Renewable Energy Guide for Developers & Communities working with Scottish Water

Working in partnership with

Northern Periphery and Arctic Programme 2014–2020
EUROPEAN UNION
RECENT
LOCAL ENERGY SCOTLAND
HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilea
Scottish Government
Riaghaltas na h-Alba
gov.scot

Version 1 – Nov 2018

1. Purpose

The purpose of this document is to help developers and communities understand how to engage with Scottish Water to develop renewable energy and low carbon heat projects. It will provide key steps and timescales to inform the selection of potential sites. This document is not intended to be a guide to developing or financing a renewable energy project, however further information about developing a renewable project can be found in development support section.

2. Our renewable aspirations

Scottish Water provides vital water and waste water services, managing a vast network of reservoirs and water sources, water treatment works, waste water treatment works and more than 60,000 miles of pipes across Scotland. We plan to invest £3.9 billion between 2015-2021 to maintain and improve our drinking water, protect the environment and support the Scottish economy.

We are one of Scotland's largest users of electricity, requiring around 440 gigawatt hours (GWh) per year1. Our renewable programme is aligned with the Scottish Government's "Hydro Nation's" 2 ambitions of supporting a greener and stronger economy. We seek to reduce the cost of delivering water and waste water services for customers and maximise the economic benefit of our water resources by reducing energy cost and consumption and increasing energy efficiency to create a low carbon water nation. Through a combination of our own investment in renewable energy, and hosting private investment on our estate, we generated and hosted more than twice the level of energy we consume by 2018.

We support sustainable communities and encourage the development of renewable energy where it is compatible with undertaking our statutory duties. One of the ways we do this is by hosting renewable development on or adjacent to our assets that can be connected to our asset via a direct private wire connection. This will help us increase the proportion of our electricity requirements from a renewable source and lower our carbon emissions.

3. Scottish Water Horizons

Scottish Water Horizons is a commercial subsidiary wholly owned by Scottish Water. The company plays a key role in contributing to Scottish Water's renewables ambitions by actively exploring ways to utilise the company's assets to facilitate green technologies.

Through the installation of renewable technologies on the utility's operational assets, Horizons is helping de-risk Scottish Water from rising power prices, keep customer prices low and decarbonise operations. Such technologies include solar photovoltaics, heat recovery systems, biomass boilers, anaerobic digestion and small-medium scale wind turbines. More recently Horizons has been exploring the potential of energy storage.

Horizons is actively looking at new opportunities to increase renewable energy production – from exploring additional Scottish Water sites to working with external organisations – to discover new and alternative renewable solutions for the benefit of customers and communities.

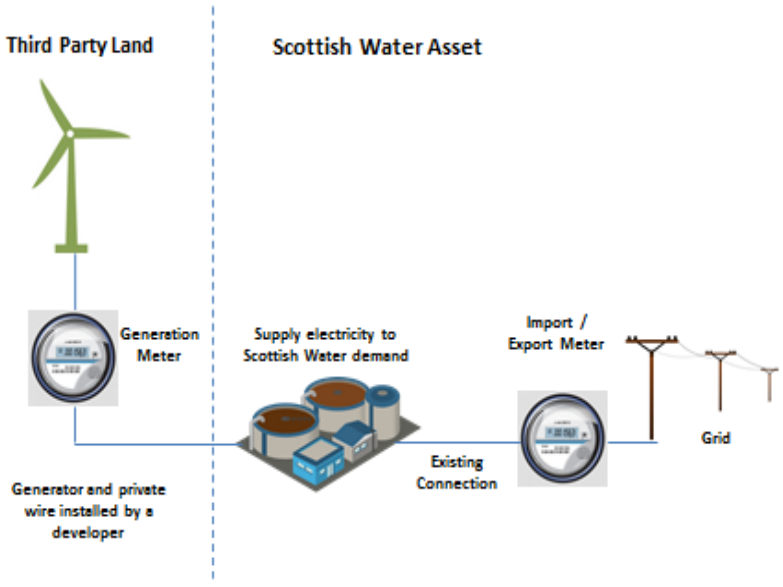
4. Electricity generation and supply

Scottish Water is open to considering all renewable energy technologies that could provide Scottish Water a source of renewable power. Our preference is for projects to be constructed on land adjacent to a Scottish Water asset and connected via a private wire (category 1). We are also open to discussing projects that are constructed on our assets or catchments (category 2 or 3) , so long as they were compatible with our statutory duties. The different categories of supply are discussed below in this section.

