

Forthside District Heating Network (DHN)

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Outline

- Existing DHN Overview
- Responsibilities
- Current Performance
- Key Challenges
- Future Direction



Forthside DHN Summary

District Heat Networks supply heat and hot water from a central source to customers through a network of pipes.

The district heating network was formally launched in August 2019, heat provided to end users since June 2019.

2.5km of underground district heating pipework and fibre communication networks.

Energy Centre

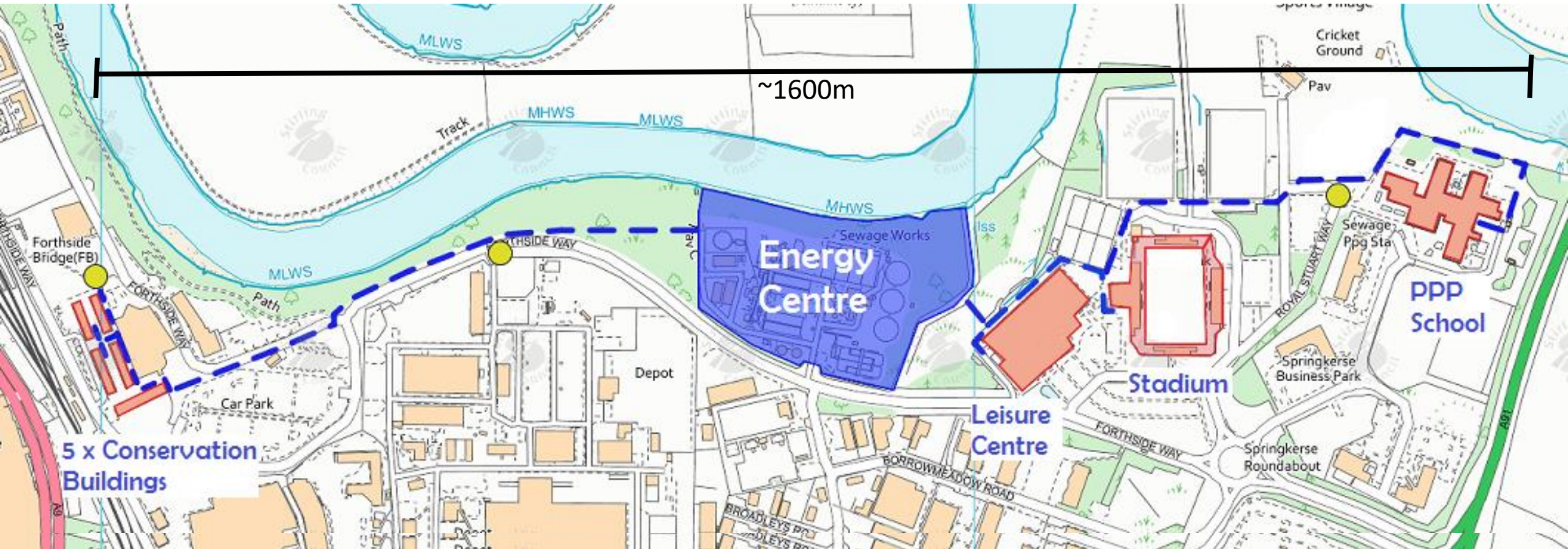
- SHARC energy from waste water unit.
- Gas CHP backup.
- Biogas – thermal store.
- East leg (high temp 85°/55°).
- West leg (low temp 60°/40°).

End Users

- 8 buildings currently on the network – scope for expansion.
- Each end user has signed Heat Supply Agreement with Stirling Council.
- 10% savings for heat end users based on current heating systems.



