Breakout 1

Developing the future workforce - exploring skills and supply chain needs

Fife Council

Our Climate Matters

Breakout 1: Developing the future workforce

Skills & supply chain for the construction & energy sectors. How to solve jobs & skills gap for retrofit and heating in Fife/wider region

- **Kate Spalding:** Strategy Officer (NZIDP), Fife Council
- **Professor Sean Smith:** Chair of Future Construction, School of Engineering, University of Edinburgh
- **Frazer Walker:** Academic Head - Construction Crafts and Technical Skills, Fife College
- **Craig McLaren:** National Planning Improvement Champion, Improvement Service

Facilitated by **Kirsty Haydock**, Service Manager - Employability & Employer Engagement

Our Climate Matters

Breakout 1:
Developing the future workforce

Kate Spalding

Strategy Officer (NZIDP)

Fife Council

NET ZERO
Innovation & Delivery Programme

Skills for domestic retrofit & manufacturing across SE Scotland

Kate Spalding
Strategy Officer, Fife Council

https://esescityregiondeal.org.uk/net-zero

Fife Council
UKRI Innovate UK
HCI Skills Gateway

NET ZERO Innovation & Delivery Programme

Project Background

- 2-year Innovate UK funded project – Net Zero Living Programme
- Up to 50 projects across the UK – 4 in Scotland
- Accelerating progress towards Net Zero for Local Authorities & businesses
- Partnership between Fife Council & HCI Skills Gateway, on behalf of the Edinburgh & South East City Region Deal
- Climate Fife – Big Energy Move

https://esescityregiondeal.org.uk/

NET ZERO Innovation & Delivery Programme

Overall aim: Skills gaps and workforce projections for the Construction and Manufacturing Sectors.

1: Energy Supply & Infrastructure – exploring skills gaps for domestic retrofit with energy efficiency and decarbonised heating measures

1.1: Extension report – development of skills to enable the efficient operation of domestic heat pumps

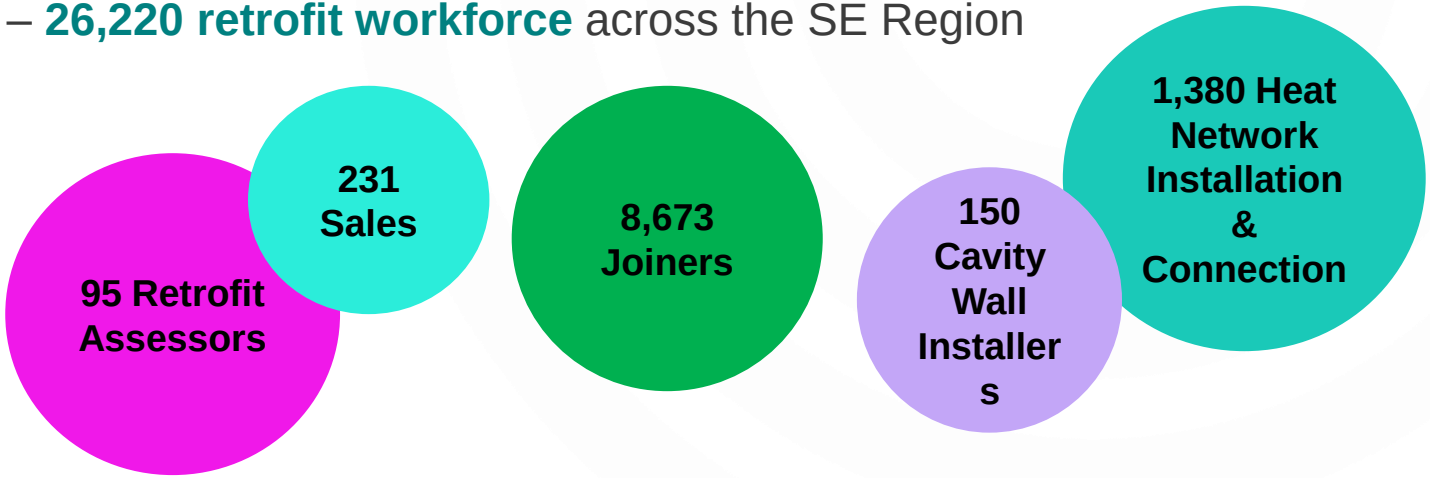
2: Industry & Manufacturing – to develop a high-skilled manufacturing workforce for decarbonised heating technology

NET ZERO Innovation & Delivery Programme

1: Energy Supply & Infrastructure – *skills gaps for domestic retrofit with energy efficiency and decarbonised heating measures.*

- Feasibility study completed by Optimat & John Gilbert Architects
- Modelled workforce projects between 2025-2045 for the retrofit sector
- 2037 peak – **26,220 retrofit workforce** across the SE Region

This includes a max. annual workforce of...



