



Stirling Renewable Heat Project

- ❖ **Stirling Renewable Heat Project**
- ❖ **Challenges, Risks & Benefits**
- ❖ **Strategic Fit**
- ❖ **Transferability & Replication**



- Scottish Water will become a zero-carbon user of electricity by 2040 – five years before Scottish Government's net zero target
- Currently host/self-generate twice the electricity SW consume (1TW)
- Interim target to host/self-generate 3 times SW consumption by 2030



- Stirling Council met and exceeded 40% reduction in emissions* by 2021 (reduced by 42% by 2019)
- 2030 and 2045 targets now under review
- Aiming to become Scotland's first carbon neutral City
- Climate strike – 300 attended at Council offices in Stirling (1st climate strike had 2 pupils)



* 2006/07 baseline

1. Partner Introductions

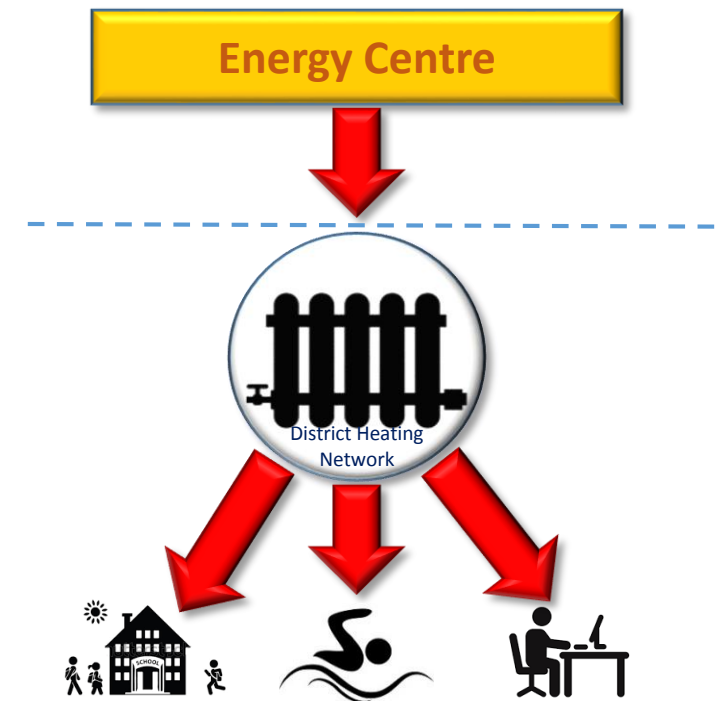
Collaborative partnership with aligned vision towards decarbonisation of heat, resource efficiency and delivery of decentralised energy solutions which do not compromise air quality



- ❖ Commercial subsidiary of Scottish Water aimed at developing opportunities and the sustainable development of Scottish Water assets
- ❖ Vast experience in delivery of renewable energy projects across Scottish Water estate: includes investment in solar, wind, hydro, biomass and biogas
- ❖ **Owner and operator of energy centre**



- ❖ Lead Partner: Local Authority which provides and ensures delivery of high quality public services
- ❖ Energy strategy focused on providing direct benefits to residents, communities and to businesses through low cost, low carbon energy as well as income generation/savings generation to the Council
- ❖ **Owner and operator of district heating network**



2. LCITP Overview

District heating initially included in City Development Framework – opportunity identified for LCITP funding

- ❖ **Low Carbon Infrastructure Transition Programme** - Capital funding call for demonstrator projects, aligns directly with Scottish Government's Energy Strategy
- ❖ Joint **EU and Scottish Government** fund which provides up to 50% total project capex
- ❖ **Partnership bid** with Scottish Water Horizons – Stirling Council lead bid partner
- ❖ **Match funding** secured by Stirling Council and Scottish Water Horizons
- ❖ 3 stage **technical and financial assessment** panel, followed by independent due diligence process prior to grant award
- ❖ **22nd March 2019** commissioning deadline due to EU funding