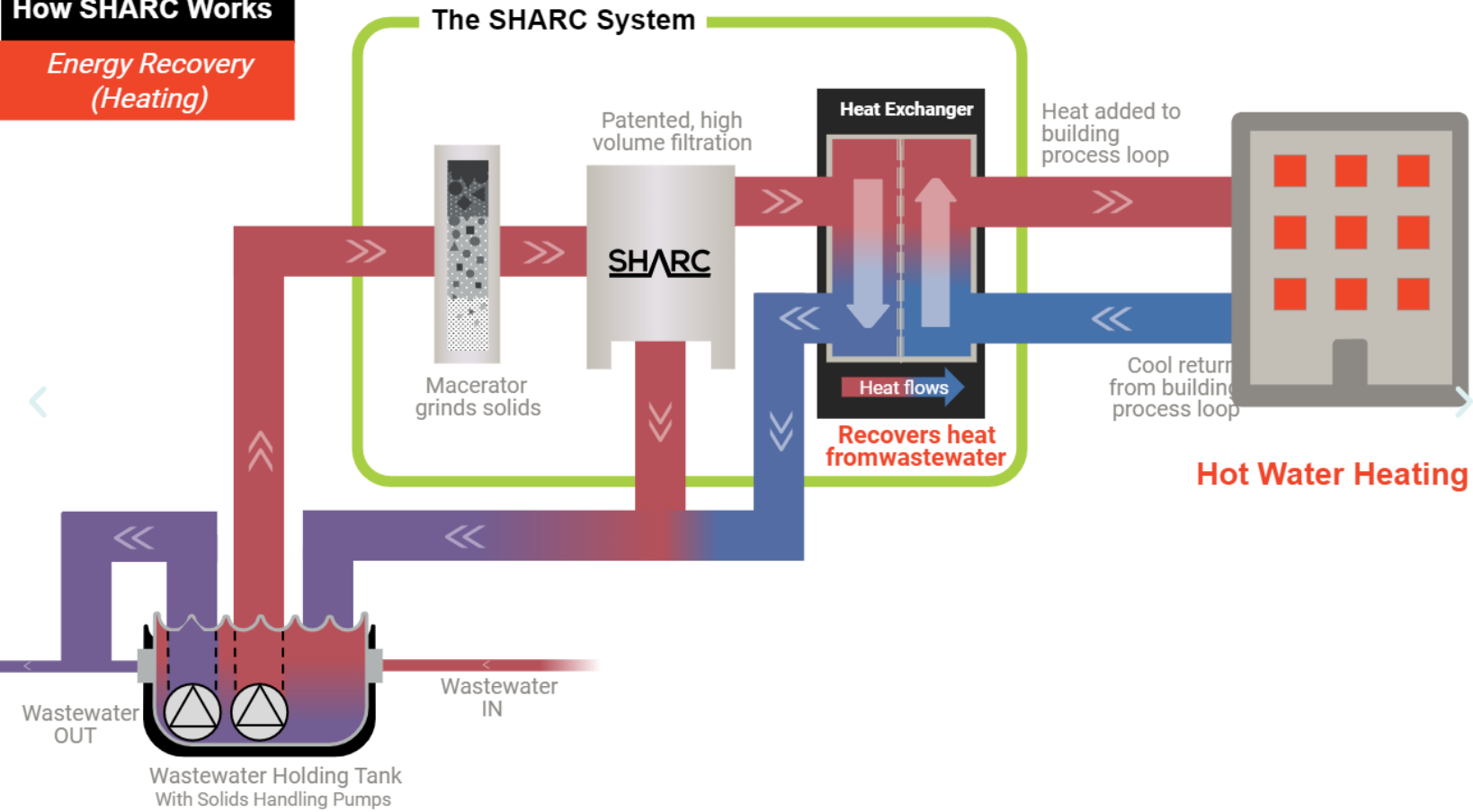
Existing Forthside DHN



- Maximise public building base, including conservation buildings.
- Future expansion potential built in.
- Primarily commercial buildings in vicinity of existing pipework, prioritising these connections to prove expansion model and reliability before any consideration of domestic properties.

