How to set up a Community Owned Hydro Site

Itinerary

Technology – high and low head sites
Overview of our ‘replicable model’
Case Study

Break

Permissions
Finance
Process

Hydropower

Hydropower is the world's No.1 source of renewable energy and produces almost 20% of the world's electricity.

Pay-back ratio of 300 (energy produced/energy to produce) – this is ten times more than oil-fired power stations.

Of the 4% of renewable electricity in this country, approximately 40% is provided by hydropower.

The river weirs in GB could produce 3% of our electricity needs

Intergovernmental Panel on Climate Change

- Nov 2007 – fourth report, conclusive that human activity is causing climate change
- Unless rate of increase of CO2 starts to fall by 2015, we're in trouble

Rajendra Pachauri, heads of the IPCC... *"What we do in the next two to three years will determine our future. This is the defining moment."*

Technology

Different Turbines

High Head and work under pressure

Power House

Water Power Enterprises

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h2oPE – Aims

- Help tackle climate change through small scale hydro systems
- H2oPE is a Social Enterprise – CIC with Board of Directors
- Funded by the Co-operative Group, Joseph Rowntrees Charitable Trust and Key Fund Yorkshire to help set up co-operatively owned community hydro sites
- Re-use the infrastructure of the Industrial Revolution – river weirs - to create a new Green Revolution
- Engage local communities as potential owners and beneficiaries

River weirs

The Archimedean Screw

Low Head and work at normal pressure

Visit to Factory

Constraints on Delivering Community Hydro Schemes

1. Knowledge
2. Money
3. Time

- H2oPE acts to remove these constraints
- We want to work with a minimum 6 community groups per year

Our Model for Community Ownership

Legal Model – Industrial and Provident Society for the Benefit of the Community

Financial Model – grants, loan and share offer

Legal Model – the IPS

- Limited Company – min 3 people as ‘founding fathers’
- Memorandum and Articles – model rules
- Therefore can accept contracts and loans
- For ‘Benefit of the Community’
- One member one vote
- FSA approved for low cost share offer

Financial Model

- Small scale hydro is a long term investment
- We work to obtain ‘social’ equity – people not primarily interested in a private return
- Grants – reduce capital cost, unlikely in large amounts for private schemes
- Loan – banks, terms, affordability
- Share offer – FSA approved

New Mills – Case Study

- New Mills – Derbyshire
- Brief history....

Artist’s Impression

New Mills, Derbyshire

Scheme Details

- All permissions obtained
- 70kw Archimedean Screw
- Approx 266,000kWh/yr
- Cost approx £250,000
- Will save 116 tonnes CO_2/yr or 4,600 tonnes in lifetime (approx 13 million car miles)
- Work started 3rd March 2008 – finished end July

How to raise £250,000

Our social business model...

- Grants
- Equity (social investors)
- Loan

Grants

- Grants target - 30% capex
- Peak District National Park - £15,000
- East Midlands Development Agency - £75,000 (pilot the community owned route)
- The Co-Op Group - £45,000 (THNM’s status as an IPS)

TOTAL £135,000 (54% of total)

Social Equity

- Form THNM as a BenCom IPS - adopt model rules
- Draft Prospectus (target interest rate 7.5%) – agreed by solicitor
- Launch of Prospectus
- Promotion of Prospectus

Raised £97,800 (39% of total cost)

208 shareholders – 65% are local

Share Offer worked because

- Build up of contacts (head of steam) prior to Launch
- Hire of PR person
- Enterprise Investment Scheme – tax relief
- National Publicity
- Right idea at the right time

Loan

Co-Op Bank

- Facility up to £60k
- Good ‘fit’ with Co-Op group – ie THNM as an IPS, Co-op grant, Co-op loan

Birds eye view

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Site Selection

- The Bigger the better
- Access for construction traffic
- Space at one side of the weir
- Proximity to nearest sub station
- Landowner Permission

