

# Community and Renewable Energy Scheme Project Development Toolkit Hydropower Module

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## Module Structure

The CARES toolkit Project Development is intended to be used as a reference by CARES Clients of all kinds, including community groups, community based businesses and rural businesses. This module is one part of a series of documents forming the CARES Toolkit and is designed to cover all sizes of project, although the scale and complexity of multi-MW projects may require more detailed evaluation than smaller projects.

Other modules that may also be of particular interest to those reading this module are:

- Establishing a Community Group
- Project Finance
- Procurement
- Securing the Site
- Planning
- Construction
- Grid Connection
- the Feed-in Tariff
- Local Energy Supply
- Investment Ready Process
- Community Investor
- Sources of Finance

This module is structured in four parts to act as a guide and reference document for CARES Clients in the development of a hydropower project in Scotland.

### **Local Energy Supply**

Overview of the current renewable energy market.

### **Project Overview**

A brief introduction to the typical ways to develop a hydropower project and step by step summary.

### **Project Steps, Phases and Breakpoints**

A more detailed look at each stage of a project, showing a logical progression with defined break points.

### **Further Information**

Appropriate links, definitions and references to other information, collated for quick reference.

## Local Energy Supply

Since 2015 the renewable energy market has changed with a new focus on more innovative grid solutions and electrical sale options, which move away from the traditional dependence on Feed-in-Tariffs (FiTs), which are currently reducing in value and due to disappear in 2019.

In terms of grid constraint issues, the Distribution Network Operator (DNO) is a body licenced to distribute electricity at regional and local level. In Scotland, there are two DNOs, Scottish and Southern Energy Power Distribution (SHEPD) covering the area north of Perth, and Scottish Power Energy Networks (SPEN) covering the area south of Perth. Both SHEPD and SPEN have large areas of constrained grid, which can lead to an expensive connection cost or a wait of several years for a connection date. There are a range of options which can be used to overcome grid connection constraints.

To overcome both the potential issues with grid connections and financial viability based on reducing or removed tariffs, there is a new focus on local energy supply. Different approaches can be taken to **Local Energy Supply**, as described in the toolkit module, these provide community groups with new options for supplying energy locally or selling electricity produced on a contract basis. This new focus on local energy supply provides the community group with a wider range of development options and the potential for increased revenue.

## Project Overview

### Hydropower development options

The wide ranging location of many hydropower installations, their potential complexity and the need to engage with the community to obtain planning permission has led to a number of different development models. Many of these are based on some form of partnership between a developer and the community, possibly in a Joint Venture arrangement.

The main features of these partnership based projects are that they are usually developer led and that financial reward follows risk (the CARES Client/organisation would also normally have less control in the overall outcome a project). Therefore, while allowing a hydropower developer to lead the project and drive it through to completion offers less risk, involves no cost and requires little work for the CARES Client, the financial reward is poor relative to the value of the operating project.

A significant number of hydropower projects have been developed by communities themselves, this increases the risk but ensures maximum returns to the community through complete ownership of projects.

Local Energy Scotland manages a registration portal that community groups ready to join shared ownership projects and commercial renewable developers seeking shared ownership partners can connect through. Having read this module, if a shared ownership approach seem appropriate, more information is available in 'Further Information'.

Table 1 below sets out in outline the main options open to a CARES Client wishing to be involved in a hydropower energy project. It identifies the role of parties involved, where the main risks lie and estimates the potential benefits to the parties involved.

**Table 1: Hydropower development options.** The Table below gives generalised descriptions of different approaches to project development potentially available to CARES Clients.

Module	Option	Description	Role of the CARES Client	Role of third partners	Risk to CARES Client	Benefits to CARES Client	Comments
1	<b>CARES Client as project developer</b>	The CARES Client takes total responsibility to identify, develop and operate the hydropower project	As developer	None	CARES Client bears all of the technical, commercial and financial risks	The CARES Client gains all of the income from the project and remains in total control of the process and outcome	For the CARES Client to retain all the financial and other benefits it must act as developer and take responsibility for all project risks. The CARES Client may become responsible for making community benefit payments to others
2	<b>Partnership with another developer (e.g. 'Joint Venture')</b>	As above, but the CARES Client shares project development costs and risks	To undertake agreed tasks within the project development process	To undertake agreed tasks within the project development process	As development will likely be via a separate legal entity, these can be limited to project costs	Will be in proportion to the work undertaken, investment made and thus risks taken	Depending on the detail and legal options taken, this can give the CARES Client control of the project and can make the process of development easier. It still does not transfer all of the benefits from the project
3	<b>CARES Client initiates development then hands over to a developer</b>	CARES Client finds a site or sites, assesses initial viability then seeks a developer partner to take the project forward	Site selection and initial viability assessment, especially around likely planning approval	To confirm viability and take the project forward to operation	Work to identify/qualify a site mostly involves time not money minimising risk	As the 'owner' of the site the CARES Client can negotiate more favourable outcomes in terms of ownership of the final project	CARES Clients can control the site of hydropower development and generate higher benefits, but the main reward will still follow development risk/capital investment and will reside with the developer
4	<b>Hydro developer leads the project then sells it to the community</b>	Developer bears all cost and risk of development. Once operating the CARES Client progressively buys the developer out	Initial support for the project to make it a success then raises funds in some way for developer buy-out	Provides development skills and finance	Low as they will be assuming ownership of an operating asset of known performance	Low risk route to long term asset ownership of a project bringing local benefit	Potentially an attractive option but one that increases the investment cost to the community and potentially reduces the period of ownership for the community of the operating asset. If a CARES Client is considering this option, they will need to obtain legal and financial support for their investment. Invitations to Tender (ITT) for the legal support services and for financial support services are available on the Local Energy Scotland website
5	<b>Hydro developer leads and owns the project</b>	Developer finds the site and bears all cost and risk of development, the CARES Client receives a payment	Support the developer in its planning application	All other works	None	Benefits paid to date can be found in the community benefits register on the Local Energy Scotland website	Low risk but low reward. Any payments to CARES Clients will always be a small fraction of the profits available

## Overview of activities

From this section on, the module assumes that you as the Community Group are leading the development of the hydropower project. Other models discussed above may still require you to undertake some elements of project development. In this case you will have to select those elements of the module to use.

There are a number of barriers in the development of a community hydropower energy project but careful preparation and planning offers the best chance of overcoming these barriers. These can include:

- Obtaining permission from a potentially high number of landowners for access to the water resource;
- Identifying and mitigating environmental concerns;
- Obtaining planning permission in sensitive locations;
- Obtaining a CAR licence from SEPA; and
- Obtaining a suitable grid connection point.

These in turn add to development costs. Finally, river sites are often remote with limited access which can cause additional challenges during the construction phase which again add to cost. This makes it important that you develop your hydropower project with care.

Local Energy Scotland (LES) provide free support, through their local Development Officers, to help CARES Clients overcome these challenges and may also be able to provide financial support through the CARES Loan and Grant Schemes.

Table 2 below outlines the steps in developing a hydropower project irrespective of scale and who is leading the development. These steps are typical and may not occur in the same sequence for all projects.