SHARC Waste Water Heat Recovery Unit

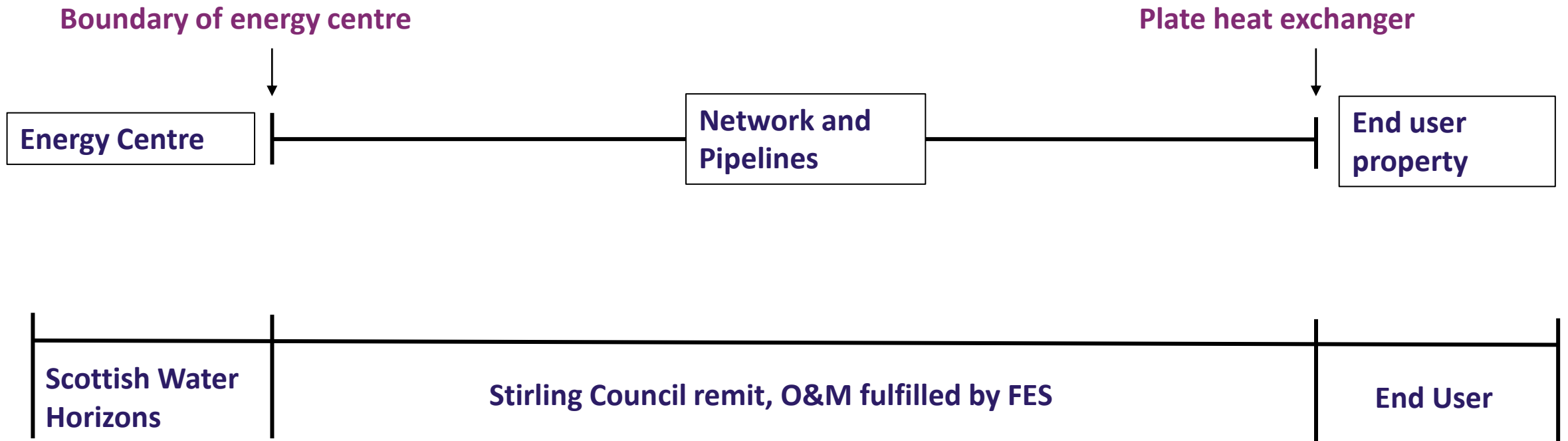
How SHARC Works
Energy Recovery
(Heating)





Boundaries of Responsibility

Partnership with Scottish Water Horizons



Contractual Obligations

Scottish Water Horizons

Ensure heat is supplied to the network at the agreed temperature, pressure and volume from the agreed sources.

Provide a schedule of maintenance on an annual basis.

<5 unplanned interruptions per year, and notify Stirling Council of these within 6 hours.

Review performance and seek to improve both efficiency and carbon emissions.

Stirling Council

Make the heat supply available to the customer at the heat supply point.

Meter the heat supply.

Provide the Heat Supply in accordance with the Performance Standards, Project Consents, Law and Good Industry Practice.

<5 unplanned interruptions per year.

Provide a schedule of planned maintenance to the Customer.

End Users

Customer to operate the Customer Network in an efficient manner by seeking to achieve thermal comfort levels in the Customer Facilities by activating heat emitters and water heating on the Customer Network for longer periods of time at a lower output temperature rather than shorter periods of time at a higher output temperature and thus seeking to reduce demand spikes on the Network and minimise return temperatures from the Customer Network to the Network.

The Customer acknowledges that the target maximum return temperature to the Network is 35°C.



Existing End Users

Active Stirling: a charitable trust who operate The Peak Leisure Centre and Forthbank Performance Sport Centre. Facilities averages 2,300 customer visits each day and include a swimming pool; 2 x ice rinks; fitness and dance studios; gym; and restaurant and café facilities.

St. Modan's High School: educational facility with ~855 secondary pupils.

The Robertson Trust: newly renovated conservation buildings. 2 x buildings house offices of charitable organisation, with the 3rd building housing a state of the art Conference Centre.

Zero Waste Scotland: main office HQ; a publicly funded organisation.*

Volunteer Scotland: office space; a registered Scottish charity – the only national centre for volunteering.

***Water Industry Commission for Scotland:** initial end user, office space taken over by Zero Waste Scotland in August 2021, building remains on the network).



Stirling Council Offer

- ✓ **Consistent 5% energy savings for duration of connection, charging mechanism incorporated into Customer Heat Supply Agreement.**
- ✓ **Cost for provision of heat to be pegged lower than the total cost of gas (currently 10%) per kWh of a traditional heating and hot water system for the lifetime of the connection.**
- ✓ **Stirling Council responsible for provision, installation, commissioning and ongoing maintenance of all primary plant up to and including the main heat exchanger.**
- ✓ **Reduced/removal of boiler replacement costs/sinking funds.**
- ✓ **Carbon reductions and added resilience and improved efficiency of current energy systems.**