Settle

Raydale

Otterspool

Break

Working Example

Height of Weir – 2m's

Flow of water – 3 cumecs

Power Output = 7 x Height x Flow

Power Output= 42kW

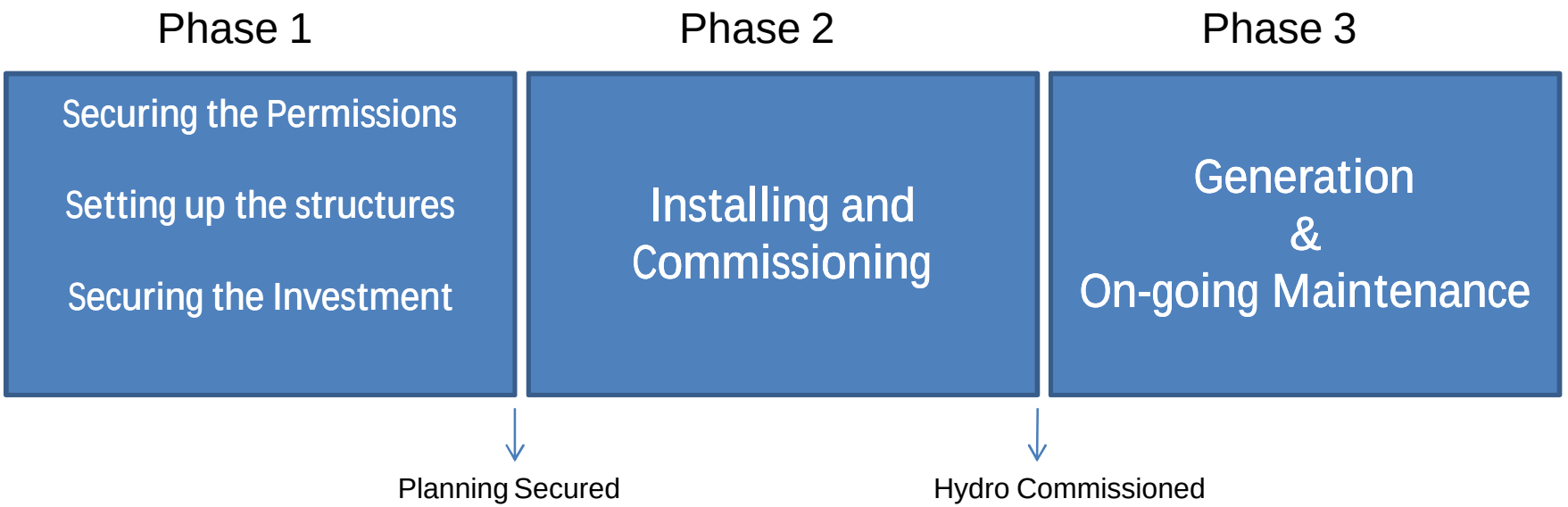
Annual Energy Output = 42 x 8585 x 0.5 = 180,000 kWh