A private wire is an off-grid connection between a renewable generator and Scottish Water. This provides a second electricity supply to the site and the incoming grid supply is still maintained. Private wire projects that export to the grid would be required to export through Scottish Water's grid connection. Scottish Water will offer the developer a price that is market-reflective. Private wires benefit the generator who will receive a higher price for their generation compared to export tariffs from exporting to the grid for the electricity used onsite. Scottish Water also benefits by paying less for electricity compared to buying it through the grid.

Category 1: Private wire renewable development located on adjacent land and supplying a Scottish Water asset with electricity

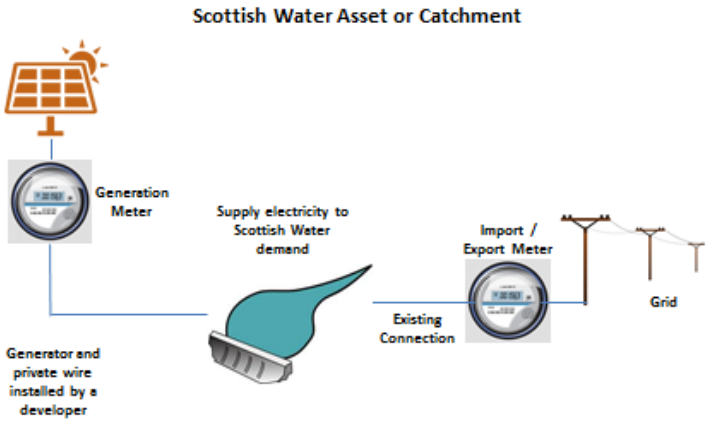
A category 1 renewable development is installed on third party land **adjacent to** a Scottish Water asset and a private water supply is connected to the Scottish Water asset as a secondary off-grid supply. Any surplus power can be exported to the grid via Scottish Water's grid connection if there is export capacity available in the network.



As a rule of thumb, a renewable development providing electricity to a Scottish Water asset should be no more than 1-2km away to enable to project to be viable financially, although this is up to the Developer to test.

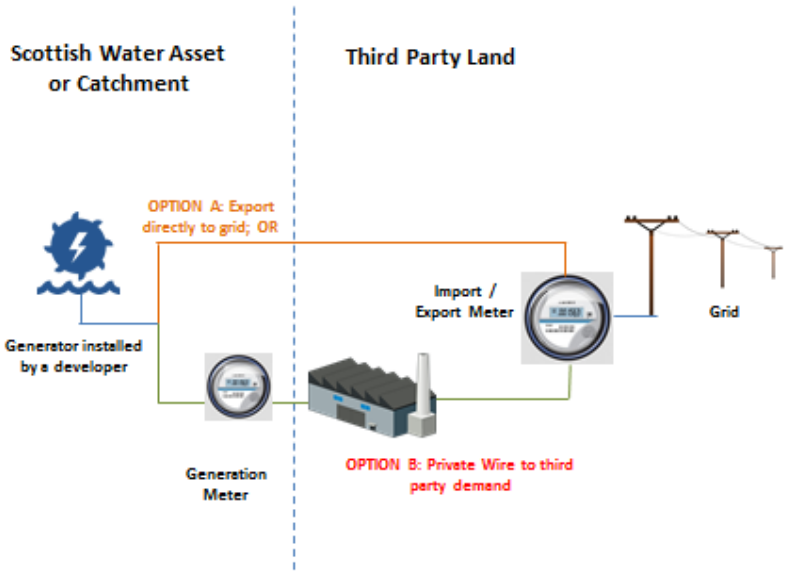
Category 2: Private wire renewable development located on a Scottish Water asset or catchment and supplying a Scottish Water asset with electricity

A category 2 renewable development is installed **on** Scottish Water land / assets and a private wire supply is connected to the Scottish Water asset as a secondary off-grid supply within the site. An example of this would be installing a solar array on an area of a Scottish Water asset not in use on an operational asset. Any surplus power can be exported to the grid via Scottish Water's grid connection if there is export capacity available in the network.



Category 3: Renewable development located on Scottish Water land or catchments, exporting electrical energy to the grid or nearby end-user

A category 3 renewable development is installed on Scottish Water land or catchments and the electricity is exported to the grid via a developer export connection. An example of this would be installing a hydro turbine in a Scottish Water reservoir. In this case, the developer would sign a land rental agreement with Scottish Water as there is no requirement for the electricity as there is no demand.