1.1: Extension Report – *How are skills developed to enable efficient operation of domestic heat pumps?*

- Study completed by Optimat & John Gilbert Architects
- Exploring the interactions between installers & consumers of Heat Pumps

Findings include:

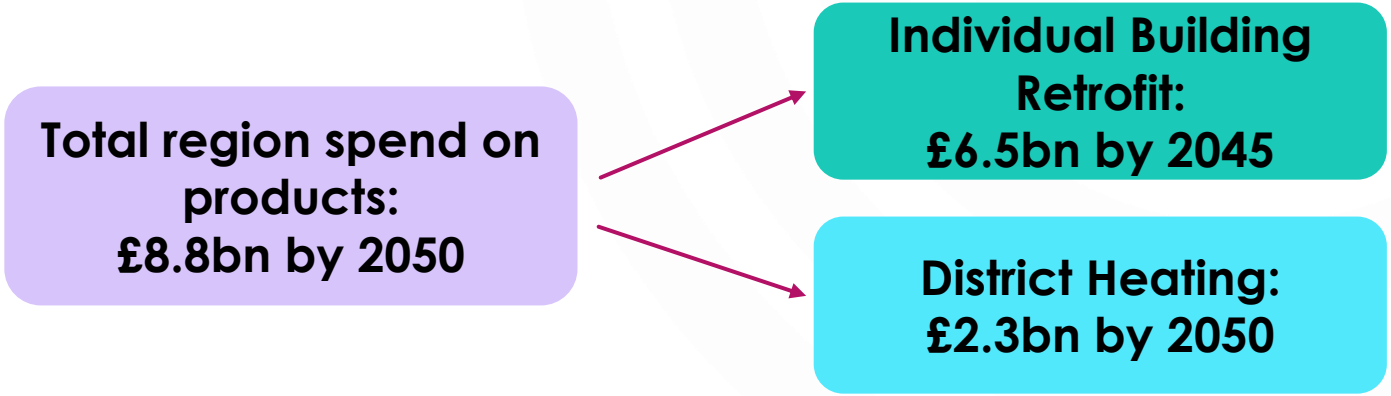
Fitting oversized units – less efficient / more expensive to run

Lots of brands, all have different set up / operating requirements

Training focused on design & install, less maintenance

2: Industry & Manufacturing – *To develop a high-skilled manufacturing workforce for decarbonised heating technology*

- Feasibility study completed by Ramboll
- Exploring the flow of heat products from a global – local scale
- Expected spend on decarb products for retrofit



NET ZERO
Innovation & Delivery Programme

Thank you!

For full reports, scan here

kate.spalding@fife.gov.uk

https://esescityregiondeal.org.uk/net-zero

Fife Council
UKRI Innovate UK
HCI Skills Gateway

Breakout 1:
Developing the future workforce

Professor Sean Smith

Chair of Future Construction, School of Engineering

University of Edinburgh

CENTRE for NET ZERO HIGH DENSITY BUILDINGS

Professor Sean Smith
BSc PhD FIOA FRSA FHEA HonFRIAS HonFCIAT

Chair of Future Construction, School of Engineering
Director – Centre for Future Infrastructure
Edinburgh Futures Institute
University of Edinburgh

Email: sean.smith@ed.ac.uk

Prof Sean Smith

LinkedIn

A Green Economy Centre funded by UKRI

CeNZ-HighDB

Centre for Net Zero High Density Buildings

CeNZ-HighDB

THE UNIVERSITY of EDINBURGH

University of Glasgow

Edinburgh Napier UNIVERSITY

University of Strathclyde Glasgow

UNIVERSITY OF THE WEST of SCOTLAND UWS

BE—ST Built Environment Smarter Transformation

UNIVERSITIES and EXTERNAL PARTNERS

CeNZ-HighDB

THE UNIVERSITY of EDINBURGH

University of Glasgow

University of Strathclyde Glasgow

Edinburgh Napier UNIVERSITY

UNIVERSITY OF THE WEST of SCOTLAND UWS

BE—ST Built Environment — Smarter Transformation

58 Partners

Industry: SMEs, Major Contractors, Utility Companies, Product Manufacturers, Innovators and Industry Organisations
Public Sector: Local Authorities, City Region Deals, Government Agencies (Enterprise, Housing, Heritage, Building Standards)
Skills / Training: Colleges (FE Sector), Training Academies & Upskilling
Networks: Industry, Housing, Net Zero, Retrofit, University Estates, Energy Efficiency, District Heating, Battery Technologies and Housing Associations