**Table 2: Overview of activities.** The table below summarises a logical progression for developing a hydropower project

Phase 1	Developing the idea	
<b>Step 1 Develop the Vision</b>	A key initial step in hydropower development is to define why you want to undertake the project	1 to 4 months
<b>Step 2 Seek Advice</b>	Hydropower developments have already been undertaken by groups or businesses like yours	
<b>Step 3 Communicate</b>	Hydropower has the potential to be contentious so it is important to undertake early consultation with local residents and the wider community	
<b>Step 4 Find a Site</b>	Sites can be assessed against key factors to identify if there is potential for a viable hydropower project. Ability to secure use for up to 40 years is beneficial	
<b>Step 5 Initial Scoping</b>	High level site potential. There are a number of web based tools which allow you to quickly review the potential viability of a given site	
<b>Break Point 1</b>		
<b>Is there a reason to develop?</b>		
Phase 2	Assess potential sites	
<b>Step 6 Establish an Entity</b>	A community may need to be established as a formally constituted body or legal entity. A business may choose to operate under the business name	1 to 4 months
<b>Step 7 Secure Initial Funds</b>	Identify funding options to support pre-feasibility work. Appropriately constituted community groups can apply for a CARES toolkit Start-Up Grant	

<b>Step 8 Pre-Feasibility Study</b>	A more detailed scoping study, usually by a paid consultant, to assess the site(s) identified and the technology options suitable	
<b>Step 9 Financial Viability Check</b>	More detailed accounting of estimated expenditure and income should be carried out. There is a CARES toolkit Finance Model that can be used for this purpose	
<b>Break Point 2</b>		<b>Does the project have potential?</b>
<b>Phase 3</b>		<b>Evaluate the project</b>
<b>Step 10 Secure the Site</b>	The site is the key to viability so it is important to secure it by a legally binding agreement (an options agreement) before incurring further development costs	6 to 12 months
<b>Step 11 Full Feasibility Study</b>	Building on the scoping study this more detailed study is carried out to identify all the site constraints and confirm potential hydropower installation models appropriate for the site	
<b>Step 12 Confirm Grid Available</b>	Based on feasibility study information, check grid availability at the preferred locations. CARES Development Officers can support enquiries to the DNO	
<b>Step 13 Pre-Planning Consultation</b>	Meet with the local planning representatives and discuss your project, their relevant policies and any requirements they may place on an application	
<b>Step 14 Neighbour Notification</b>	Good practice includes notifying all properties within 1km of the site about the proposed project and where possible ask for views and feedback	
<b>Break Point 3</b>		<b>Can the challenges be overcome?</b>
<b>Phase 4</b>		<b>Develop the project</b>
<b>Step 15 Fix the Project Size</b>	You should now have a scale of development in mind and the feasibility study, planning consultation and grid enquiry should have helped to fix this	6 to 18 months
<b>Step 16 Financial Viability Check</b>	Confirm the project remains financially viable. The CARES toolkit Finance Model can be used with more detailed figures and various scenarios tested.	
<b>Step 17 Secure Pre-Planning Funds</b>	Identify funding options to support ongoing development of the project through to a planning decision. CARES Clients can apply for a CARES Pre-Planning Loan	
<b>Step 18 Planning Application</b>	Usually through paid consultants and including a variety of reports, surveys and visualisations, prepare and submit a Planning Application for the project	
<b>Step 19 Water Use Licence Application</b>	Make a formal CAR licence application to Scottish Environment Protection Agency	
<b>Step 20 Grid Application</b>	Make a formal grid application to the appropriate Distribution Network Operator	
<b>Step 21 Identify Funding Sources</b>	Investigate routes to achieve capital funding. The most appropriate should be selected at this point as this will influence some future activities	
<b>Step 22 Develop Full Financial Model</b>	Complete a business plan and detailed financial appraisal with full project costs and projected project lifetime incomes to take to potential funders	
<b>Break Point 4</b>		<b>Confirm consents, grid and financial viability</b>
<b>Phase 5</b>		<b>Getting Financial Close</b>
<b>Step 23 Identify and Contact Suppliers</b>	With consents and agreements in place, the hydropower turbine supply, construction, operations and maintenance contracts can be formalised and programmed	1 to 4 months

<b>Step 24 Secure Bridge Funds</b>	Identify if further funding is required (usually for deposits) prior to Financial Close. Well managed projects may be able to apply for a CARES Post-Planning Loan	
<b>Step 25 FIT Pre-Accreditation</b>	Timing of FIT pre-accreditation is critical to getting the best possible tariff for a project by balancing anticipated construction times with tariff reduction	
<b>Step 26 Financial Close</b>	This is the point at which the funder assesses the project through a due diligence process and, if acceptable, agrees to release funds for construction	
<b>Break Point 5</b>		<b>Can the project be funded?</b>
<b>Phase 6</b>		<b>Completing the Project</b>
<b>Step 27 Account for Other Funds</b>	Secure any additional capital funding and repay development loans where required. CARES Loans should be paid in full on reaching Financial Close	1 to 12 months
<b>Step 28 Construction</b>	Post Financial Close, confirm all orders and contracts and the process of hydropower turbine delivery, construction and connection can take place	
<b>Step 29 Community Benefit</b>	Where appropriate enter into a community benefit agreement to secure index linked community benefit payments for the life of the project	20 to 40 years
<b>Step 30 Operation</b>	Ensure management is in place for the life of the project for collecting and distributing income and meeting operating, financial and other liabilities	
<b>Step 31 Decommissioning</b>	Hydropower projects must plan for removal of the construction at the end of the productive life (which can be up to 40 years)	

## Phase 1 - Developing the idea

### Step 1. Develop the Vision

A key initial step in hydropower development is to define why you want to undertake the project. This may be to utilise the UK Government Feed-in Tariff (FIT) to support the development of the installation within the community or rural business community and the income that will result from the project. Other reasons may be around becoming more energy self sufficient to offset rising energy prices or environmental drivers to become carbon neutral. It is important that you fully understand these drivers so that project viability and outcomes can be tested against your objectives.

For communities, an excellent way to identify needs can be through the development of a 'Community Action Plan', the production of which will allow you to develop a strategic plan and allow local democracy to define and respond to local community objectives and opportunities. It also provides a robust mandate for the distribution of funds when a community related venture begins to provide revenue. A strategic plan provides overall direction on the long path from where things are now to where we hope they will be. Community work can be greatly enhanced by a clear vision, a mission statement, objectives, strategies, and an action plan.

Businesses can also benefit from the development of an action plan, as this helps link business needs and objectives with the potential to develop a hydropower energy project.

The main points to consider in an action plan are:

- What are the needs in your community/business and what evidence of these needs is there?

- What potential, realistic changes can you envisage?
- What actions and activities need to be undertaken to meet the needs and implement the changes?
- What are the costs of the actions?
- What are the short and long term priorities?

Eligible CARES Clients can apply for a CARES Start-Up Grant to support developing a community action plan. A number of examples of action plans produced by CARES Clients are listed in the 'Further Information' section.

## Step 2. Seek Advice

It is sensible to seek the advice and experience of those that have started from a similar position and are well placed to offer help and guidance. By seeking this input from the outset you will be able to build on the success of others when taking your project forward. Early liaison with your local CARES Development Officer (DO) can highlight opportunities for knowledge transfer between organisations and potential meetings or project visits.

Local Energy Scotland and other organisations such as Community Energy Scotland, the Development Trust Association Scotland and the Energy Saving Trust also maintain case studies to facilitate the identification of suitable projects to approach and to gain their insight.

Consider completing a skills assessment of those persons that can be involved in the project during the development stages as the need to buy in consultancy support will clearly add to the cost of the project. The CARES toolkit Establishing a Community Group module describes the range of skills that could be beneficial when completing this action.