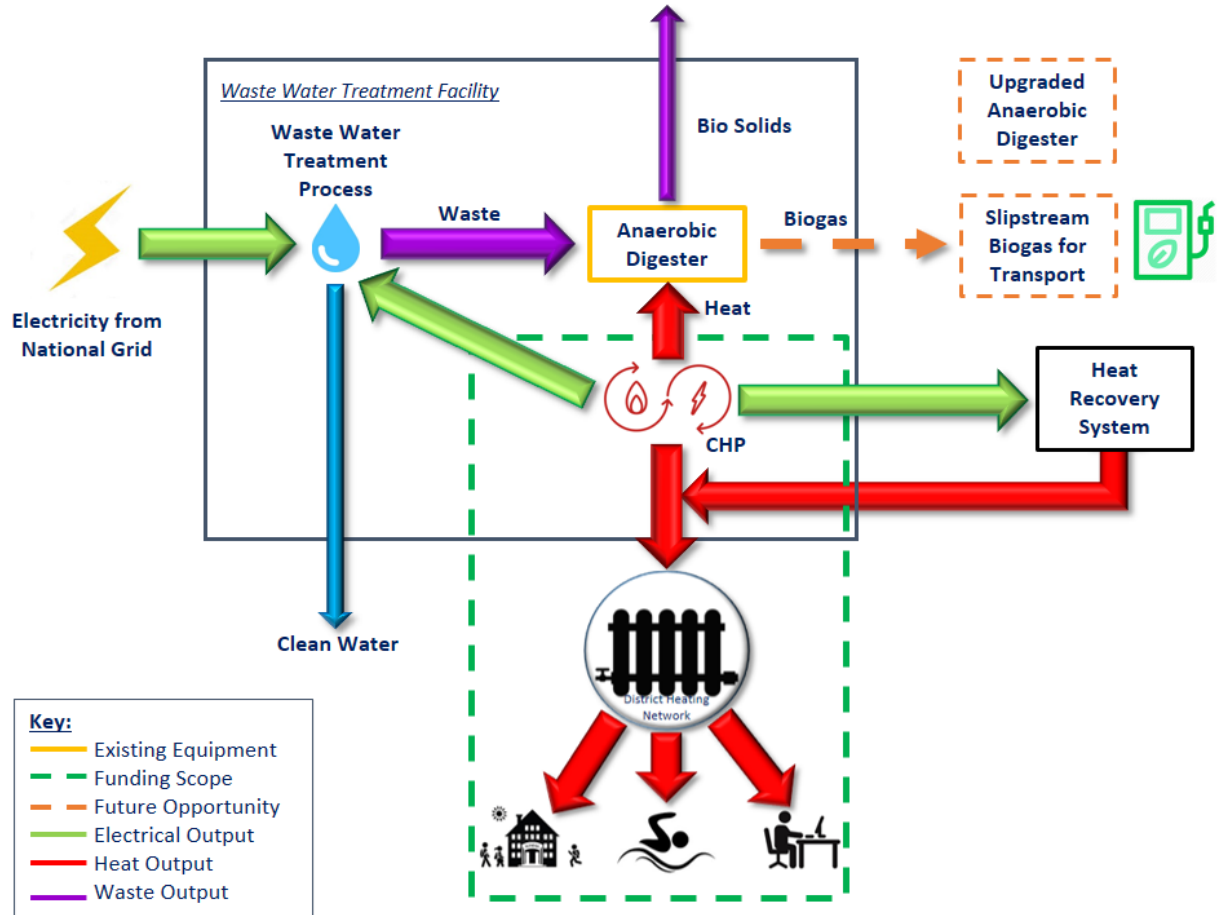


3. Funding Overview

Match funding secured through Stirling Council and Scottish Water Horizons approval processes. Formal Offer of Grant received from Scottish Government 30th March 2017

Total Project Capex: £6,151,000

- ❖ **LCITP Funding:** £2,095,331 (including £100,000 enabling costs as grant)
- ❖ **SC Budget:** £1,000,000
- ❖ **SWH Budget:** £3,055,669 (sewage heat recovery system not included in total ask due to RHI – cannot claim incentives if receiving grant offer)



4. Initial Project Overview

Innovative demonstration of harnessing energy from waste to deliver low carbon & renewable affordable heat with negligible air quality impact - Scotland's Heat Map used for initial opportunity identification

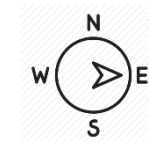
Initial Energy Centre:

-  Hydrogen Fuel Cell
-  Waste Heat Recovery
-  Biogas
-  Resilience outwith energy centre



Scotland's Heat Map

Initial District Heating Network:



Network going east only



Design assumed all low temperature (60°/40°)