The Challenge – Net Zero for High Density Buildings

Highly Complex; Multi-Factorial; Modern & Historic; Existing Infrastructure Restrictions; Occupant Diversity

40% of Embodied Carbon from Construction; 22% of Emissions from Buildings;

Many Key Workers & Low Income Families Live in High Density Buildings – underpinning GREEN ECONOMY JUST TRANSITION

About the Centre

- **CeNZ-HighDB** supports and develops **Net Zero solutions** for high density buildings and streetscapes in cities and towns.
- The Centre is funded by the UKRI as part of the **UK's Green Economy Centres**.
- **Led by the University of Edinburgh**, this research partnership combines the Universities of **Glasgow, Strathclyde, West of Scotland, Edinburgh Napier and BE-ST**: Scotland's construction innovation centre.
- The Centre **supports R&D, data analysis, pilot and demonstrator projects, archetype approaches, occupant needs and novel technologies** to deliver net zero or significant carbon reductions.
- Projects can **include retrofit of buildings, new net zero buildings, heat networks, innovative product developments, advanced materials, new software and tech approaches, new skills training content for the retrofit, new buildings, housing and non-domestic buildings.**

Key Themes – System Approach

CeNZ-HighDB

Delivering Net Zero Green Economy Outcomes

Centre for Net Zero High Density Buildings			
CORE TWGs: Green Materials & Technology	TWG-I. Building Fabric and Performance	TWG-II. Heating-Cooling & Energy Storage within Buildings	TWG-III. District & Community wide Heating-Cooling
Cross-Cutting TWGs	TWG-IV. Modelling & Data Analysis		
	TWG-V. Occupant Needs & Behaviour		
	TWG-VI. EDI, Skills & Training		

Energy Use Reduction - Circular Economy – Waste Reduction

Embodied Carbon – Operational Carbon

The Team:

CeNZ-HighDB

Centre Management

Prof Sean Smith
Chair in Future Construction
University of Edinburgh
Centre lead

Serena Lambley
University of Edinburgh **Centre Manager**

Amy Macpherson
University of Edinburgh
Centre Administrator/ Finance Officer

Academic Co-Investigators

Dr Julio Bros-Williamson
Chancellor's Fellow for Net Zero Buildings
University of Edinburgh
Lead – TWG-I

Prof Des Gibson
Chair in Thin Film and Sensor Technologies, University of West of Scotland
Lead – TWG-II

Prof Gioia Falcone
Rankine Chair of Energy Engineering
University of Glasgow
Lead – TWG-III

Dr Nick Kelly
Reader
Co-Director, ESRU
University of Strathclyde
Lead – TWG-IV

Prof Lori McElroy
Chair in Smart Resilient Cities
University of Strathclyde
Lead – TWG-V

Prof Robert Hairstans
Chair in Offsite Construction
Edinburgh Napier University
Lead – TWG-VI

Industry Sector Engagement

Kaye Keenan
Built Environment Smart Transformation (BE-ST)
Impact Manager

THE UNIVERSITY of EDINBURGH
University of Glasgow
Edinburgh Napier UNIVERSITY
University of Strathclyde Glasgow
UNIVERSITY OF THE WEST of SCOTLAND UWS
BE—ST Built Environment Smarter Transformation