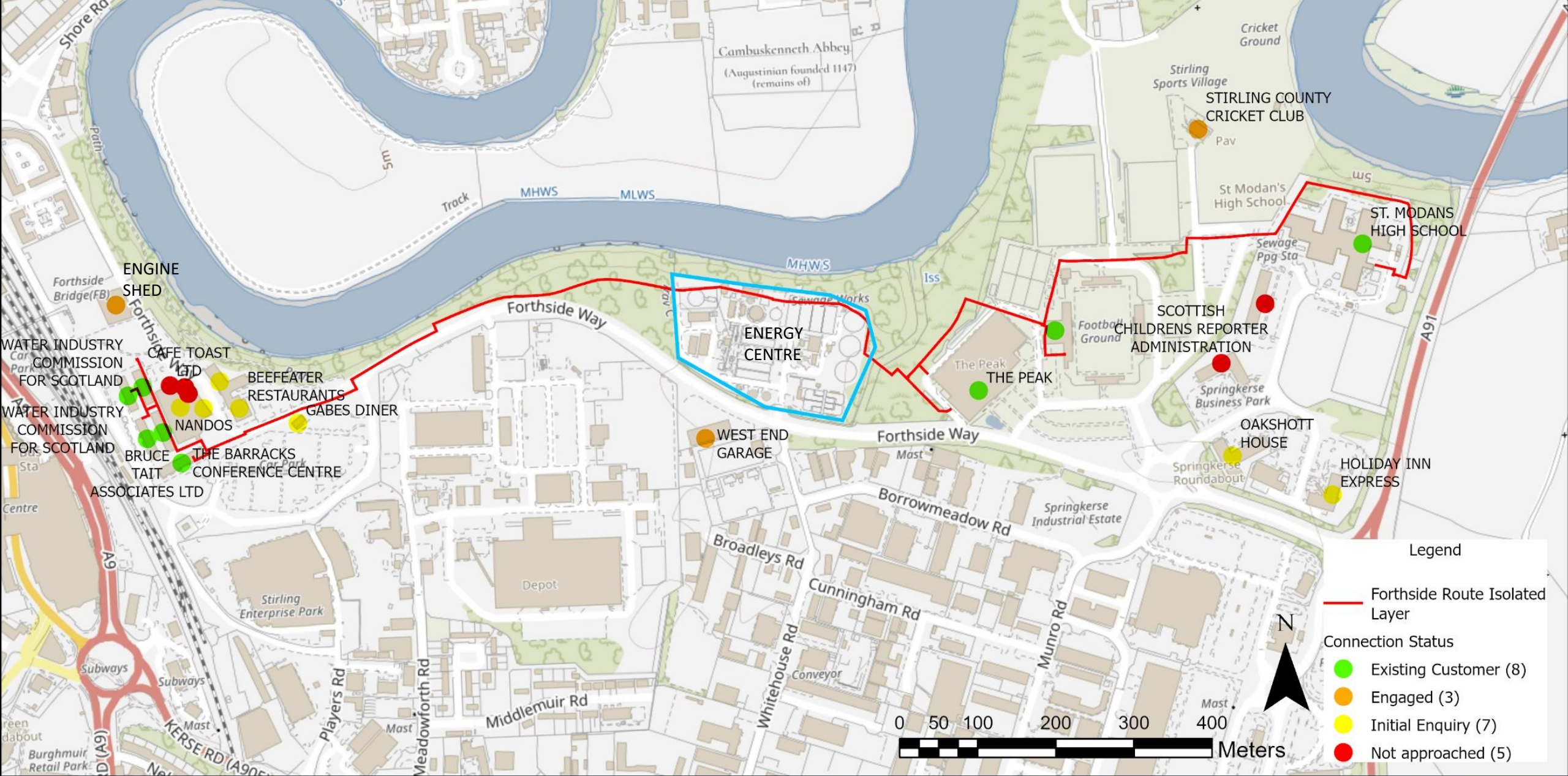
Current Performance

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**

Current minimum heat offtake agreement = 5,500,000 kWh

2022/2023 Figures		
	Total Use (kWh)	Current Position (£)
East Leg (High temp.)	3,506,225.48	
West Leg (Low temp.)	711,336.00	
Whole Network	4,217,561.48	£122,962.86