Capital Cost approx £6,000 per kW = £250,000

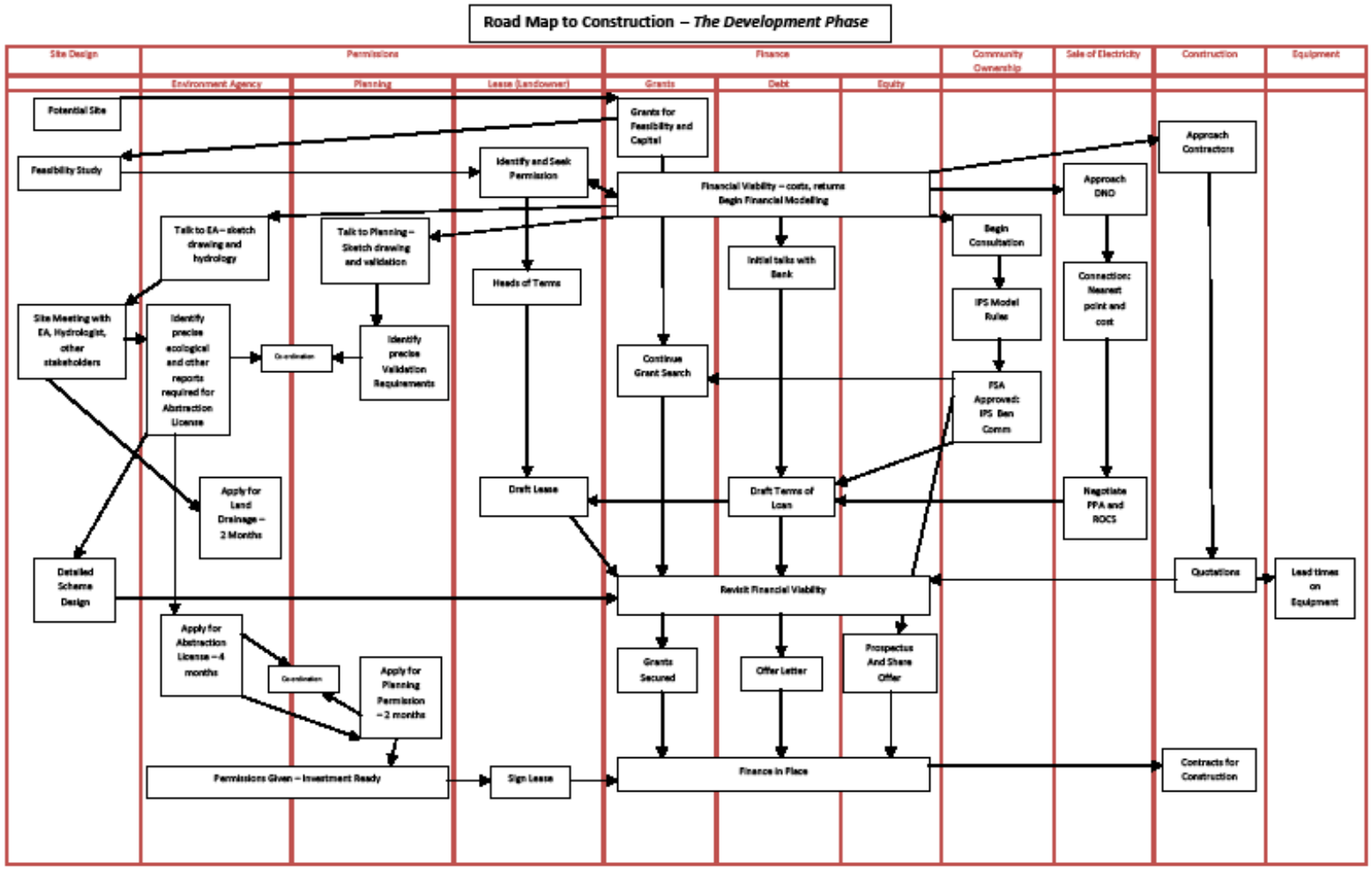
Gross Revenue (old ROCS) = 180,000 x 15p = £27,000