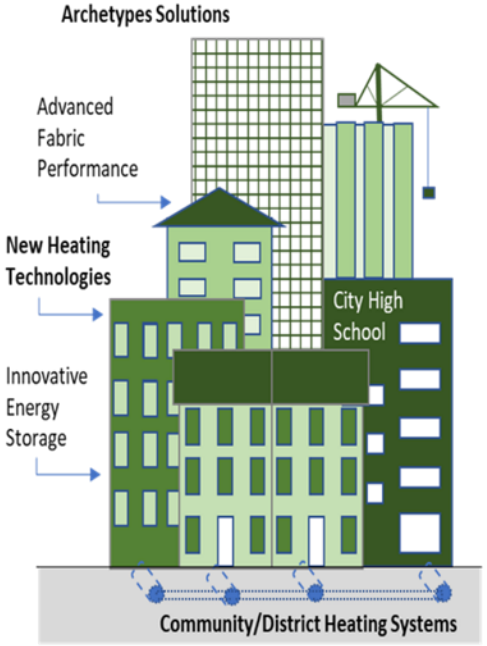
Our Vision

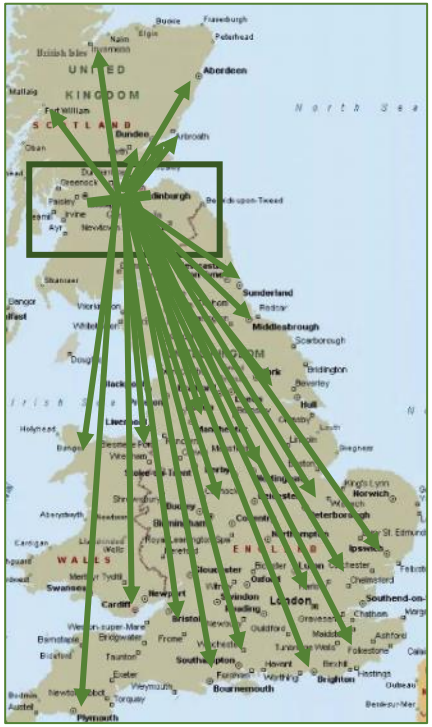
CeNZ-HighDB

CENTRE for NET ZERO HIGH DENSITY BUILDINGS
CeNZ-HighDB – The Vision

Partnering & Reach:
- 5 regional universities
- 2 city regions
- 8 cities network
- 32 local authorities
- 14 industry networks
- 8 research alliances
- 5 major public bodies
- 7 regional colleges
- 20 colleges network
- 60 housing associations
- Multiple communities
- Pan-UK utility companies

Leadership & Co-ordination:
- 50+ partners
- 50+ projects
- Major archetype solutions
- Linking 2000+ supply chains
- 6500 jobs upskilled
- 2600 new jobs
- New manufacturing
- Archetype Retrofit Handbook
- Local to international reach
- Targeting £50M investment
- Underpinning £35B future retrofit pipeline