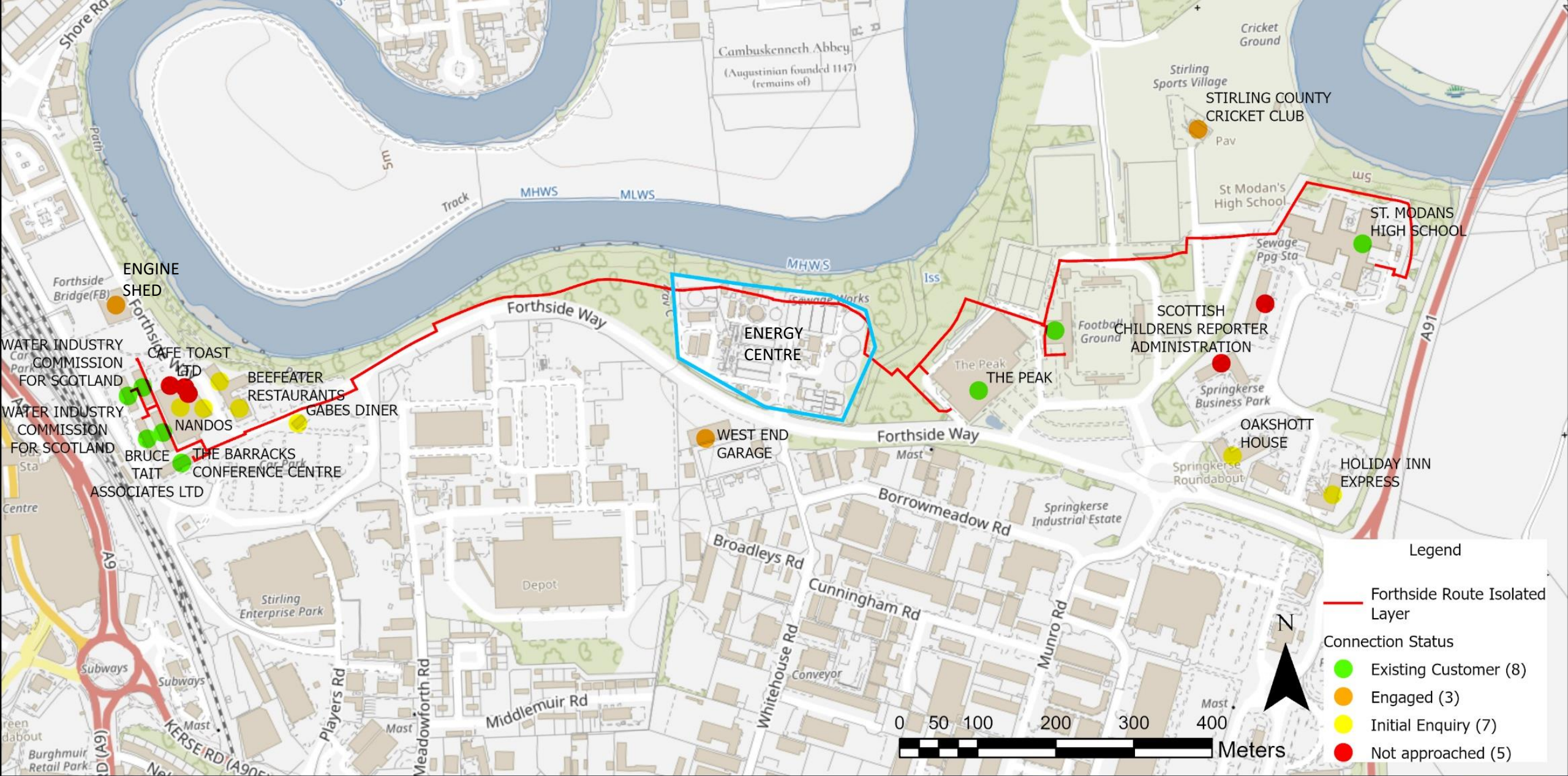


Legend

- Forthside Route Isolated Layer
- Connection Status**
- Existing Customer (8)
- Engaged (3)
- Initial Enquiry (7)
- Not approached (5)