Resilience at building level



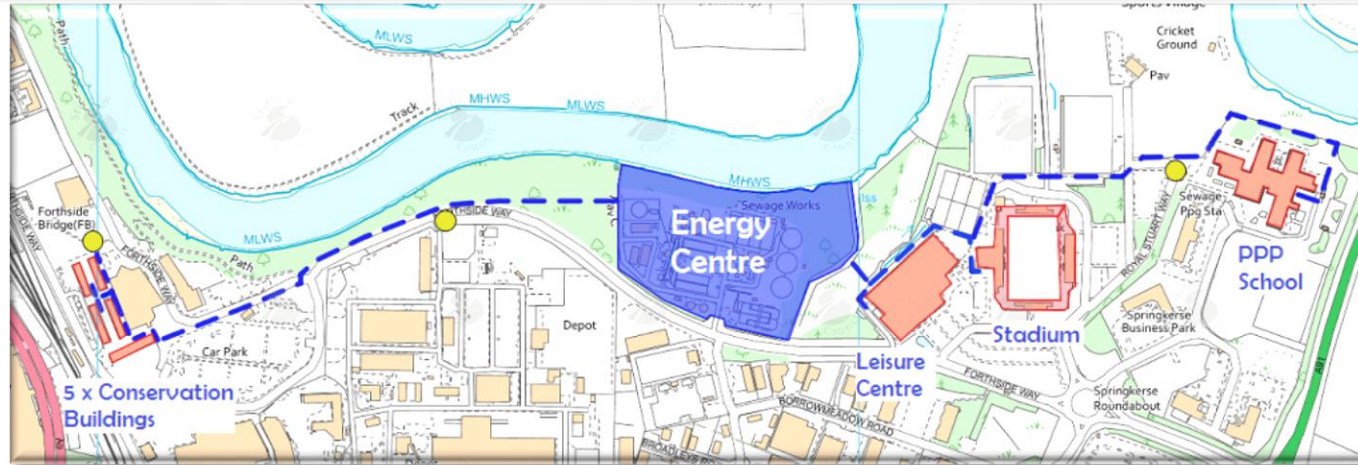
Public and commercial end users



5. Final Project Overview







Formal Change Request submitted for changes to technology mix; change to route; and taking into account change to carbon savings. Approved November 2017. First of a Kind for technology mix in the UK



Final Energy Centre:

-  Gas CHP
-  Waste Heat Recovery
-  Resilience within energy centre
-  Biogas – thermal store

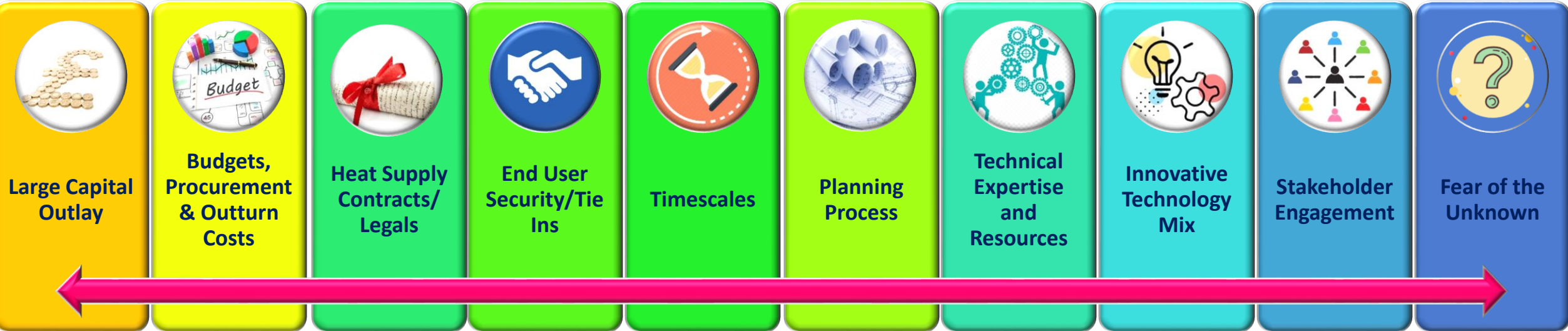
Final District Heating Network:

-  Now going both east and west
-  East (high temp 85°/55°) and west (low temperature 60°/40°)
-  Maximise public building base, including conservation buildings
-  Future expansion potential built in



6. Challenges & Risks

Steep learning curve – knowledge sharing and lessons learned will be key. Number of challenges and key areas for consideration within the project



7. Stirling Renewable Heat Project: Benefits

Analysis carried out to identify local financial & environmental benefits resulting from project



Investing in infrastructure that brings direct benefits to end users:

- **Increased Energy Efficiency:** Reduced energy demand; security of supply and added resilience
- **Reduced energy costs:** 10% savings for heat end users based on current heating systems; electricity savings for Scottish Water



Local & National Opportunities:



- **Scalable & Replicable:** Across the Council area and Scotland to help target fuel poverty
- **Job creation/upskilling of local workforce:** Low carbon and renewables – a growing industry which Scotland has world leading targets in



Local Area Enhancement:

- **Economic development and regeneration of areas:** Forthside earmarked as new business “grow on space”
- **Income generation:** Investment in future network and/or community projects



8. Scotland's Energy Targets: Strategic Fit

Aligns with the key pillars of Scotland's Energy Strategy, as well as targets and actions within the Scottish Government Programme for Government; and new Climate Change (Emissions Reduction Targets) (Scotland) Bill



AN INCLUSIVE ENERGY TRANSITION

a stable, managed energy transition: ensuring secure and affordable energy supplies
 ✓ = resilience; security of supply; low cost, low carbon energy provision



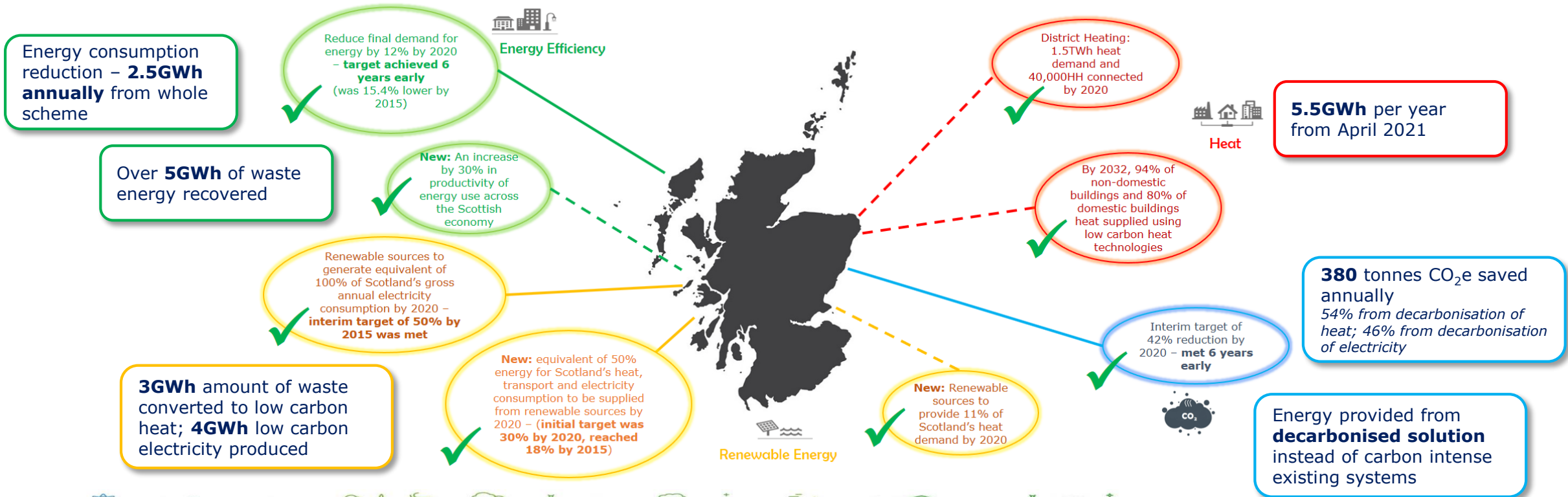
A WHOLE-SYSTEM VIEW

an integrated "whole systems" view: consideration of energy supply and consumption equally
 ✓ = matching local demand with supply for power and heat; utilising waste heat



A SMARTER LOCAL ENERGY MODEL

a truly local vision of energy provision: local energy solutions, planned with community involvement
 ✓ = locally generated energy being used locally