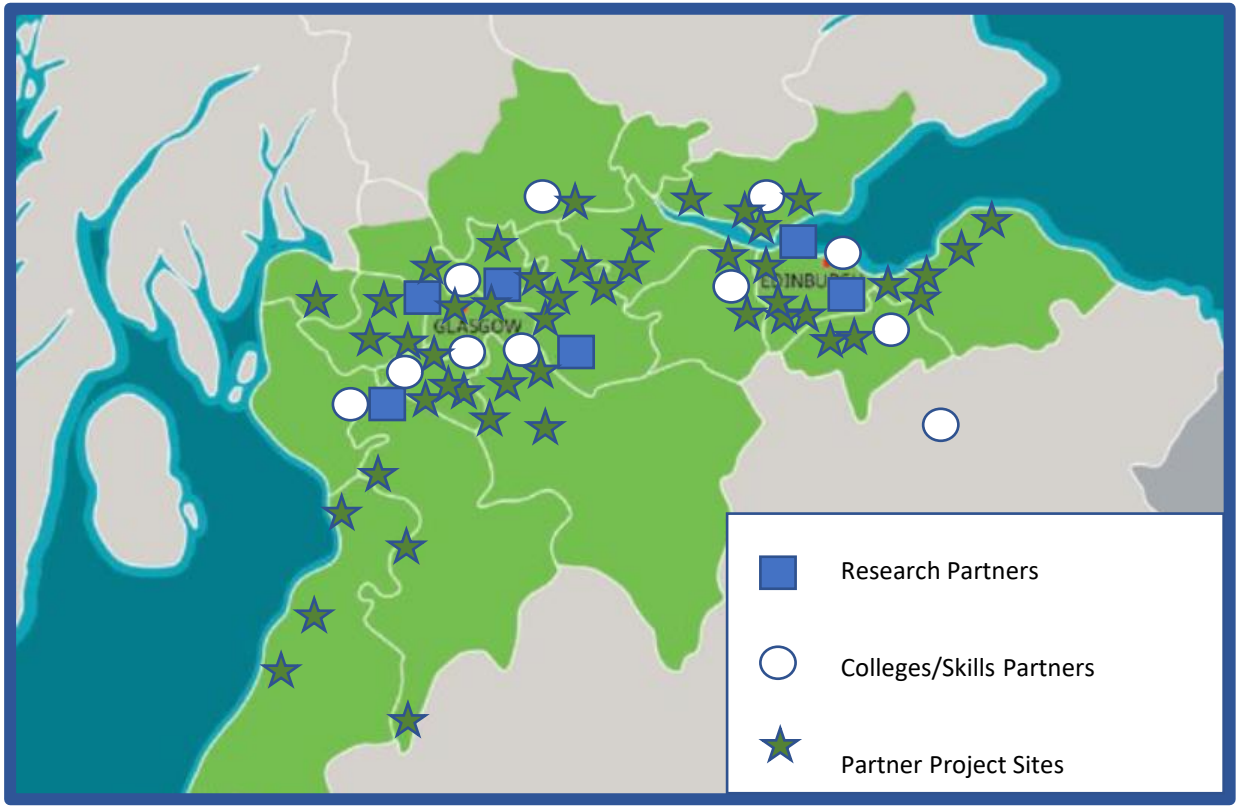


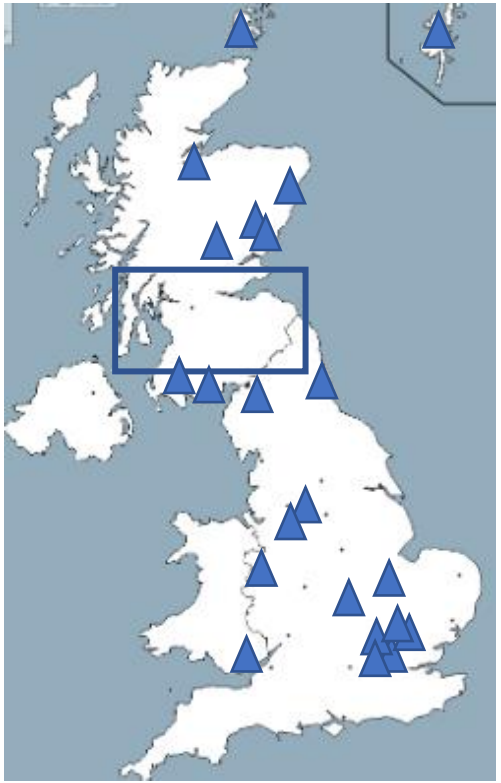


"A vital new Centre"

"extremely significant"

Co-Creation & Geographic External Partners Reach





Scotland – Construction Workforce by Region (2022)

Figure 2: Labour demand by local area, Scotland, 2022

Source: **CITB Report 2023**
https://www.citb.co.uk/media/tgsiuvlr/local-skills-scotland-report-2023.pdf

Net Zero Skills / Green Economy Jobs

Future Trend:

With future growth of SE Scotland (2024-2045) the scale of workforce need **will increase far more than any other region**

CITB 2023 Report - workforce gap analysis

Table 7: Gap analysis breakdown by local area, Scotland

Occupational Group	Aberdeen City and Shire	Glasgow and West	Highlands and Islands	Lanarkshire	South East	South West	Tayside, Forth and Fife
Construction Managers and Supervisors	-700	-1,450	750	2,400	-3,300	1,250	1,300
Construction Professional/Technical	-650	-1,450	1,100	2,450	-3,900	1,300	1,450
Labourers	-200	-450	100	600	-700	350	400
Non-construction trades	-50	-150	50	200	-300	100	150
Skilled trades - bricklaying	-100	-200	200	300	-600	150	250
Skilled trades - electrical	-450	-950	500	1,400	-1,900	700	850
Skilled trades - other occupations	-650	-1,600	700	2,200	-3,100	1,250	1,500
Skilled trades - painting and decorating	-150	-350	150	400	-650	250	300
Skilled trades - plumbing & HVAC	-200	-500	350	650	-1,050	350	450
Skilled trades - wood occupations	-400	-900	650	1,350	-2,150	700	850
Support staff - office based	-600	-1,300	850	2,100	-3,250	1,150	1,200
Total	**-4,250**	**-9,250**	**5,400**	**14,150**	**-21,050**	**7,450**	**8,750**

CeNZ-HighDB

CITB workforce gap analysis

Pink (shows shortfalls/gaps)

Includes digital technical skills

Building Services / HVAC / electrical and plumbing

Source: **CITB Report 2023** https://www.citb.co.uk/media/tgsiuvlr/local-skills-scotland-report-2023.pdf

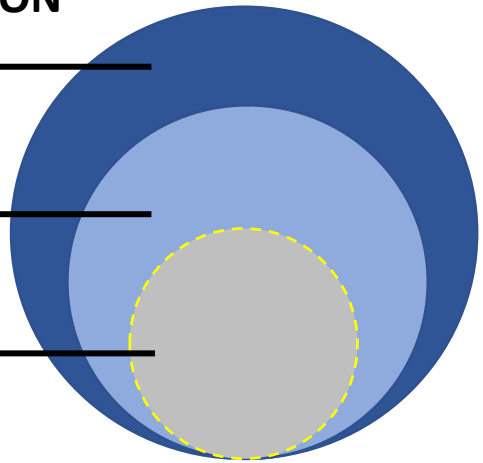
South East Scotland City Region Construction Workforce
(current, transiting and future required)