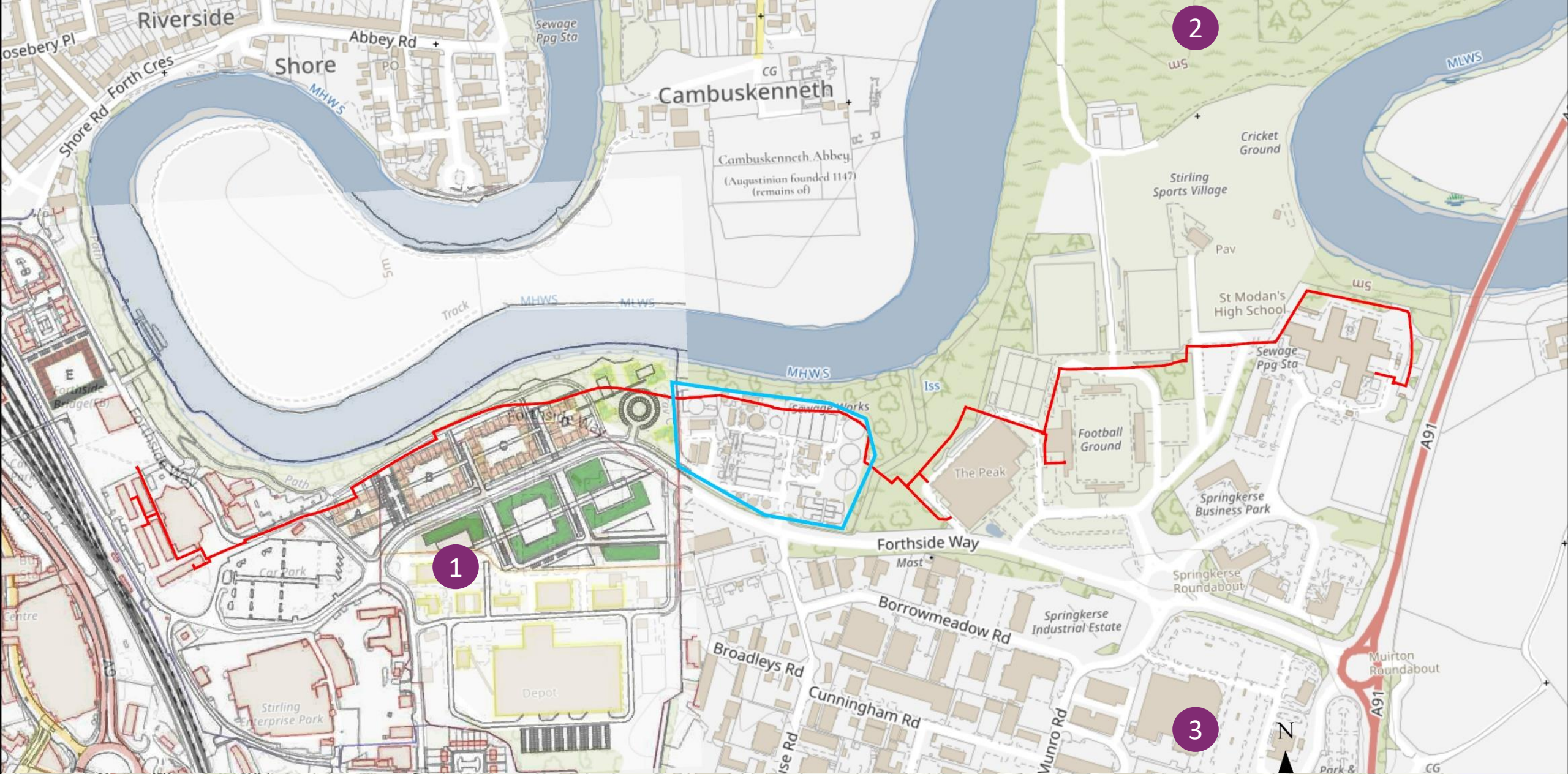
Forthside Expansion Opportunities 01-05-24