Gross Revenue (new FiTs) = 180,000 x 20.8p= £37,440

Overview Project Plan



Road Map



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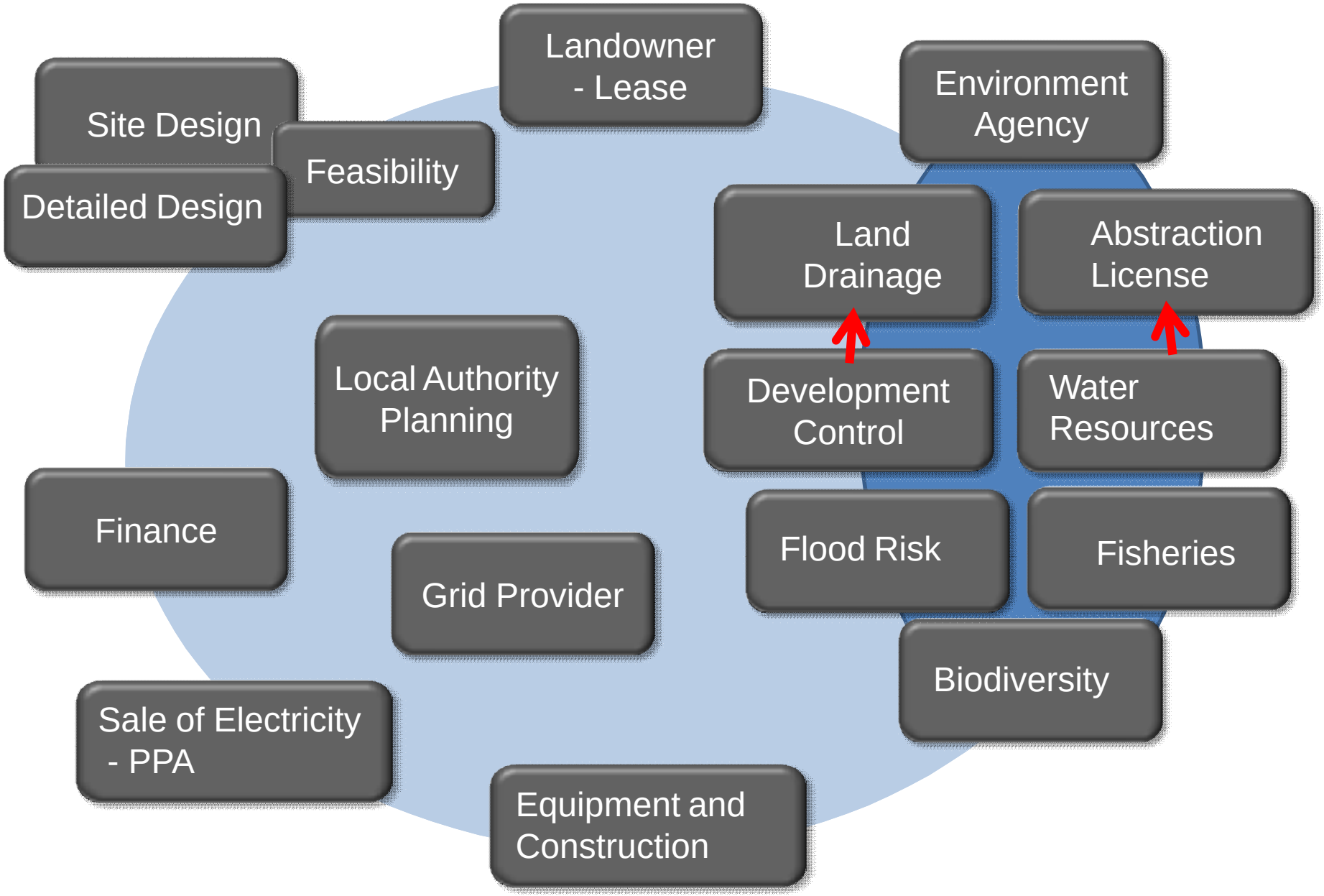
The Process – *stakeholders involved in setting up a Hydro Site*