Importantly, look for advice in relation to an appropriate scale of hydropower project to suit the project objectives.

## Step 3. Communicate

Experience shows that this communication must be open and honest about what is being planned and must include good opportunities to receive and respond to feedback. This also avoids any misinformation being generated and to allow the vision for the project and the benefits from it to be fully explained. Eligible CARES Clients can apply for a CARES Start-Up Grant to support communication of this nature.

If strong opposition remains after this process it may make it harder and more costly for you to obtain planning permission and may cause lasting social impacts within your community.

It is equally important for a rural business planning hydropower energy projects to ensure that it has local support for its plans. A rural business receiving CARES financial support will pay an annual sum to the local community, but it is important to understand the relative significance of this against any perceived impacts such as visual intrusion.

There are a range of guidance documents available for engaging with the community referenced in 'Further Information'. CARES Clients should contact all relevant stakeholders, including but not limited to, wildlife trusts, activity groups and anglers.

## Step 4. Find a Site

The CARES Renewable Handbook provides information about what constitutes a good site for a hydropower scheme. As part of this process it is important to understand the impacts that construction of a hydropower scheme can have and the requirements of permitting as these issues can have impacts on site selection. There are several important points to consider when identifying a suitable site:

- Hydropower resource;
- Planning constraints;
- Grid connection, and how to maximise the value of the power;
- Lease agreement;
- Licencing issues; and
- Access to site.

### Hydropower resource

You will want to identify potential site locations offering the best energy yield. This will involve understanding the available head (the height differential of the water course) at your proposed site and also the water resource available, the flow. Hydro projects can be broadly classified into three categories according to the available head, these are:

- High head – greater than 50m
- Medium head – 10m to 50m
- Low head – up to 10m

Some of the possible arrangements of different small scale high/medium head and low head run of river scheme are shown in [Figure 1](#). The Canal and Penstock or Penstock Only arrangement is typical for high/medium head projects. The Mill Leat or Barrage arrangements are most commonly used for low head projects.

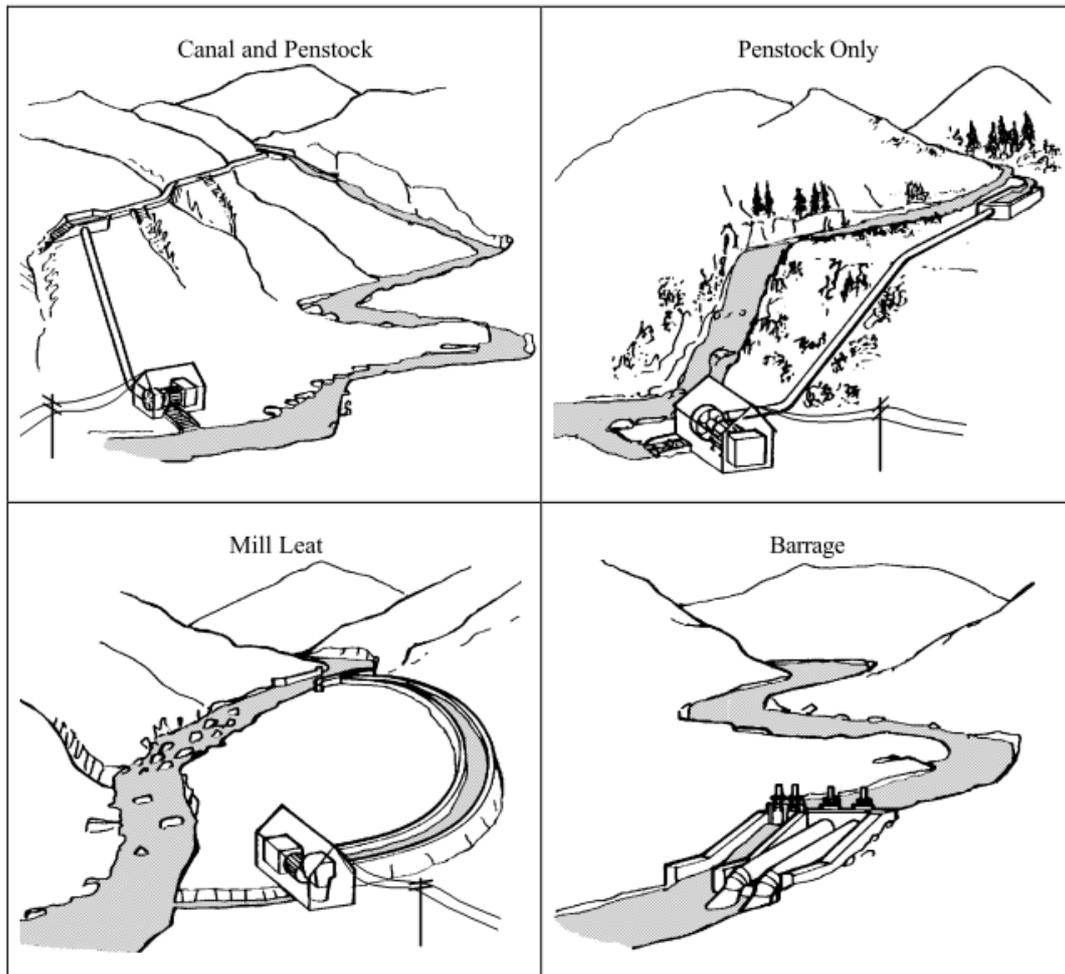


Figure 1: Examples of high/medium head and low head hydropower scheme configurations (Source: British Hydropower Association)

Understanding the head available will then inform if the project will be a low head site or medium/high head site. This will have a number of implications and different advantages and disadvantages:

- A high head site will need additional infrastructure to convey the water from the intake to the hydropower turbine powerhouse/outlet; this may be some distance apart and cross over the land of several land owners; and
- A low head site will normally be more compact and could make use of an existing infrastructure such as a weir or an old mill site, but due to the reduced head will require more water compared with a high head system to deliver the same power output. Therefore the hydro equipment will generally be larger and civil works be able to divert a larger flow of water through the hydro equipment.

The Centre for Ecology and Hydrology has data river flow and catchment for a selection of larger rivers. A common method that is used to estimate the water resource available at a given point in a watercourse is LowFlows, a software tool that estimates from an analysis of the catchment area.

The Scottish government has published a hydro resource assessment. Although from 2008, this provides an indication of the potential for hydropower installation across over 50 different areas across Scotland.

The proposed site must have the highest possible energy yield for as much of the year as possible and must not be unduly impacted by fluctuations in water flow such that energy yield drops significantly or the hydro plant is required to shut down for significant periods.

### **Planning constraints**

Many planning authorities have published Planning Policy Guidance covering hydropower projects and this should be your first port of call for background information. In addition many Planning Departments welcome early informal discussions with hydropower developers about their plans; this may give an early view if a proposal is likely to receive planning at a specific location. If hydropower installations have been proposed, or built in the area, the Local Authority web site will contain details of the planning application, the objections and any restrictions on the development of hydropower. This can be a valuable source of local information. While results from this background research can never guarantee that planning permission is possible or will be rejected on any given site, it may help to identify where there may be serious barriers to granting planning permission and the basis for this. The CARES toolkit Planning module provides additional guidance and should be referred to.

Clearly, designated areas such as Sites of Special Scientific Interest (SSSI), Areas of National Outstanding Beauty (ANOB) and National Parks have significant planning restrictions associated with them and will require additional consultation and a more detailed Environmental Impact Assessment (EIA) for hydropower development than in other locations. Scottish Natural Heritage (SNH) has a web based mapping tool that will show some of the relevant land designations and constraints.