ALL CONSTRUCTION

Future construction workforce need **79,000** (by 2035)

Current city region construction workforce **57,500**

Non local based workforce transiting into city region annually **20,000**



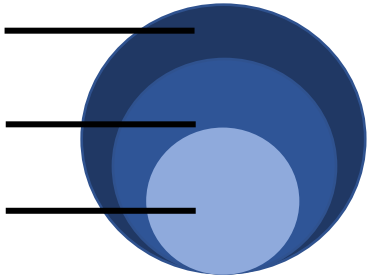
South East Scotland City Region Construction Workforce
(current and future min and max required)

RETROFIT CONSTRUCTION

Future Max. required **34,000** (by 2035)

Future Min. required **21,500** (by 2035)

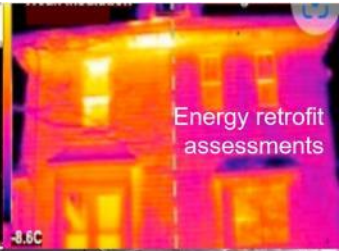
Current estimated **8,000**

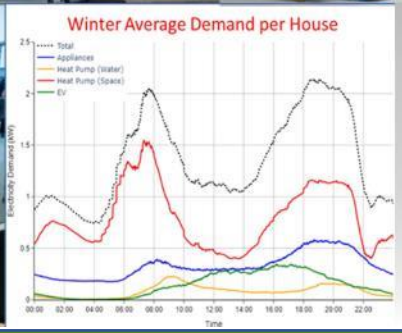


Specialist Projects & HEI Facilities

CeNZ-HighDB

- Specialist testing of new construction products & materials
- Prototype assembly
- Integrated heating & cooling monitoring and modelling
- New heating technologies
- System approaches analysis
- Digital technologies & data
- Air quality monitoring
- Carbon assessments
- Green economy / business analysis
- Archetype handbook
- Fire safety testing of products and systems

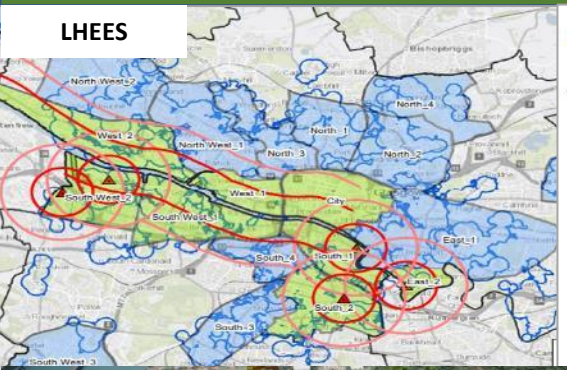


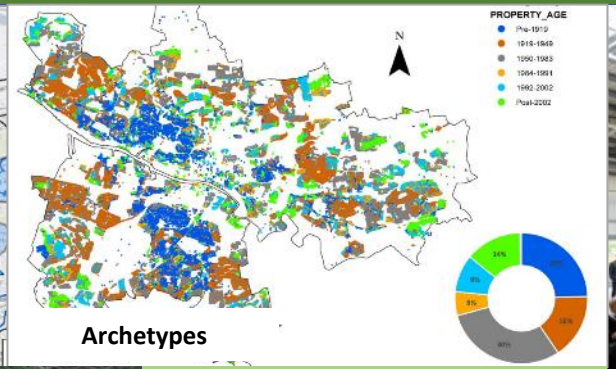


The Combined Impact Opportunities & Engagement

CeNZ-HighDB

LHEES





Archetypes

£50M
Manufacturing Investment
+
Export Markets

FORTH GREEN FREEPORT

£35 Billion

THE ENERGY TRAINING ACADEMY

Regional
SKILLS
Net Zero Accelerator Hub

- 25 workshops with industry & public partners
- Annual major knowledge exchange events
- Community workshops

BE—ST
Built Environment — Smarter Transformation

SUMMARY

- **Transformational leading Centre to support pan-UK cities and towns towards Net Zero**
- Bringing leading UK experts and multiple external project partners together
- **Delivering new innovations, 2600 jobs, upskilling 6500 and economic/business growth**
- Reaching across 2000+ supply chain partners
- **Supporting lower bills and improving health across high density urban communities**
- Maximising **Green Economy Outcomes**, productivity and net zero delivery through archetype solutions
- **Creating lasting legacy through inclusive approaches to solve one of the key challenges of our time!**

5 HEIs + 58 External Organisations
Combining over 150 experts

End of Presentation

Thankyou for Listening

Breakout 1:
Developing the future workforce

Frazer Walker

Academic Head - Construction Crafts and Technical Skills

Fife College

Innovating for a Sustainable Future

FIFE'S SKILLS DEVELOPMENT IN RETROFIT, HYDROGEN & ENERGY

PRESENTED BY FRAZER WALKER

Ten students will complete our 18-week construction with futures retrofit course this June.