5. Capturing heat from waste water

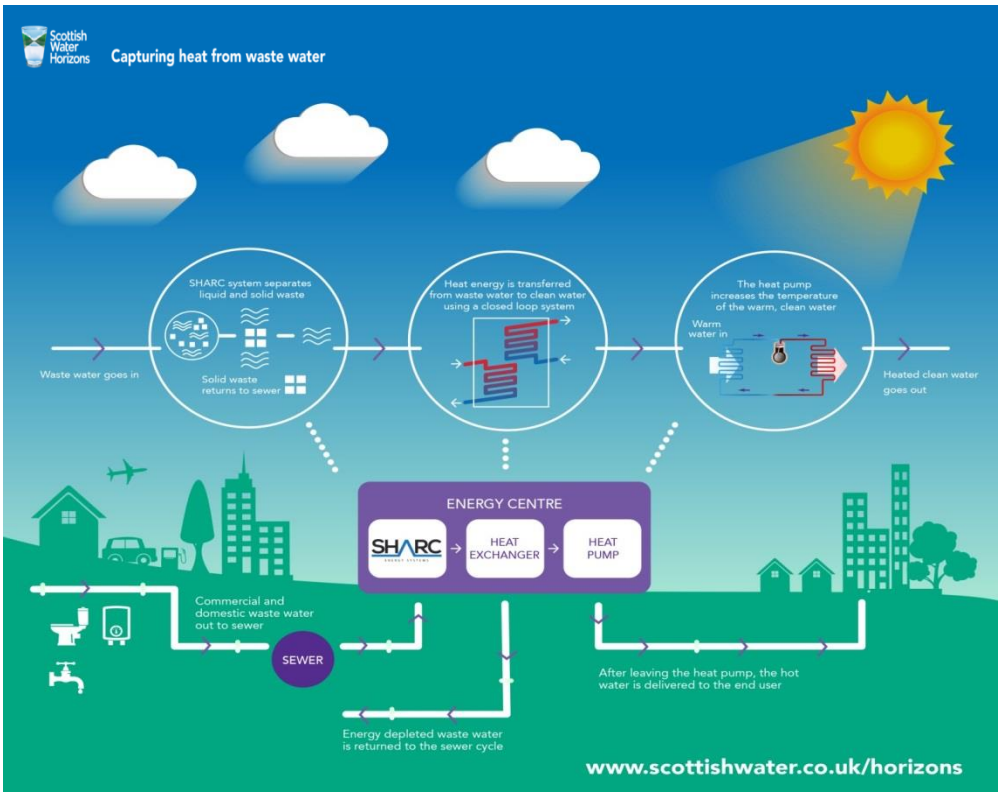
Scottish Water Horizons is facilitating low carbon heat projects by enabling the extraction of heat from Scottish Water's vast waste water network. Horizons is helping to bring low carbon, sustainable heating to a range of commercial, private and public buildings by working in partnership with SHARC Energy Systems, whose innovative technology is used to capture and distribute heat found in the sewer network. Typically these buildings should have a minimum heat demand circa 1GWh per annum.

Water that is flushed into the waste water network from homes and businesses represents a significant source of thermal energy. Usually, this heat is lost as the treated effluent is returned to the environment. By using waste water heat recovery technology, this wasted heat is extracted and then amplified using heat pumps.

The heat is then transferred to the clean water heating network using a closed loop system for distribution throughout buildings. This generates an energy-saving, cost-effective and environmentally-friendly system for heating and hot water production. By simply reversing the process, the system can also be used for cooling.

The technology can be installed at any stage of a building's lifespan; from incorporation into new build design right through to retrofit, and can be adapted to most building styles, ages and construction types.

Working with SHARC, Scottish Water Horizons is currently expanding and accelerating the deployment of waste water heat recovery systems around Scotland. These include low carbon heat schemes in Campbeltown, Glasgow and Stirling.



For low carbon heat enquiries email: Heatfromwastewater@scottishwater.co.uk

6. Key steps in approaching Scottish Water (electricity projects)

If you think you have a viable renewable project that fits within one of the categories above, please follow the following process:

Step 1: Initial enquiry to Scottish Water - energymanagementteam@scottishwater.co.uk

Initial contact should be made to Scottish Water via the Energy Team mailbox (listed above). Please complete the initial approach form detailing the name and description of your organisation; the type of development; the proposed Scottish Water location; the renewable technology/capacity in kW and the information or data you would like to receive from us. We will respond to any initial enquiries within 10 working days.

At this stage Scottish Water will assess whether there is scope for progressing to the next stage and we will inform you if there are any reasons why a development would not be appropriate, for example if our future plans for the site limit our capability to host an installation or electrical connection.