### **Grid connection**

A grid connection will be required for most projects, unless isolated supply and use is envisaged. Grid connection can be a problem across parts of Scotland, especially if large amounts of electricity are being generated in the vicinity and sufficient grid capacity is not available. Typically the further a connection point from the hydropower turbine this is, the higher the cost of connection will be (due to increased cable costs, which may need to be buried). Early discussion with the Distribution Network Operator (DNO) may give broad cost of connection, subject to detailed connection studies. This is covered in more detail in the CARES toolkit Grid Connection module.

### **Lease Agreement**

To install a hydropower turbine on a site will require a lease for a period of at least 20 years, the likely lifetime of the equipment and length of any FIT contract. Depending upon your hydropower design, up to 40 years may be appropriate. Identify site owners through the land registry and make an initial approach to confirm their willingness in general terms to make the site available. The CARES toolkit Securing your Site module contains further guidance on this which should be reviewed when you have identified a site.

### **Licensing**

All hydropower schemes require a water use licence from SEPA. For these reasons you should contact your nearest SEPA office to seek advice and guidance well in advance of your application for an informal enquiry.

The SEPA guide uses a check list to assess the impact of a hydro scheme on the water course. There are a number of different types of scheme that will pass the criteria. One is schemes on water courses that are already significantly affected by man-made activities. Another is steep burns where water the amount of extracted will not affect the habitats.

All hydropower schemes represent a compromise between the need to generate renewable energy and the impact the hydro scheme has on the environment. In assessing licence applications SEPA aims to ensure that an appropriate balance between promoting hydropower and protecting the water environment and other water users is always achieved. This balancing determination will be in line with the policy statement issued by the Scottish Government in January 2010.

Clearly it is important that the scheme is located in a water flow that is away from sensitive habitats and causes minimal environmental impacts both during construction and operation. The inclusion of measures such as means for fish to by-pass the scheme is also important. The SEPA guidance outlines what environmental standards it expects to see in a project.

As part of the licensing of a scheme, SEPA may require a minimum of 1 year of onsite monitoring, which would need scheduled into your project development plan.

#### **Access to site**

Other locational issues are the physical access to the site to deliver, construct and on-going maintenance of the hydropower installation, powerhouse and associated equipment. This is a particular issue with the inlet for hydropower schemes which could be remote and away from roads, and the penstock which may cross areas without tracks or roads. Consideration must be given as to how delivery to the site is to be achieved. If this is an issue it must be identified, especially if the cost of making a temporary track must be included in the project development cost. Sources of information about access include local council transport officers and local transport contractors. Full access surveys will be completed as part of the detailed project development later in the process.

### **Step 5. Initial Scoping**

Having identified a potential site (or sites) consideration of the commercial viability of the project should begin. In the first instance web tools can be used to provide an initial assessment of viability. There are many different tools available to do this, some of which are referenced in Further Information later in this module.

As a general rule of thumb, at this point in the development of the project a site generating an estimated payback of 6 years or less has the potential to make a viable project. Your Local Energy Scotland DO can provide support at this stage to help determine if the project seems viable.

### **Break point 1 – Is there a reason to develop?**

The development process in Phase 1 is intended to identify the need for a project, helps gauge local support and looks to find potential sites. If there are clear benefits to developing a project and a site can be found that is:

1. Identify potential sites for hydropower development that are:
  - a. Available to purchase, or where access can be secured on a long lease (at least 20 years);
  - b. Accessible for project construction and maintenance;
  - c. Close to a point of grid connection;
  - d. Likely to have a good annual energy yield (subject to confirmation) and sufficient water resource;

- e. Unlikely to cause unacceptable impacts on habitat and/or wildlife, especially fish; and
  - f. Potentially able to gain planning permission, water use licence and the other consents required.
2. Confirm that the energy yield is potentially high enough across the year; and
  3. Take an option on, or otherwise secure any site which meets the above criteria and access to it.

If a site which meets these criteria cannot be secured then the project should be stopped at this stage. However, if a site is available then this is a good point to take the project forward. This will require the CARES Client to formally establish an appropriate formally constituted body or legal entity to facilitate securing the site and undertaking the next stages of development.

There are two actions that are useful throughout the entire ongoing project development, which you may choose to start now. Both are provided free by Local Energy Scotland.

- 1) Investment Ready preparation – Local Energy Scotland have developed a tool for recording the progress in developing your project and storing all the supporting documentation in a secure, online site. The local CARES Development Officer will assist in setting this up.**
- 2) Project Development plan – a project development plan detailing key tasks, responsibilities and schedule for completion can help you meet the important deadlines that influence the success of your project. Local Energy Scotland has produced a template plan which can be downloaded.**

## Phase 2 - Assess potential sites

### **Step 6. Establish a Legal Entity**

In order to make funding applications, establish banking facilities, secure a site, and enter into contracts or joint venture arrangements, to pay bills and to receive income there should be a recognised legal entity taking the project forward.

For rural businesses, it is important that any liability insurance or the conditions of existing bank finance allow diversification into renewable energy generation so that this activity is covered. In the case of larger projects it may also be prudent to isolate the liabilities of the hydropower project from the core business.

For CARES Clients that are not already constituted, this means an appropriate formally constituted body or legal framework, usually where the constitution provides some protection against personal liabilities and potentially including appropriate insurance. The CARES toolkit Establishing a Community Group module contains more information on establishing a legal entity.

The form of legal entity taking on the project can influence the range of finance options available and could be critical in securing the finance option most suited to the project objectives. Further information on finance options can be found in the CARES toolkit Finance Model. The modules should be reviewed when progressing the potential hydropower project.

It is important that legal advice from a solicitor who has experience of completing this type of work is obtained at this stage.

### **Step 7. Secure Initial Funding**

If project funding has not been identified already, then it will almost certainly be required from this stage on.

There are many ways to source funding, however CARES Clients have generally fallen into two categories. Communities, third sector organisations and charities that may be eligible to apply to CARES for a Start-Up Grant usually find this the most appropriate, whilst businesses often managing initial funds internally.

Development costs for hydropower schemes up to 250kW can cost over £50,000 and increase depending on the size and complexity of the scheme (and if an EIA is required and the associated environmental studies).

### **Step 8. Pre-Feasibility Study**

Up to this point little if any financial investment has been required to develop the project, with almost all input being that of time. From this point on costs will be incurred in advance of any capital draw down from a finance provider.

This is a scoping study that is intended to identify suitable sites for development and is commonly out-sourced to a professional. For small scale developments (<50kW), a hydropower turbine supplier may provide some level of this professional support for a low or reduced fee.

The study may look at several sites, and for each site investigate the potential scale and cost of the development. It will also look at each of the key constraints and identify which would be critical to enable the

project to be developed on that site. The client or professional can also use the CARES DNO enquiry form to obtain initial grid information local to each site.

The subsequent report at the end of the study should indicate for each site:

- a. Annual energy yield and estimated income.
- b. Environmental and technical constraints.
- c. Initial estimates of capital, operations and maintenance cost.
- d. Screening and scoping opinion from local planning authority which will detail key constraints that need to be addressed.

Procuring this study in a competitive process ensures value for money and allows for a review of the consultants experience and skills prior to engagement. A template Invitation to Tender (ITT) for procuring these services is available on the Local Energy Scotland website and provides an outline of all the tasks that a professional consultant should complete. Further details on the process for procuring these services can be found in the CARES toolkit Procurement module.