9. Expansion, Transferability & Replicability

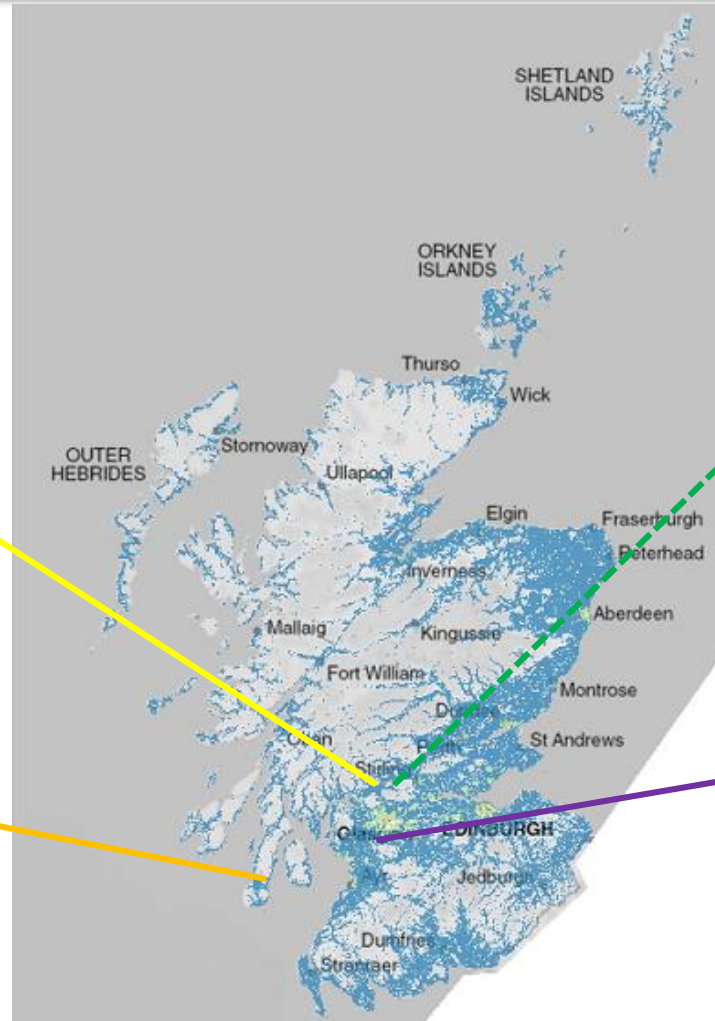
Potential across Scotland – both urban and rural as seen in range of LCITP projects: Bandwidth Aqualibrium and Clyde Gateway Regeneration Area and investigating potential for Fallin



Stirling Renewable Heat Project



Aqualibrium Centre Campbeltown



Fallin



Clyde Gateway



10. Expansion, Transferability & Replicability

Fallin has a waste water treatment works, as well as a number of public buildings – and large amounts of social housing. Stirling Council and Scottish Water Horizons investigating a potential replication

Fallin:

- one of the 'eastern villages'
- a former pit village, Polmaise Colliery was closed in 1987, marking the end of coal mining in Stirlingshire

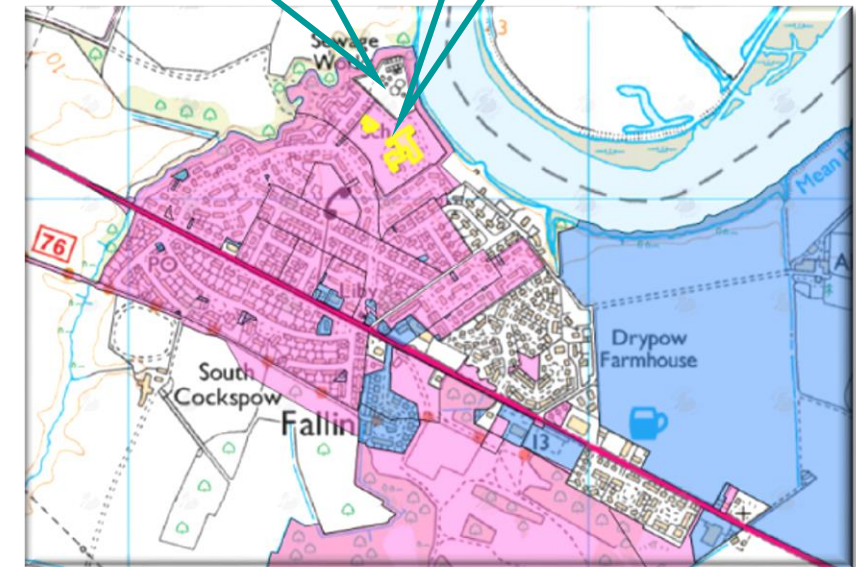


Waste Water Treatment Works

Nursery; Primary School; and Community Centre



- High levels of fuel poverty
- 2 of the 4 data zones are within the top 20% most deprived (SIMD)



11. Expansion, Transferability & Replicability

Diversify Heat Recovery - Water