Forthside Expansion Opportunities 01-05-24



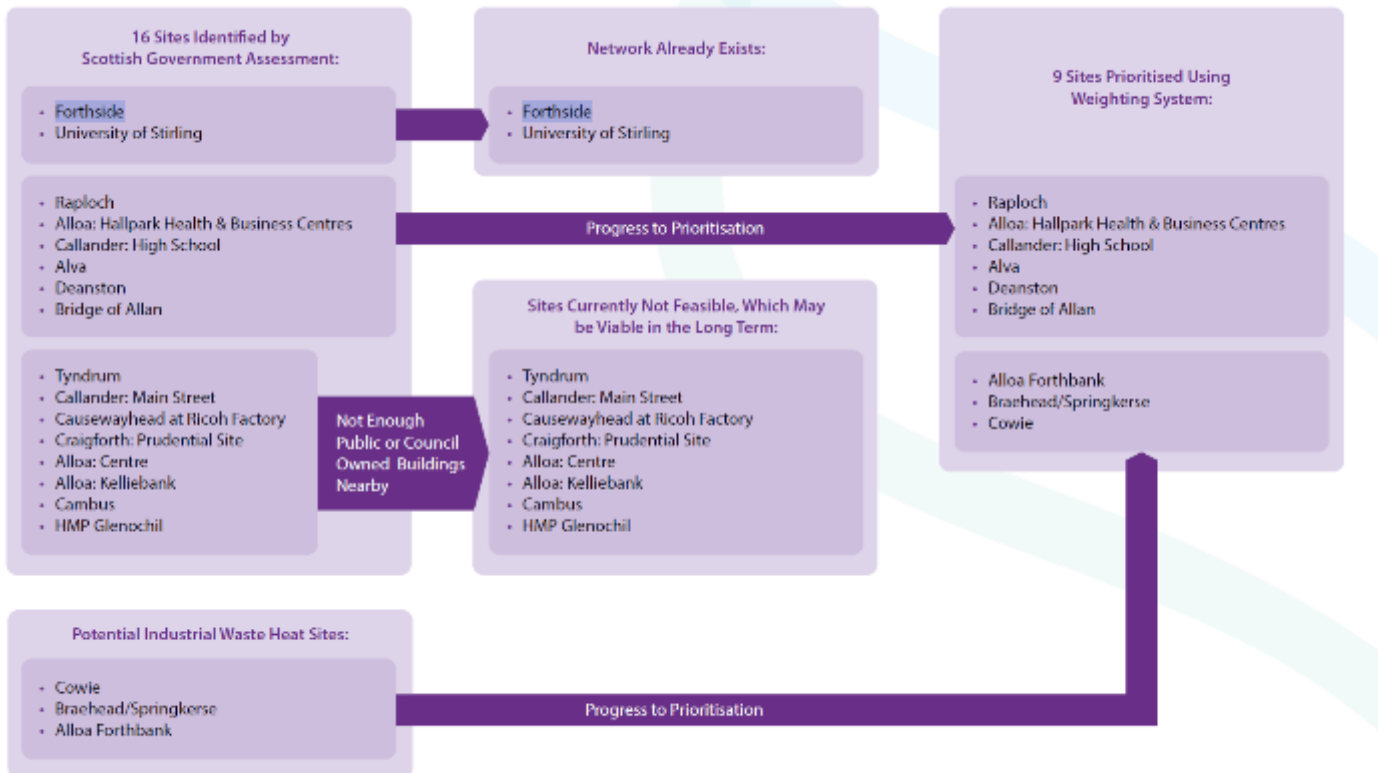


Forthside Redevelopment Early Stage 10-04-24





Key Challenges to Overcome



- Improve resilience and carbon performance of the network – currently gas CHP backup.
- SHARC system downtime due to manufacturing fault – considering replacement / additional options.
- Work ongoing to assess spare capacity in the network – no current concerns with currently identified new end users to be added.
- Building controls.
- Blurring of party responsibilities due to staff turnover and knowledge loss.
- Connect new users to the network.
- Align with Forthside redevelopment.
- Develop proposal for expansion into Springkerse retail park.

Figure 16: Site prioritisation and screening for district heating networks



Future Direction

Short-term (<12 months)

- Operation and Maintenance: Renewal of Stirling Council O&M contract. Assist with procurement of O&M contract for end users – consortium approach being discussed.
- Commence feasibility study for significant expansion. Early engagement of potential new end users.
- Increase resilience and reliability of existing network.
- Regular engagement with end users to ensure continued positive experience.
- Target easy connections to increase heat offtake – Engine Shed and Cricket Club.

Medium-term (1-2 years)

- Connect new customers to network – Forthside MoD site Redevelopment, West End Garage expansion, Vue Cinema, two hotels.
- Replace / expand capacity of energy centre.
- Prove expansion model and reliability – begin feasibility for other heat networks.
- Feasibility study for expansion into Springkerse.
- Develop proposal for Borrowmeadow solar generation renewable proposal to support DHN expansion.

Any questions