Additionally, at this stage of the process it is recommended that any preliminary findings for the proposed project be discussed with SEPA. Water abstraction licences are generally determined within 4 months of application. For this reason it is advisable to engage with the SEPA at the earliest possible opportunity through an informal enquiry.

## **Step 9. Financial Viability Check**

Some financial information will normally be provide as part of the pre-feasibility study, however a slightly more detailed review of project viability is recommended. There are hydropower resource tools that can be utilised to compare potential generation and therefore help verify potential income and the CARES toolkit Finance Model can be populated with initial information on potential sites to compare overall benefit. The CARES toolkit Finance Model guidance document provides indicative costs taken from a number of different market studies.

This viability check should be considered along with any other key constraints noted in the pre-feasibility study.

## **Break point 2 – Does the project have potential?**

If it is considered possible to overcome the identified constraints and the project still seem financially viable on one or more sites, the project can continue to Phase 3.

As looking at more than one site in detail can be costly, it is recommended to review site ownership and pursue one preferred site in the first instance.

## Phase 3 - Evaluate the Project

### **Step 10. Secure the Site**

Securing the site requires you to enter into a legal agreement with the site owner that guarantees you tenure over the site for the full life of the project, usually 20 - 40 years. It is likely that this will involve some kind of payment to be made to the owner. Whilst this is not an essential step to complete before continuing the development of the site, until an agreement is in place any development that takes place and costs that are incurred are at risk of the site owner refusing permission to continue work.

See the CARES toolkit Securing the Site module for more details and for a set of example draft agreements. If parties do not want to enter an options agreement at this stage, an exclusivity agreement should be considered. For a hydropower project, this could involve negotiation and reaching legal agreement with a number of landowners depending on the arrangement of the scheme.

The project inlet and outlet may be some distance apart and streams often form the boundary between neighbouring properties, so discussions can be complex. Furthermore, there needs to be confidence that upstream of the inlet there are no changes that could affect water flow.

### **Step 11. Full Feasibility Study**

Building on the pre-feasibility work, a detailed feasibility study is now required to assess a number of factors in developing a hydropower project on the selected site, including:

- Hydrology, including head, flow rate and catchment area analysis;
- Estimate of scheme characteristics head, design flow rate, design power output, annual energy yield);
- Optioneering around the different scheme arrangements for a hydropower system (varying intake and turbine powerhouse locations);
- Preliminary design and selections of key equipment (normally for the preferred option);
- Capital cost of the scheme (including budget quotations for key equipment and civil works);
- Operation and maintenance costs;
- Financial assessment of the hydro power arrangement, including any income from FIT revenue;
- Consultation with the local planning authority, SEPA and local DNO;
- Local electricity grid connection point to the local 11kV/33kV network, and assessment of potential customers for the power;
- Potential electricity grid connection constraints;
- Designated sites (e.g. SSSIs), protected species and any locally valued habitats and species;
- Archaeology concerns;
- Visual impact, including cumulative impact, and landscape impact;
- Assessment of construction issues; and
- Risk register of project risks to the development of a scheme at the given location.

Potential lenders will want to see a detailed assessment of each of these factors and it is most common to engage with specialist consultants to complete the necessary studies.

For example, one key study is an energy yield assessment. This will translate yield into potential income, however it is subject to probability. The output from an energy assessment will be the predicted long term energy yield, also called the central estimate or the P50 estimate. This estimate has a 50 % chance the result will be lower and a 50 % chance the result will be higher than the predicted long term energy yield. Further

detailed energy yield analysis can provide a P90 estimate (a 90% likelihood that the energy yield will be exceeded) and it is this estimate that funders prefer to use.

Local Energy Scotland have developed a template ITT that can be used to procure these services which includes a detailed scope of work for all activities that should be completed.

### **Scoping Opinion**

The aim of a scoping exercise is to assist the developer in identifying the key environmental issues surrounding their proposal. To obtain the most relevant and valuable responses to a scoping report it is recommended that developers engage with the consultees and the local community as soon as possible. The Energy Consents and Deployment Unit (EDCU) provide recommendations for scoping consultations.

The Scottish Government have a list of expectations related to the scoping process. The details are related to Formal Applications under Section 36 of The Electricity Act 1989. This guidance is more relevant for larger developments, but the principles apply to all scales of project

## **Step 12. Confirm Grid Availability**

Ensure the information on connecting to the grid is up to date. Feasibility studies can take extended periods of time and any grid information gathered at the beginning of the process may change. The CARES Development Officers can support grid enquiries to the local DNO. Transmission connection will be equally important to larger developments as local connection to the distribution network. Many parts of the national grid in Scotland are constrained making it increasingly difficult connect large generators. Solutions to overcoming grid constraints can be investigated, usually by marrying a local load with the local generation, and in some cases other funding can be applied for to support this.

In general however, having sufficient grid capacity and a suitable connection date to suit the predicted construction of the hydropower project remain the most favourable conditions in which to develop.

## **Step 13. Pre-Planning Consultation**

Early engagement with the local planning department is essential to minimise planning risk and wasted costs. If a meeting has not already taken place through the feasibility work to discuss the scale and nature of the project, on the preferred site, then this must be undertaken now. The feasibility study should have indicated the main issues related to the site, however an open discussion with the planning authority will give a clearer picture as to the potential to gain consent. There are no guarantees, but projects taken through to the next phase of development should be reasonably confident that there is a prospect of planning consent for the project, at the scale intended.

## **Step 14. Neighbour Notification**

As a separate notification to that required when making a planning application, we recommend contacting all residents within 1km of the proposed site. Local Energy Scotland have template letters for this notification which allow for feedback. This allows the views of those most affected to be taken into consideration in the next stages of development. If a rural business or CARES Client wish to apply for a CARES Pre-Planning Loan to fund the next stages of development, it should be noted that the CARES application seeks confirmation that this neighbour notification has been undertaken.

## **Break point 3 – Are there any show stopping constraints?**

Frank and impartial assessment of the project should be carried out against the main challenges:

- Is the site tenure secure?
- Does the feasibility study show a viable project?
- Are the local residents aware of the development?
- Is there potential to get planning consent at the scale anticipated?
- Is it likely a suitable grid connection can be made?

If the potential remains, then the project can be taken to Phase 4.

## **Phase 4 - Develop the project**

### **Step 15. Fix the Project Size**

The size and capacity of the project should now be determined for taking through the subsequent process of final appraisal. The pre-feasibility study will have identified a number of options. The detailed feasibility study will have evaluated each option and identified the most appropriate. You will be able to make an informed decision as to the most appropriate scale of project in line with the restrictions of planning policy, guidance on suitable hydropower installation to suit the hydropower resource and local consultation.

You can use the CARES toolkit Finance Model, to evaluate the different options. By running different scenarios through the model you may find that a smaller scheme may be better as it sits in a higher FIT band or that the increased capital costs of a larger scheme results are offset by the higher energy yield.

Planning considerations may mean larger schemes are higher risk, but less so for smaller ones. Alternatively, the flow rates may indicate that larger capacity scheme is viable. This will have been identified in your feasibility study.

The feasibility study should have provided you with a list of options and the financial viability of each option, the associated risks with each and their sensitivity to key factors such as capital cost or energy yield.

