support activity and 180 FTEs throughout the construction phase of the facility within the contracted firm and through the wider supply chain;
- The AIC is estimated to have delivered £16.6 million of GVA to the Humber LEP, including £5.1 million of GVA from business support activity as well as £11.5 million through the construction phase.

7.0 Assessing value for money

- 7.1 This section provides an overview of the value for money provided by AIC. The approach to assess value for money draws on the National Audit Office definition, and is underpinned by three principles, namely: economy (spending less); efficiency (spending well); and effectiveness (spending wisely), as illustrated below.

Figure 7.1 Value for Money assessment framework



Source: National Audit Office

Economy

- 7.2 The AIC project team worked hard to ensure value for money was achieved throughout the project delivery. The project benefitted from the established processes put in place by the University, routinely gathering 3 quotes and utilising competitive tendering when procuring project materials and services. The reduced capital development cost is testament to this process ensuring that the most economically advantageous option was pursued.

- 7.3 As well as this, academic experts linked with the AIC provided guidance on the most appropriate technical equipment to install within the centre, ensuring that the investment in such equipment provides value for money and optimises utilisation.

Efficiency

- 7.4 The AIC project has been benchmarked against meta-analyses of previous business support interventions to compare the cost efficiency in terms of cost per output. For the purpose of this assessment both ERDF total contributions (covering both capital and revenue) as well as ERDF revenue contribution in isolation are highlighted. This seeks to avoid overinflating
-

cost per output figures compared to the meta-analysis, for which the majority of these projects will not have had a capital element.

- 7.5 Table 7.1 shows the overall outputs and input costs per output for the programme as at Q4 2022 as well as the forecast figures at project completion. The results show that relative to revenue ERDF contributions the unit cost per output of the AIC project is in line with national benchmarks across all indicators. As would be expected, when considering the total ERDF contributions, the unit cost per output is significantly higher.

Table 7.1 Cost per output analysis – benchmarked against national meta-analysis

Output indicator	Actual performance to date	Projected outputs	Regeneris national research
C1: Number of enterprises receiving support	49 – Unit cost of £79,643 (total) £33,039 (revenue)	74 – Unit cost of £66,245 (total) £35,196 (revenue)	Mean unit cost of £34,000 based on 623 studies
C5: Number of new enterprises receiving support	4 – Unit cost of £975,632 (total) £404,734 (revenue)	11 – Unit cost of £445,672 (total) £236,770 (revenue)	Mean unit cost of over £200,000 based on 24 studies
C29: Number of enterprises supported to introduce new to the firm products	24 – Unit cost of £162,605 (total) £67,456 (revenue)	26 – Unit cost of £198,731 (total) £100,172 (revenue)	Mean unit cost of £94,000 based on 78 projects

Source: Lichfields analysis / Regeneris national evaluation

Effectiveness

- 7.6 To provide an assessment of the effectiveness of the intervention and ERDF funding contribution, cost per net additional job and Benefit Cost Ratio (BCR) metrics are calculated. Table 7.2 below demonstrates that the AIC project supported 253.6 net additional FTEs, translating to a cost per net additional job of £19,334. National benchmarking analysis identifies a mean cost per job created of £71,000⁸, therefore the AIC has created jobs much more cost-effectively.
- 7.7 The return on investment figure highlights that net additional benefits of the programme exceed the total investment, for every £1 of investment there are £3.54 of benefits, representing effectiveness. Using the Government's Value for Money framework the BCR of 3.54 corresponds to a 'High value for money', categorised by interventions with a BCR greater than 2.
- 7.8 Furthermore, it is important to consider that this quantitative measure of impact occurs alongside wider impacts, such as increased knowledge and skills. For support programmes like the AIC, it can often take a number of years for tangible impacts to be realised.