We will endeavour to provide information or data that you request, as long as we already have it available or we can collect it without incurring cost. If it is not the case, then site survey or data collection work will need to be undertaken at the developer's own cost. It is worth noting that where past data demonstrates a particular level of electrical demand or water flow, it may not be possible to guarantee these levels into the future.

Step 2: Submit a detailed proposal

Scottish Water will contact you to discuss your plans in more detail and request a more detailed proposal. A high level breakdown of what should be included is below:

- Does the site have planning and any export consent?
- Site plan showing proposed location of infrastructure in relation to Scottish Water assets
- Nature of proposed development interface with the Scottish Water asset
- Electrical or heat capacity of proposed development
- Predicted generation in kWh and any planned maintenance periods
- How the development is sized to ensure that the supply to the Scottish Water asset is maximised (and not exported to the grid)

A rule of thumb is that any renewable project supplying Scottish Water with electrical power from should be at least 50kW to make a project finically viable.

The Scottish Water Energy Team will consult a wider range of internal stakeholders at this stage and if we consider the proposed development to be appropriate, we shall appoint an internal project team and you will be notified that you can progress to Step 3.

Step 3: Agree key principles & exclusivity

Step 3 involves agreeing a set of key principles which are agreed and signed by both parties. Scottish Water will offer exclusivity to a community developer for a period of one year. The "Key Principles" document outlines the key conditions for site development, including access. This will include but is not limited to:-

- Any internal staff time, legal or land search costs reasonably incurred by Scottish Water will be chargeable to the developer, for example where lease or land access agreements are required
- Any installation works undertaken within a Scottish Water asset boundary must be carried out by Scottish Water's framework contractors. Scottish Water can supply a list of accredited contractors
- Any installation works within a Scottish Water asset boundary will be covered within the project budget by the developer of the project
- The developer must maintain £10m public liability insurance
- The design and construction programme shall make allowances for Scottish Water's internal review processes for assessing projects
- A Company parent guarantee for larger projects
- Developer must provide water pollution prevention plans to protect Scottish Water reservoir catchments

Once an exclusivity agreement has been agreed and signed, the project can start to progress through the normal development phases from securing funding through detailed design, consenting, construction and ultimately operation. Scottish Water will provide any necessary support to help with achieving appropriate consents and finance, however it is the responsibility of the developer to manage these aspects of the development phase.

If Scottish Water has been approached by more than one developer or community to link a potential renewable project with a Scottish Water asset, we reserve the right to run a competitive tender process to determine the best value for Scottish Water. Or alternatively we would consider a joint approach where communities can work together.

Step 5: Agree a power purchase agreement

A Power Purchase Agreement between the developer and Scottish Water will be agreed for project where Scottish Water is purchasing electricity for onsite use and/or export to the grid. Scottish Water has a legal template that it will issue that can be used to develop the contract. Scottish Water will cover all internal legal and project costs, however if there are any external legal costs, we would expect the developer to include these in the project budget.

Step 6: Implement the project

Scottish Water will provide contacts within its Energy Team to deal with project management during the implementation phase of the project and a contract manager to deal with negotiating contracts drawn up and the ongoing review of any agreements.

7. Community Empowerment (Scotland) Act 2015

Scottish Water supports the Scottish Government's aspiration to see a Scotland where community-led action is celebrated and community ownership is desirable and viable. A key element of this legislation is Part 5 of the Act (Asset Transfer Requests). Part 5 introduces a right for community bodies to make asset transfer requests to a wide-ranging list of public bodies, including Scottish Water, for any land or buildings they feel they could make better use of to help deliver services and/or to address local needs. It details the statutory process that has to be followed by eligible community bodies when requesting ownership, lease or right to manage, use or occupy public land or buildings.

Please note that land used for the supply of drinking water and disposal of waste water and certain reservoirs are excluded from these provisions.

Under the Act public bodies are required to provide a register of assets it owns or leases to the best of their knowledge and belief, subject to certain specified exceptions set out in the Community Empowerment (Registers of Land) (Scotland) Regulations 2016. Scottish Water's register of assets can be reviewed by following the link below.

https://www.scottishwater.co.uk/about-us/freedom-of-information/freedom-of-information-and-publication-scheme/community-empowerment-act.

The guidance for both public bodies and community groups encourages dialogue between the parties at an early stage to share information that will be helpful in considering and preparing potential Asset Transfer Requests. Scottish Water would therefore encourage any interested groups to email us their enquiry at assettransferenquiries@scottishwater.co.uk.

8. Case Studies

Girvan Mains Farm Supplies Girvan Waste Water Treatment Works with Green Electricity

In 2016, Scottish Water's Girvan Wastewater Treatment Works was supplied with 100 kW of capacity from a new AD Plant running on manure on the adjacent farm owned by A Young.