### **Step 16. Financial Viability Check**

Carry out a further financial modelling exercise with the detail provided through the feasibility study. The CARES toolkit Finance Model can be populated with these more accurate figures and a series of scenarios tested. Testing against income or expenditure changes, against lending rates and terms can support viability in varying circumstances. The CARES DOs can support testing the financial viability of a project with this model, and can also support engaging with financial advisors through the CARES framework.

### **Step 17. Secure Pre-Planning Funds**

Funding will now need to be sought for taking the project through the next stages of development. It should be noted that progression through this phase with grant funding can put income from government incentives at risk. Most developers secure funding through loans or private finance to ensure the income potential from the hydropower development is maintained. Eligible clients can apply for a CARES Pre-Planning loan.

### **Step 18. Planning Application**

There are a number of applications which you must make to progress your project and (in some instances) confirm project development costs. Given the time involved (6 to 12 months), making a planning application and applying for a CAR (Controlled Activities Regulation) licence is an important first step as no project will reach Financial Close without these permissions.

Some planning authorities have developed local Planning Policy Guidance which describes what they expect developers of hydropower projects at all scales to deliver as part of the planning process. This will identify what is required as part of the planning application and the costs of submitting a planning application. This planning application can be submitted by the CARES Client itself, or for more complex applications through the use of a planning consultant. Further information is available in the CARES toolkit Planning module.

## Step 19. Water Use Licence Application

All hydropower schemes require a water use licence (CAR licence) from the Scottish Environment Protection Agency (SEPA). The supporting information required when making a licence application is extensive and will require the support of specialists to develop. Applications for an abstraction licence may require long term site monitoring, so early identification of the requirements is important.

Project finance is unlikely to be secured until all planning consents, licences and grid connection agreements are in place (due to the risk that these may not be granted). Hence once you have completed the detailed financial viability, work on securing the grid connection, water use licence and submitting the planning application should commence as soon as possible.

## Step 20. Grid Application

Securing a grid connection will require a deposit to be paid to your DNO. The CARES toolkit Grid Connection module provides guidance on obtaining a grid connection.

Some hydropower schemes may be some distance from the electricity network and require significant investment in new overhead lines or buried power cable. However many sites choose locations for the powerhouse that are close to roads and existing power lines, potentially offering a reduction the likely cost. While distribution network wires passing close to the site is good, 'tapping in' to this network will potentially require significant investment in suitable transformers. The ideal connection is where this kind equipment already exists, into a point of termination or into an existing point of off-take/demand. As a result, long cable runs may be required and these may potentially have to be underground.

When you have a grid connection, CAR licence and planning permission and the right to develop, you can apply for FIT accreditation (or pre-accreditation) through the ROO-FIT process as outlined in the CARES toolkit FIT module.

## Step 21. Identify Funding Sources

Some work should now be put into finding a suitable route and funder to support the capital costs of the project. Local Energy Scotland have a list of finance providers that offer finance to community renewable projects and the DOs can support discussion with funders and share further knowledge through contact with the Renewable Energy Investment Fund (REIF).

There are many finance options available including traditional loan finance, partnership with a developer, establishment of a co-operative (via the sales of shares) and more. Each of these has different attributes and requirements (interest rates, target investment types, loan conditions).

The CARES toolkit Finance Module gives guidance on the types of finance, whether for development, construction or bridging loans that may be available to a project and potential sources of that finance.

Advice from an Independent Financial Adviser is essential to ensure all the options are evaluated as there are many potential sources of funding each with their own advantages and disadvantages. The CARES framework of Financial Advisors is a good place to start to identify a suitable advisor.

As with all commercial processes, obtaining a number of different quotes for services will enable a comparison to be made and the most appropriate provider can be selected for the community needs.

## Step 22. Develop Full Financial Model

The financial viability of any project depends on the cost of borrowing the money required to buy the hydropower installation, civil works, balance of plant and the cost of installation relative to the income after operating costs. The schedule of incurred costs and the length of time to install and commission the project all influence the financial viability of the project. The CARES toolkit Finance Model is available to download and use to complete a detailed financial appraisal of your project.

In order to complete the financial appraisal as accurately as possible, the capital costs of the hydropower installation, connection and other capital works such as grid connection, civil works and installation should be defined as accurately as possible. The detailed feasibility study should outline all the potential costs associated with your project and provide an indication of the scale of these costs, however quotes will need to be obtained to confirm the final costs. Operational costs such as maintenance, ground rent and insurance must be determined and other ongoing expenditure such as community benefit payments must be accounted for.

A potential lender will also want to see a full business plan for the duration of operation of the hydropower installation with a detailed cash flow and balance sheet that includes repayment of loans provided. The CARES toolkit Finance Model provides this facility and more detail on this is covered in the CARES toolkit Project Finance module and the CARES toolkit Finance Model guidance.

## Break point 4 – Confirm consents, grid and financial viability

The outcome from Phase 4 of the development process should show that all the following are in place:

- Planning consent granted;
- CAR licence granted;
- Grid connection secure;
- Energy yield predicted;
- Income predicted;
- Financial viability confirmed; and
- Funding options investigated.

If consents are in place and the project appears financially viable, then the project can progress to Phase 5. If at this stage the scheme looks unviable it should be stopped, or re-designed.

## **Phase 5 - Getting Financial Close**

### **Step 23. Identify and Contact Suppliers**

The process of finalising suppliers of equipment and services will need to be completed. It is good practice to seek competitive tenders for all services, and it is recommended a construction phase project manager be appointed in the same way if not already in place.

There are a number of contracts that need to be agreed with suppliers:

- Construction phase project management
- Hydropower turbine installation (Engineering Procurement and Commissioning)
- Operation and maintenance
- Power Purchase Agreements
- Financial and legal advice (financial advice, lease and contract advice)

### **Step 24. Securing Bridge Funds**

The timing, process and completion of the procurement process will be dictated by the route to capital drawdown which in turn is linked to the means by which the project will be funded. Suppliers of key pieces of equipment such as transformers and hydropower turbines may require deposits to secure delivery of these items. The long lead time on these items needs to be considered, and often required further funds to be secured, prior to Financial Close. It is important to develop a programme, with cash flow, to anticipate the need for funding in advance. The CARES toolkit Project Plan is a good place to start.

CARES Clients demonstrating a well-managed project can apply for a CARES Post-Consent Loan. This is designed for projects that will be progressing to Financial Close, as there is no potential for write off, but can provide a further £100,000 towards essential project costs at this stage.

### **Step 25. FIT Pre-Accreditation**

Pre-accreditation is a means by which you can fix the Feed-in Tariff you will receive for your project before you have completed construction. This provides some certainty on the revenue you can expect for your project. A prerequisite for pre-accreditation is that you have a confirmed grid connection (deposit paid) and planning permission. Once pre-accredited you have a limited time to install and commission your hydropower installation. The CARES toolkit Feed-in Tariff module provides further information on this process FiTs are degressing regularly, and due to be phased out by 2019.

### **Step 26. Financial Close**

Using the detailed financial appraisal previously completed and the CARES toolkit Finance Model, or another finance model, which has been verified by an accountant, it should be possible to secure finance through your chosen route.

Between procurement and Financial Close can be a long period of due diligence by a lender, sometimes 3-5 months which includes a detailed analysis of potential project performance, all associated costs, warranties and liabilities. If you have completed your CARES toolkit Investment Ready Tool you will have collated a large proportion of the information required by the lender and identified any gaps in the information that the lender

may require The lender may also require a significant financial floating bond be set up to pay the banks costs irrespective of the result, positive or otherwise of the due diligence process.