Table 7.2 AIC Project Return on Investment assessments

Impact Metric	ERDF Investment	ROI
253.6 Net additional FTE jobs created	£4,902,390	£19,334 per net additional job

⁸ Based on 758 ERDF projects within the England ERDF Programme 2014-2020

Impact Metric	ERDF Investment	ROI
£17.4m Net additional GVA		£3.54 net additional GVA per £1 investment

Source: Lichfields analysis

Chapter Summary:

- Value for money has been achieved throughout the project, with the project team establishing processes to ensure cost efficiencies are realised through procurement of the construction and purchasing of technology;
- The AIC project has performed in line with national benchmarks for business support interventions regarding cost per output, demonstrating that the outputs from project delivery provided value for money relative to ERDF funding;
- The AIC project demonstrates a BCR of 3.54, translating to an additional of £3.54 of benefits for every £1 of public funding spent, presenting high value for money in Government Value for Money framework; and
- Cost per job analysis identifies that the AIC project performed £19,334 per net additional job created compared with national benchmarking of £71,000.

8.0 Conclusions and Recommendations

- 8.1 This section of the report provides an overview of each of the sections detailed earlier in the report, drawing conclusions, lessons learnt and offering recommendations for legacy support in response to the summative assessment findings.

Output achievement

- 8.2 The AIC project has made good progress towards achieving output targets, despite initial delays in mobilisation resulting from the Covid-19 pandemic. The project has exceeded C29 targets, which represent the more intense research collaboration assists. The project is anticipated at closure to meet and exceed all output targets as the final claims are being processed. The reduced capital expenditure meant that the AIC project were able to contribute greater funds to undertake more business support activity and support more SMEs within the Humber LEP, meaning that the project significantly outperformed against the originally intended output targets.

Delivery and management

- 8.3 The AIC project delivery has been overwhelmingly successful, the development of the centre itself has provided the University with a specialist hub offering a range of workshop and technical facilities as well as high quality events, conferencing, and meeting space. The AIC facility has offered a professional front door for promoting and ensuring collaboration with industry-academia.
- 8.4 The delivery model was considered appropriate, with Innovation Managers playing a pivotal role in ensuring the most appropriate academics are matched up with corresponding businesses on research projects. The small core team are considered to have worked effectively, delivering the project with a clear strategy and shared common goals set out by leadership. The project has a positive culture with the project team feeling that they had a common understanding of what the project represented, and everyone was on the same page regarding objectives.
- 8.5 Despite initial challenges in mobilisation resulting from the Covid-19 pandemic, the AIC project adapted quickly and responded well to these challenges, which is testament to the project team. They were able to offer comprehensive project support whilst adhering to government guidance.
- 8.6 The project benefited from tried and tested processes underpinned by the University's own governance systems and processes. Beneficiaries felt supported throughout the project, with administrative teams provided help and clear guidance to minimise compliance issues. The project team were praised for their communication and clear advice to help reduce administrative burden on beneficiaries. It was noted that further administrative resource would have been beneficial to reduce the load of the Innovation Managers.
- 8.7 The access to a broad range of academic expertise covering several faculties and departments through the University ensured that the AIC project was well positioned to
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respond to niche and technically complex research collaborations and to support businesses from a broad range of sectors.

Outcomes and impacts

- 8.8 The AIC project has made a significant positive impact not only on beneficiary businesses supported, but also to the University, wider stakeholders, and the regional economy. The project first and foremost provided the Humber with a dedicated facility for promoting and assisting with innovation activity.
- 8.9 The project support helped to improve Humber-based SMEs in developing and bringing closer to market innovative low carbon products. Businesses overwhelmingly felt that they had improved awareness, interest and likelihood of undertaking future R&D activity following project support. The project supported businesses in accelerating product/process development, with respondents indicating improvement in SPDP levels indicating products moved closer to commercialisation.
- 8.10 The AIC project helped beneficiary SMEs to reduce carbon emissions, energy costs and improve their environmental processes as well as to achieve business growth, improve productivity and extend networks. Most businesses felt that in the absence of the AIC support they would not have achieved the same outcomes.
- 8.11 The AIC assisted Humber SMEs in identifying opportunities to penetrate the low carbon supply chain. 'Meet the Buyer' events hosted by the AIC help to stimulate ideas regarding how products/technologies can be amended or repurposed to meet the needs of low carbon businesses. Networking events helped to identify potential synergies between different organisations' products/activities which, through collaboration, could respond to a challenge or opportunity facing low carbon industries.
- 8.12 One of the key outcomes of the AIC project for the project team and stakeholders has been the new, and improved, relationships fostered between the University and industry partners as well as business-business relationships helping to support and foster supply chain relationships. Almost all beneficiary respondents suggested that they had developed or improved relationships with the University of Hull as well as academic staff delivering research collaboration support, with a number stating they had continued to work with the AIC project team beyond initial support.
- 8.13 The AIC and project support has helped contribute towards raising the Humber's profile as a location of excellence for low carbon innovation. The AIC has hosted several events of significant importance helping to contribute towards raising the profile amongst prospective inward investors.
- 8.14 The economic impact assessment identified that the AIC project had generated an estimated net additional £16.6m in GVA benefits to the Humber LEP area and helped to support 253.4 net additional GVA. This is a significant contribution to the local economy in driving economic output and employment.