The plant provides 60% of the plant's electricity requirements, saving Scottish Water circa £40K and circa 0.8 GWh of renewable electricity per year.

The farm business receives an above market price for their power from Scottish Water on a PPA contract for 20 years and can export surplus power to the grid through Scottish Water's meter.

Fair Isle Electricity Company Supplies Wind Power to Water Treatment Works

Fair Isle erected the UK's first 60kW wind turbine in 1982, supported by the National Trust for Scotland and the local authority. This complemented the existing diesel generator system. Another turbine followed some years later. The Fair Isle Electricity Committee (now Company) wisely set charges that encouraged Consumers to use wind generated power rather than the more expensive diesel generated electricity, helping alleviate fuel poverty on the island.

In 2014, the community, supported by HIE, created a future development plan for the island. Around the same time Scottish Water commissioned a feasibility study into energy production as part of their plans to upgrade the water supply. Shared aspirations led to the plans for a new and enhanced electricity system for Fair Isle. HIE supported FIEC to successfully access funds for early stage project development.

Capturing Heat from Waste Water in Galashiels

Scottish Borders College Campus in Galashiels is the first example in the UK of heat being extracted from waste water networks for use as space heating and hot water, reducing customer costs and carbon emissions.

The team at the campus were looking for a way to meet their carbon reduction targets by replacing their existing gas heating system with a sustainable alternative. Catering for over 6,000 students, the campus contains a range of buildings including their modern main premises and an 18th century mill.
Working SHARC Energy Systems, Horizons enabled the installation of a heat recovery system to support the entire campus by tapping into the town's sewer networks.

The heat technology now provides the campus with the majority of its heating demands (around 1.9 GWh a year), saving over 230 tonnes of carbon per annum. All of this work was financed using a heat sale model which meant that Borders College did not have to commit to capital expenditure, entering into a 20 year heat sale agreement with SHARC instead. The installation was the recipient of two industry awards recognising its innovative and sustainable method of providing heating.

9. Development Support

This document is not intended to be a guide to developing or financing a renewable energy project, but the main development support is listed below. Further guidance information can be found through Local Energy Scotland and the Scottish Government. Support is also available for communities seeking to acquire land or buildings to deliver community benefit. This could include the purchase of assets to enable the development of a renewable energy project.

Funding

Local Energy Scotland
https://www.localenergy.scot/funding/

- **Enablement Grants:** These are available towards start-up costs of feasibility studies, community consultation and other preparatory costs.

- **CARES Development Loans:** These offer funding to develop renewable energy generation schemes for communities and other eligible organisations.

- **CARES Innovation Grants:** These are available to fund innovation activity or improve the viability of projects

Scottish Government Low Carbon Infrastructure Transition Programme
http://www.gov.scot/Topics/Business-Industry/Energy/Action/lowcarbon/LCITP

The LCITP was launched in 2015 and is a working partnership between the Scottish Government, Scottish Enterprise, Highlands & Islands Enterprise, Scottish Futures Trust and sector specialists. A range of support mechanisms including project development, expert advice and financial support (where applicable) is available through the LCITP to support the development of substantive private, public and community low-carbon projects across Scotland.

Development resources

https://www.localenergy.scot/resources/

There is a wide variety of resources available including the CARES Toolkit, which includes the following information:

- **Technology Options:** Including information about renewable energy generation and supply options, including local energy supply.

- **Business Planning:** Including information about project finance and sources of finance, subsidies and shared ownership.

- **Project Development:** Including information about developing an idea, securing a site, grid connection, procurement, planning and construction.

Community asset ownership support

- **Advice and funding (HIE):** Communities in the Highlands and Islands can access support from HIE's Community Assets Team http://www.hie.co.uk/community-support/community-assets/

- **Advice to acquire assets from the public sector:** The Community Ownership Support Service (COSS) is a Scottish government funded programme, set up to help community-based groups in Scotland to take on land or building assets for their community http://www.dtascommunityownership.org.uk/

- **Funding to acquire assets**: The Scottish Government's Scottish Land Fund supports communities to become more resilient and sustainable through the ownership and management of land and land assets https://www.biglotteryfund.org.uk/funding/programmes/scottish-land-fund

Highlands and Islands Enterprise technical advice framework

http://www.hie.co.uk/community-support/community-energy/lcesframework.html

HIE's Low Carbon Energy Systems (LCES) Technical Advice Framework has been put in place to provide support to communities and businesses across the Highlands and Islands to access technical project development advice to assist in the early stage/concept development of a low carbon energy systems project.