Financial close is the point at which all contracts are signed and funds are transferred between your lender and all your suppliers. Prior to this point your suppliers are likely to have requested deposits for all materials and services. At Financial Close the balance of payment is made.

This can be a busy period, so it is important to ensure that the relevant people with delegated responsibility are available to sign off any legal agreements. This should include the project manager you have hired to develop the project.

## **Break point 5 – Is the project ready to construct?**

Provided all consents, grid connection, contracts, FIT pre-accreditation and funding is in place the project should be ready to construct.

A professional team of managers and suppliers should be responsible for taking the project through to commissioning. If any member of this team is not yet in place they should be appointed prior to moving into Phase 6.

## Phase 6 -      Completing the project

### Step 27. Repay Other Funds

Any debt that is due for repayment should be paid back (with interest) at this point. The CARES Pre-Planning Loan and CARES Post-Consent Loan (where applicable) are set up to be repaid at Financial Close. The debt provided by the funders should include provision for this repayment.

### Step 28. Construction

Once all of the permits and permissions are in place and all relevant planning constraints have been addressed, construction can commence and the wind turbine(s) installed and grid connected. The **Construction** module outlines the community group's obligations as a developer, the construction process and the additional roles in the construction process. The module addresses the community group's duty of care as a developer for the site workers, environment and general public, additionally covering basic legal responsibilities with additional links to guidance and regulatory documents.

### Step 29. Community Benefit

CARES Clients providing or receiving community benefit should enter into a binding agreement with the appropriate party, stating the terms and conditions of payments. CARES have template agreements to facilitate this, which also confirm the process for indexing payments over 20 years.

The CARES toolkit Establishing a Community Group module provides further guidance on dispersing any income generated for the CARES Client.

### Step 30. Operation

The income from the project will need to be managed carefully. The funder will expect there to be cash held to cover fixed costs such as interest and loan repayments, O&M contracts and land rent. In addition the funder will expect cash to be held to cover loan payments during periods when the hydropower installation has not generated as much electricity as expected, for example if there are any faults with the hydropower installation or the energy produced is lower than average.

Only after these costs have been met can the project distribute the remaining income.

Proper management will need to be in place for the life of the project to oversee the process of collecting and distributing income and managing liabilities. It is also important that the performance of the hydropower installation are regularly monitored as changes in performance might indicate a technical problems and this in turn will reduce income, leading to reduced financial returns.

The Establishing a Community Group module provides further guidance on dispersing any income generated for the CARES Client.

### Step 31. Decommissioning

The planning consent will state the date and requirements for decommissioning the hydropower installation. The costs for removing the hydropower installation and the requirements to remove foundations or other

equipment need to be estimated, alternatively refurbishment of the hydropower scheme may be undertaken; this may require new consents to be granted.

There may be some scrap value in the equipment, but this is unlikely to cover the entire cost of decommissioning. So the project should set aside income to build up a fund to cover decommissioning costs.

## Further Information

### CARES Toolkit

This, and the other CARES Toolkit modules referred to, are available from the Local Energy Scotland website – <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit>

### Hydropower Context

- The National Farmers' Union (NFU) provides specific guidance for farmers interested in hydropower energy generation – see <http://www.nfuonline.com/membership/farmer-grower/member-services/farm-energy-service/business-guides/>
- A guide to micro hydropower development by the British Hydropower Association is available – see [http://www.british-hydro.org/Useful\\_Information/A%20Guide%20to%20UK%20mini-hydro%20development%20v3.pdf](http://www.british-hydro.org/Useful_Information/A%20Guide%20to%20UK%20mini-hydro%20development%20v3.pdf)
- The Scottish Government Register of Community Benefits from Renewables provides information to support local communities through the community benefit process. The Register publishes the benefits that local communities have received through renewable energy projects– see <http://www.localenergyscotland.org/view-the-register/>
- Ofgem's FIT database includes data on the distribution network operator (DNO) that has connected the wind turbine to their system– see <https://www.ofgem.gov.uk/environmental-programmes/feed-tariff-fit-scheme/feed-tariff-reports/fit-update-reports>
- The Partnership Portal is designed to allow organisations and community groups across Scotland to collaboratively progress renewable energy projects– see <http://www.localenergyscotland.org/shared-ownership/partnership-portal/>
- Local Energy Scotland have produced a range of documents on joint ownership– see <http://localenergyscotland.org/resources-advice/joint-ventures/> and <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/finance-matters/community-investor-module/>
- More information and advice specifically around the use of Joint Ventures has been produced by HIE – see <http://www.hie.co.uk/community-support/managing-community-funding/joint-venture.html>
- The EST also provides a guide for Joint Ventures – see <http://localenergyscotland.org/resources-advice/joint-ventures/>
- For an example published by Carbon Free on Joint Ventures – see <http://www.scotland.gov.uk/Resource/Doc/917/0116428.pdf>

### Project Overview

#### Step 1. Develop the Vision

CARES Client actions plans can be found on the following organisation websites:

- Development Trust Association Scotland – see [www.dtascot.org.uk](http://www.dtascot.org.uk)
- Foundation Scotland – see [www.foundationscotland.org](http://www.foundationscotland.org)
- Kirknewton Development Plan – see [www.kirknewton.org/assets/0000/1534/Community\\_Development\\_Plan\\_Nov\\_11.pdf](http://www.kirknewton.org/assets/0000/1534/Community_Development_Plan_Nov_11.pdf)

- Lochaber Community Development Plan – see [www.highland.gov.uk/NR/rdonlyres/4E640F34-C928-4ABF-9AD4-9BD331B4FC18/0/LochaberCDPNov08MASTERv11.pdf](http://www.highland.gov.uk/NR/rdonlyres/4E640F34-C928-4ABF-9AD4-9BD331B4FC18/0/LochaberCDPNov08MASTERv11.pdf)
- Cairngorms National Park Community Action Planning Toolkit – see [http://cairngorms.co.uk/resource/docs/publications/18022010/CNPA.Paper.1489.A Community Action Planning Toolkit.pdf](http://cairngorms.co.uk/resource/docs/publications/18022010/CNPA.Paper.1489.A%20Community%20Action%20Planning%20Toolkit.pdf)

## Step 2. Seek Advice

Local Energy Scotland and other organisations maintain case studies to facilitate the identification of suitable groups to approach to gain their insight:

- Local Energy Scotland – see <http://www.localenergyscotland.org/casestudies/>
- Community Energy Scotland – see <http://www.communityenergyscotland.org.uk/case-studies.asp>
- Development Trust Association Scotland – see <http://www.dtascot.org.uk/content/what-is-a-development-trust/case-studies>

## Step 3. Communicate

There are a range of guidance documents available for engaging with the community including:

- The Scottish Community Development Centre (SCDC) has developed a useful on-line resource to support community development and communication – see <http://www.scdc.org.uk/>
- Scottish Government has produced a ‘how to’ guide – see <http://www.scotland.gov.uk/Topics/People/engage/HowToGuide>
- The Home and Communities Agency (HCA) has also developed a Community Engagement toolkit – see [http://www.homesandcommunities.co.uk/community-engagement-toolkit?page\\_id=&page=1](http://www.homesandcommunities.co.uk/community-engagement-toolkit?page_id=&page=1)

## Step 4. Find a Site

The CARES Renewable Energy Handbook outlines the technologies that have been employed by CARES Clients across Scotland, the principles of how each technology works and the key issues regarding installation and operation as well as environmental impacts – see <http://www.localenergyscotland.org/funding-resources/resources-advice/renewables-handbook/>