Value for Money

- 8.15 The project team have put in place a number of processes with a view to minimise the cost of resources, while ensuring quality. The project team actively aim to maximise efficiencies,
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to reduce waste. This is perhaps best outlined in the use of recycled 3D printer filaments provided by a local business for the 3D printers on-site. Academic respondents indicated that their involvement in research collaboration was a worthwhile investment of their time.

8.16 The AIC project performed broadly in line with national benchmarks, granting confidence in the efficiency of the programme. With a positive Benefit Cost Ratio (BCR) of 3.54:1 the programme represents a high value for money. A total cost per net additional job of £19,334 is significantly lower than national cost per job benchmarks.

8.17 Economy is maintained within the procurement process by utilising competitive tendering, routinely gathering at least 3 quotes. Academic experts were also involved in the procurement process to ensure that equipment provides value for money and optimal utilisation.

Recommendations for policy makers

8.18 The Summative Assessment has identified several considerations for policy makers and any future similar projects based on the experience of the AIC project. These include:

- The Innovation Manager role was pivotal in brokering relationships with SMEs and ensuring that they were matched up with suitable academics for delivering research collaboration.
 - Effective promotion of the centre as a commercial hub and ‘front door’ to the University and the academic expertise available to supporting businesses helped with the successes of the AIC project support. It is expected that this will lead to lasting usage and relationships with industry beyond the project lifetime.
 - The quality and range of technologies available through the centre were informed through liaison with academic users and responding to the demand of beneficiaries which ensured that utilisation was optimised.
 - Having the ability to leverage wider academic staff from across a broad range of faculties and disciplines opened the project support up to beneficiaries from a wide range of sectors with niche and technically complex research collaborations.
 - Having an active social media and web presence is helpful or increasing audience engagement. The AIC project benefited from a professionally designed website providing information on the project, the facilities, key events, and case studies to showcase practical examples of support delivered.
 - Developing positive and lasting relationships with beneficiary SMEs and delivering demand-led support through experts helped to generate benefits that maximised added value.
 - Involving local stakeholders at programme inception helps to increase the strategic value of the project to ensure buy-in and continue to maximise opportunities and ensure delivery aligns with wider strategic ambitions.
 - Utilising an experienced small core team for project management helped to ensure that the project had a clear vision and common goals were well understood by all involved helping to lead to better outcomes.
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- Having well-established and effective processes and systems in place are vitally important for assessing project progress, potential delivery risks and allowing the delivery team to inform decision making and identify timelines for key outcomes and objectives.

Appendix 1 AIC Logic Model

Click on the arrows to navigate around the model. Tables can be edited directly in the model. To edit free text, click Edit under each title

Context

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The Aura Innovation Centre (AIC) will support low carbon and offshore wind innovation in the Humber. It will facilitate regional economic development in the low carbon and offshore wind sectors and foster collaboration between SMEs and the research base. It will accelerate the development of new low carbon products and technologies. The Centre will provide direct access to high quality research, development and innovation facilities and services, market intelligence and commercialisation support. The AIC will provide SMEs with access to a unique portfolio of services in one building to initiate, encourage and deliver the development of commercially relevant products for the target sectors. It will also act as a magnet to attract companies that are relocating to the Humber or expanding and seeking access to the low carbon and offshore wind sectors. Located at the Humber Bridgehead Business Park, the facility will be ideally placed for expedient access to regional and national markets.