Fife College trains and qualifies 35 heat pump installers each year from our student population.

More than 70 participants have successfully completed the 2-day *Domestic Retrofit in Practice* course.

Why Fife? A Regional Perspective

Shovel ready projects -What's Next for Fife?

SCOTLAND NEEDS 100,000+ GREEN-SKILLED WORKERS BY 2040

FIFE COLLEGE EXPANDING PARTNERSHIPS AND REGIONAL LEADERSHIP

CALL TO ACTION FOR MORE ALIGNED INVESTMENT AND SUPPORT

Driving Skills for a Sustainable Future – Fife College's net zero Role

- Hydrogen: Industry-led Collaboration on courses
- Energy: Renewables, smart grid, microgeneration
- 30% of courses to embed sustainability by 2028 (Fife College)
- Retrofit: Training aligned with PAS 2035 standards

Introductory Courses: Equivalent to Standard Grades	Pre-Apprenticeship Courses: Same tasks as an apprenticeship, but with greater tolerances.	Advanced Courses: Equivalent to 1st year of a degree
NPA Pre-apprenticeship for 4th year school students	National Progression Award: Plumbing and Electrical Building Services	National Certificate: Architecture with Interior Design
Access to Construction Skills	Construction Operations & Civil Engineering Services	HNC: Architectural Technology SCQF Level 7 Group-A
Certificate: Construction Futures Joinery/Brickwork/Roofing/ Painting and Decorating	National Progression Awards Carpentry & Joinery	HNC: Quantity Surveying
Construction Futures with Retrofit Joinery, Airtightness, Roofing and solar panels, Plumbing electrical, PAS2035	National Progression Awards Painting & Decorating	HNC: 3D Design
	National Progression Awards Trowel Trades	