Additional resources that help determine the resource and any constraints that may apply are given below:

- The Scottish Environment Protection Agency (SEPA) Best Practice Guide on developing a hydropower project – see <http://www.sepa.org.uk/water/idoc.ashx?docid=16c5a25f-d08b-400f-b7ef-75a076e5fc03&version=-1>
- SEPA guidance on run of river schemes – see <http://www.sepa.org.uk/water/idoc.ashx?docid=25e5f167-ab8c-4820-9350-677482889231&version=-1>
- The Centre for Ecology and Hydrology has data river flow and catchment for a selection of larger rivers – see <http://www.ceh.ac.uk/data/nrfa/>
- Scottish Government hydro resource assessment – see <http://www.scotland.gov.uk/Resource/Doc/917/0064958.pdf>
- Scottish Natural Heritage (SNH) web based mapping tool for relevant land designations and constraints – see <http://gateway.snh.gov.uk/sitelink/index.jsp>

- SEPA water use licence information – see <http://www.sepa.org.uk/water/idoc.ashx?docid=358677fe-61f7-4fc9-baab-79cb93671387&version=-1>
- Scottish Government hydro policy (January 2010) – see [www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17851-1/HydroPolicy](http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17851-1/HydroPolicy)
- SEPA on-site monitoring information – see <http://www.sepa.org.uk/water/hydropower.aspx>
- Hydro viability tool – see <http://www.hydroxpert.com/calculators/hydropower-production>

## Step 5. Initial Scoping

There are a number of web tools available for determining the viability of a project which would be appropriate to use at this stage of the project development.

Different tools use different data sources for water course data and estimated energy yield. One prominent tool produced by Wallingford HydroSolutions helps determine the yield for initial feasibility assessment – see <http://www.hydrosolutions.co.uk/consultancy-3-1.asp>

## Step 6. Establishing a Legal Entity

The Establishing a Community Group module contains more information on establishing the legal entity. It is important that legal advice from a solicitor who has experience of completing this work is obtained at this stage. This solicitor will be required at various stages throughout the project to support all legal and contractual activities, of which there will be many – see [www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/project-development/establishing-a-community-group/](http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/project-development/establishing-a-community-group/)

## Step 8. Pre-Feasibility Study

A Pre-Feasibility Study will help identify sites that have the potential to be viable. CARES Start-Up grant provides grant funding to help towards the start-up costs of feasibility studies, community consultation and other preparatory costs. Up to £10,000 is available for CARES Clients to fund non-capital aspects of a project.

The scope of work outlined in the Pre-Feasibility Invitation to Tender (ITT) is comprehensive. However, the information is unlikely to account for all project types and variations. It is therefore, the responsibility of those using the forms to ensure the template is tailored to be accurate and representative of the project – see <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/downloadable-tools/invitation-to-tender-templates/>

A number of difference sources can be used to obtain indicative project costs. These include:

- The CARES Finance Model guidance document provides indicative costs taken from a number of different market studies
- <http://www.renewablesfirst.co.uk/hydro-learning-centre/how-much-do-hydropower-systems-cost-to-build/>
- [http://www.hydomatch.com/resources/hydropower\\_cost\\_estimator](http://www.hydomatch.com/resources/hydropower_cost_estimator)

## Step 10. Secure the Site

See the Securing the Site module for more details and for a set of example draft agreements. If parties do not want to enter an options agreement at this stage, an exclusivity agreement should be considered – see

[www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/project-development/securing-a-site/](http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/project-development/securing-a-site/)

## Step 11. Full Feasibility Study

Feasibility, design and development Invitation to Tender (ITT). The scope of work outlined in the ITT is comprehensive, however the information is unlikely to account for all project types and variations. It is therefore, the responsibility of those using the forms to ensure the template is tailored to be accurate and representative of the project – see <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/downloadable-tools/invitation-to-tender-templates/>

Once it is clear that there is a viable project, it may be prudent to employ a project manager dedicated to developing the project. To support CARES Clients in the delivery of their community projects the Local Energy Scotland has set up a framework of suppliers to provide a number of professional services including project managers – see <http://www.localenergyscotland.org/funding-resources/resources-advice/framework-contractors/about-the-framework/>

For larger sites, the detailed feasibility study should include a scoping study to determine whether an Environmental Impact Assessment (EIA) is required. The Scottish Government have a list of expectations related to the scoping process. The details are related to Formal Applications under Section 36 of The Electricity Act 1989 – see <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Guidance/scopingguidelines>

## Step 12. Confirm Grid Availability

See the CARES toolkit Grid Connection module for more information on grid availability and how to find out whether you are in a constrained area.

## Step 13. Pre-Planning Consultation

See the CARES toolkit Planning module for more details and considerations for planning.

## Step 15. Fix the Project Size

The outputs from your Detailed Feasibility and Design Study will have identified the optimum size of project. This will align with the planning application and grid connection applications that have been submitted.

## Step 18. Planning Application

The key applications to complete when developing your project are:

- Planning – see <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/project-development/planning/>
- Grid connection – see <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/project-development/grid-connection/>
- Feed-in Tariff pre-accreditation – see <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/project-development/feed-in-tariff/>

If you have employed a project manager they will be able to complete this for you.

## Step 19. Water Use Licence Application

SEPA guidance on applying for Controlled Activities Regulations (CAR) licence for hydropower schemes – see <http://www.sepa.org.uk/water/idoc.ashx?docid=358677fe-61f7-4fc9-baab-79cb93671387&version=-1>

## Step 20. Grid Application

See the CARES toolkit Grid Connection module for more details and information to consider when applying for grid connection.

## Step 21. Identify Funding Sources

Local Energy Scotland sources of finance for community projects – see <http://www.localenergyscotland.org/funding-resources/resources-advice/cares-toolkit/finance-matters/sources-of-finance/>

## Step 22. Develop Full Financial Model

When finalising the costs and income of the project, it is important to ensure they are completely accurate with enough detail for a bank to make a lending decision. Indicative costs will no longer be accurate enough.

This may require professional financial support. To support CARES Clients in the delivery of their community projects the Local Energy Scotland has set up a framework of suppliers to provide a number of professional services including financial advisors – see <http://www.localenergyscotland.org/funding-resources/resources-advice/framework-contractors/about-the-framework/>

## Step 23. Identify and Contact Suppliers

For hydropower schemes, suppliers are listed on many websites including:

- <http://www.therenewableenergycentre.co.uk/hydroelectric-power/small-scale-hydroelectric-system-suppliers/>
- [http://www.british-hydro.org/hydro\\_in\\_the\\_uk/hydro\\_companies](http://www.british-hydro.org/hydro_in_the_uk/hydro_companies)

## Step 25. FIT Pre-Accreditation

See the CARES toolkit Feed-in Tariff module for information on when and how preliminary application is required.

## Step 26. Financial Close

This is a very busy time for the project and it is important to have the right support in place. To support CARES Clients in the delivery of their community projects the Local Energy Scotland has set up a framework of suppliers to provide a number of professional services including lawyers, financial advisors and project managers – see <http://www.localenergyscotland.org/funding-resources/resources-advice/framework-contractors/about-the-framework/>

## Step 28. Construction

Construction, design and management regulations. Further guidance can be found on the HSE website – see <http://www.hse.gov.uk/construction/cdm.htm>

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