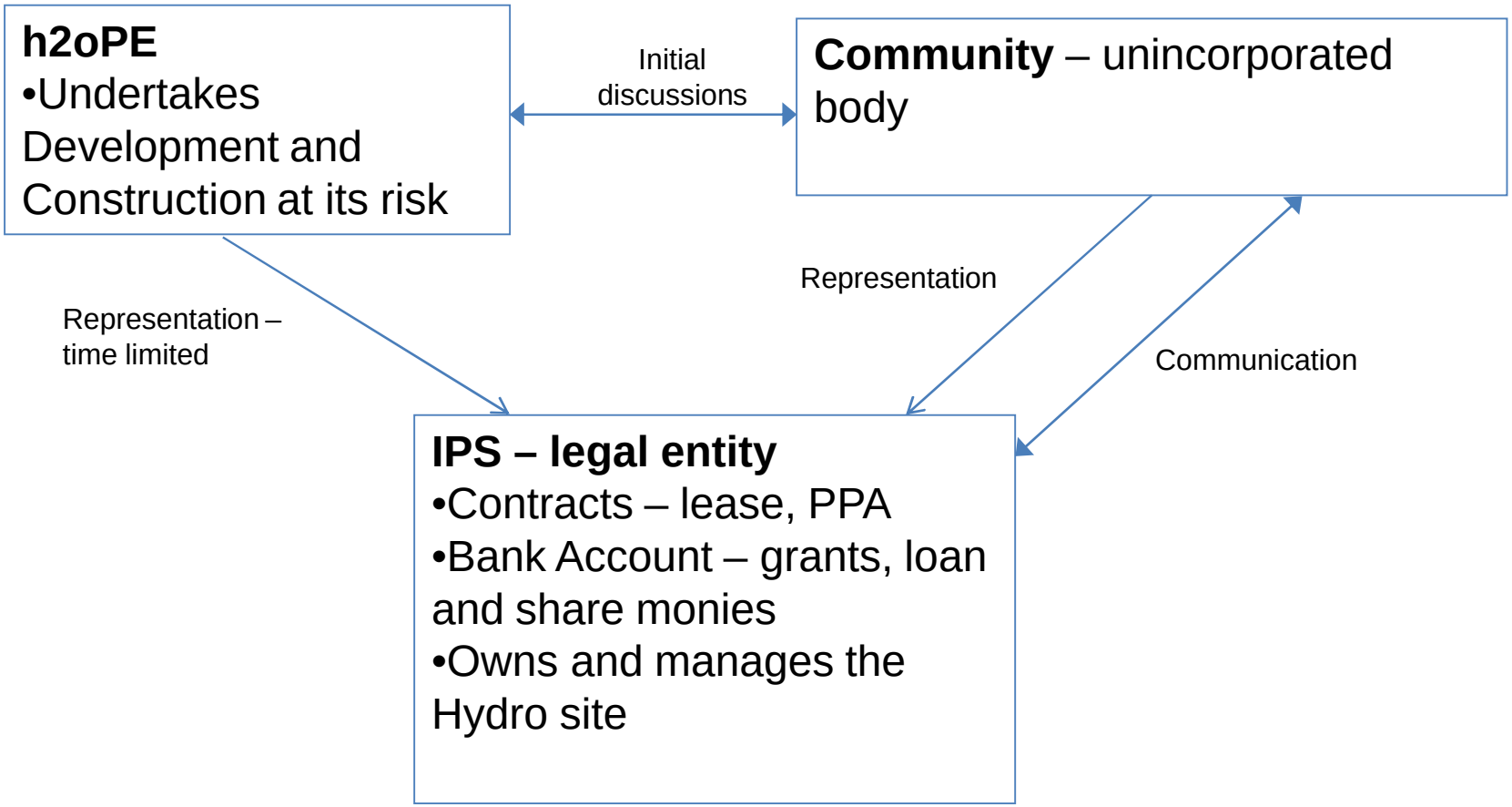
Development Risks

1. Commercial viability
2. Grid Connection
3. Landowner
4. Planning Permission
5. Environment Agency
6. Technical risks
7. Funding risks – grants, loan and shares
8. Exchange rate
9. Contractor risks
10. Power Purchase Agreement

Community Hydro Schemes
The Benefits

- A community owned hydro site producing green electricity for decades
- A sustainable grant scheme for the local area funded from the surplus profits of the hydro scheme – for generations to come
- Green electricity and reduced carbon emissions

Relationships - Functions



How Much?

Standard Terms – negotiable for each site

Principles – transparency, flexibility, affordability

Cost is made up of 4 elements…

1. Technical and Commercial viability - £750

   At end of Technical and Commercial Viability Stage, finalise the payment terms and items 2,3 and 4 based on principles above

2. Development costs – usually 10k – 20k per site

   we work at risk and pay 3rd party development costs

3. Standard Fee 45k – time and risk

4. Negotiable 10% of gross revenue from scheme for ‘x’ years