ROUTES INTO SUSTAINABILITY AT FIFE COLLEGE

Learning & Adapting

Challenges: Staff training, infrastructure investment

Response: Sustainable campus projects and digital delivery

Continuous evaluation and feedback integration

Working Together for a Greener Future

LEADING THE JOURNEY TO NET ZERO THROUGH EDUCATION

Breakout 1:
Developing the future workforce

Craig McLaren

National Planning Improvement Champion

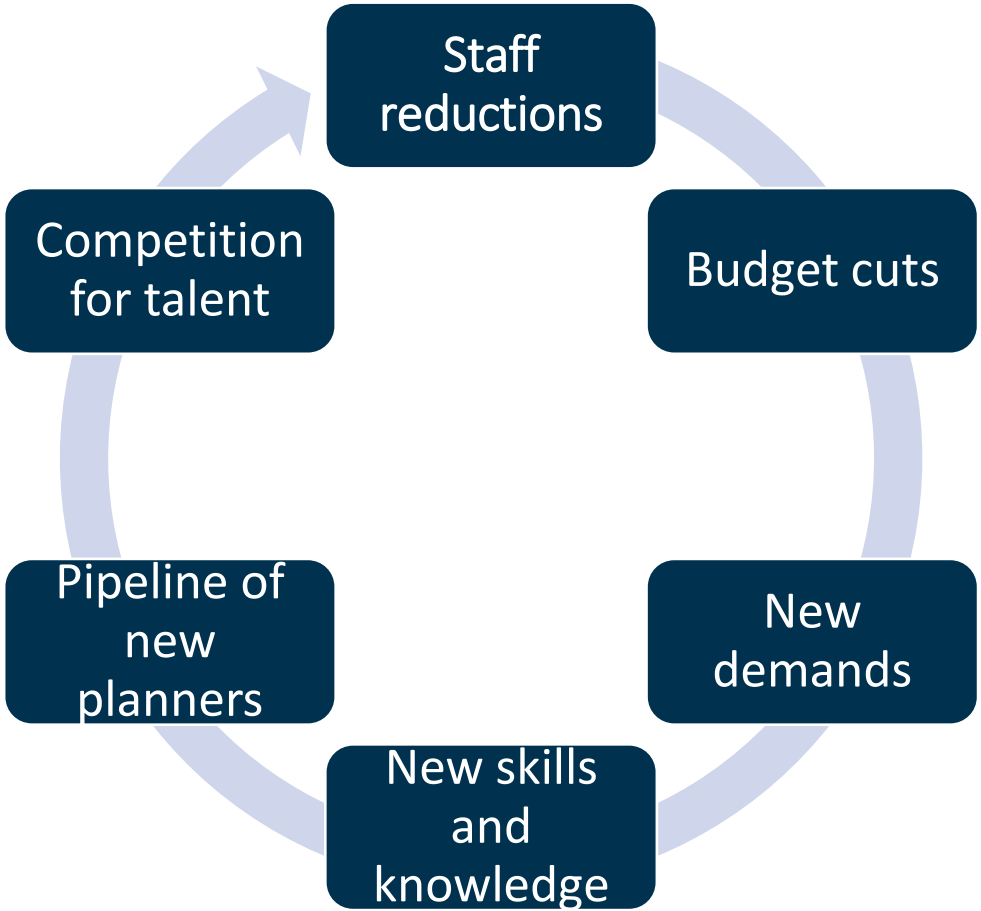
Improvement Service

Developing the future workforce – exploring skills and supply chain needs

Craig McLaren, National Planning Improvement Champion, Improvement Service

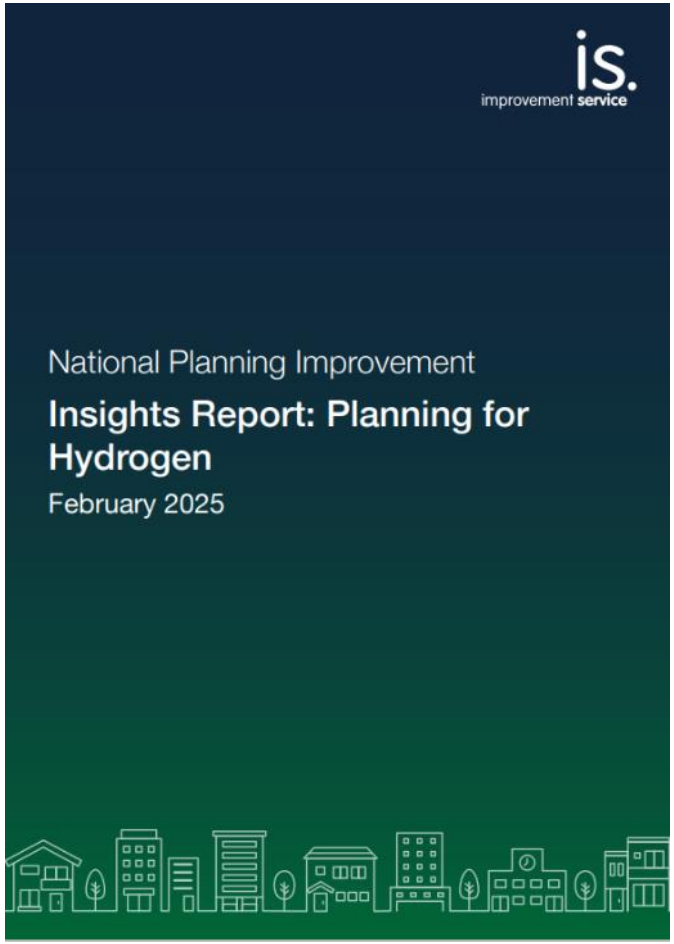
improvement service

Scottish Government
Riaghaltas na h-Alba



28.6% drop in planning spend
25% drop in staff
49 new, unfunded duties
Costing up to **£60m**
700 new planners
Fees meeting **66%** of costs

Career destination	Understanding of Planning Perception of Planning
Pipeline	Practice Based degrees Post Graduate Bursaries
Resourcing	Fee increase Discretionary charging
Managing talent	Competitive Hiring Sharing Talent Future Chief Planning Officers
Upskilling	National Planning Skills Commitment National Planning Hub



Understanding

Regulation

Process

Risk

Spatial


Brokerage
Specialist Expertise
Shared professional expertise
Practice and Capacity

Insights programme	• Insights Paper on Planning for Hydrogen • Scottish Government Guidance on Planning for Hydrogen roll out • Online Learning Modules • Explainer Programme for community councils • Hydrogen development pipeline • Large hydrogen sites programme
Access to Expertise programme	• Planning authorities access specialist skills and expertise • Planning authority sharing resources
Learning and Knowledge Exchange	• Advice on Early engagement for developers • Knowledge Exchange Programme • Learning Events • Planning for Hydrogen Process map • Risks, impacts and mitigation/ conditions • Case Studies

Audience Q&A

Lunch

13:00 – 13:50

Fife – A Place for Energy

Exploring Fife's innovative approach to the energy transition through our Big Energy Move

Fife Council

Our Climate Matters