Market Failure Assessment

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The market can provide low carbon innovation support to SMEs but not in a widely accessible fashion or that is based on the underpinning knowledge and expertise of publicly funded RD&I. The obvious research and development spill-overs that can be applied to support SMEs seeking to diversify into or grow market share in the low carbon and offshore sectors often lack a clear delivery mechanism or channel to market. The AIC provides such a conduit from which all eligible firms might benefit. The rapid pace of development of the low carbon/offshore wind sector has led to imperfect flows of information across the sector affecting SME ability to innovate and respond quickly to new and emerging opportunities. The AIC will act as a repository and disseminator of sector knowledge as well as demonstrating the practical application of new innovations and technical/technological developments. The global low carbon/offshore wind market is still at a relatively early stage of development and requires a broad base of companies that can compete effectively and develop and/or access emergent supply chain opportunities. Innovation is a critical success factor for companies seeking to introduce new products to the supply chain. The AIC is founded on supporting UK and Humber SMEs to develop supply chain capacity through innovation.

Project Objectives

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The objectives of the AIC are to:

- Support low carbon innovation, foster research collaborations and promote knowledge exchange.
- Stimulate SMEs to access innovation expertise.
- Promote the low carbon agenda.
- Bring together UK and international leaders in wind energy and low carbon sectors enabling SMEs to benefit from supply chain opportunities.
- Showcase low carbon innovations, host sector events and facilitate information exchange and networking.
- Support SMEs to accelerate their innovations and progress collaborative low carbon research outcomes towards market readiness.

Rationale

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The emergence of the Energy Estuary concept in the Humber together with the development of the offshore wind sector in the region has highlighted the need for continuous innovation across the low carbon technologies spectrum. The AIC will establish the nucleation point for low carbon innovation support in the Humber as well as incubating the burgeoning low carbon, offshore wind and renewables sectors. The Centre will create collaboration space for industry and academics to work together, share knowledge and build lasting partnerships. These will lead to the creation of new and innovative low carbon products, services and processes with the potential for international commercialisation and application benefiting beneficiary SMEs. The unique combination of leading edge equipment (funded by Green Port Growth) and facilities together with professional and academic wrap around support will form the platform for a low carbon innovation cluster spanning SMEs, large multi-national OEMs and the public sector (with ERDF activities working within ERDF eligibility and State Aid rules).

Inputs

What	Value
ERDF Investment	£4000000.00
Public Sector Match Funding (Green Port Hull Growth Fund and University AIC Operational Delivery Team	£5494899.00 4.5 FTE staff
Specialist equipment & facilities (Innovation Accelerator &	1100000 (Green Port Growth)

Intended Impacts

What
Increased levels of investment in low carbon R&D by SMEs
A more innovative company base in the low carbon market place in the target areas
An increased number of SMEs engaged in the low carbon economy as a result of the project
A greater level of sustainable collaboration between SMEs and research and innovation establishments
Increased levels of inward investment from companies seeking to locate their low carbon business activities in the Humber
Encouraging and supporting the creation of new employment opportunities in the low carbon economy

Outcomes

ID	Intended Outcome	How is it Measured?	Level	Baseline	Actual
1	SMEs assisted to diversify services/products in low	Assessment of business at engagement and comparsion to	Business		
2	Increased competitiveness of SMES engaged in low carbon	Benchmarked at engagement re turnover and profitability within	Business		
3	SMEs assisted to develop new domestic and global markets	Assessment of active markets and levels of market penetration	Business		
4	Greater level of collaboration between SMEs and research	Assessment of historical engagment with such activity	Project		
5					

Outputs

What	Value
No. of enterprises receiving support	28
No. of new enterprises supported	3
Enterprises supported to introduce new to the firm products	5

Activities

What
Construction of specialist facility supporting low carbon innovation
Provision of tailored wrap-around support and project management
Access to specialist equipment, academic and technical expertise
Signposting and referral to other relevant sources of low carbon
Events, seminars/workhops and specialist briefings programme
Dedicated AIC website with access to information and contacts