



EcoEnergy Group Ltd

Renewable Energy Project Hydro Power Glasgow City Weir

December 2008

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THE PROPOSITION

Company Focus	Our investment activities are focused on the renewable energy generation sector, associated sustainable energy projects & carbon offset ventures
Project	Development & installation of small scale hydro-electric facilities
Geographic Focus	River Clyde, Glasgow city centre
Project Size	up to 1MW
Investment Size	£2.4m
Construction	Operational by 2010
Results	<ul style="list-style-type: none">- Net annual energy savings- Utilise natural resource- Statement of environmental credentials- Reduce CO₂ emissions- Comply with Scottish, UK & EU Legislation- Truly renewably generated power

EcoEnergy is perfectly placed to deliver exceptional & sustainable, emission-free renewable energy projects.

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RENEWABLE POWER GENERATION



HYDRO POWER

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Project Overview

Summary

The objective is the development of new small scale hydro-electric turbine facilities, located in each local authority region, that will be installed at all suitable swaths of river & water courses and associated land, with an installed capacity of up to just under 1MW per project.

The first site proposed in this document for Glasgow City Council is located at the existing weir on the River Clyde in Glasgow city centre – attached Location Appendix.

The proposal includes the target to involve the local communities in the renewable energy project by offering an ownership opportunity, through issue of an open community held share scheme, along with offering the energy generated being used to supply both local residential customers and the local authority e.g. the street light network, at lower costs than currently being incurred.

Indeed, hydro power turbines are an extremely efficient energy recovery process that utilises a locations' water flow resource and creates truly renewable electricity.

The energy can be captured and used for the benefit of local communities, local authorities, commercial premises or businesses and, as it does not come from fossil fuel sources & is readily available, the energy is carbon neutral.

Project Benefits

The installation of the proposed hydro facility will bring many benefits to the local community, local authority, and the wider environment.

Hydro-electric energy is an environmentally sound and sustainable energy source which generates low cost electricity, helps reduce dependency on fossil fuel sources of power, reduces air pollution & greenhouse gas emissions and generates 100% renewable electricity 24/7, 365 days per year.

Community involvement, with projected partial shared ownership & end user participation, will result in the strengthening of the local community perception and outlook that they, along with & in partnership the local authority, are making significant and real progress with tackling climate change, increasing power bills and renewable energy.

Hydro turbine developments not only create employment but they can be used to safeguard existing jobs, provide a reliable source of power and provide a more stable and secure future for local communities, authorities, businesses & enterprises.

Renewable Energy

In September 2007 the BWEA (British Wind Energy Association) published their Renewables report 'Countdown to meeting the 10% UK renewable electricity target by 2010' which showed that there is an energy market requirement for and a shortage of renewable energy being generated in the UK.

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Currently, electricity generated from renewable sources provides just over 4.5% of the UK's total electricity supply requirement.

The report states that the rate of installation of new renewable generation capacity is behind target, and needs to more than double by 2010 to meet the 10% renewable energy target for the UK.

In Scotland, the renewable energy target is actually much higher at 31% by 2011 and 50% by 2020, while the amount of electricity generated from renewable sources at present (Scottish Government Study 2000 – 2006) is only 16.3%.

Energy Generation

Electricity generated by hydro power turbines will be further in demand due to the fact that many UK power generation plant operations will be restricted under the EU Large Combustion Directive (LCP).

This places strict limits on the SO_x, NO_x and particulate emissions of power stations from 2008 and qualifying plants have the right to opt into or out of the LCP Directive. Those plants that opt out will be restricted to 20,000 hours of operation in total from 2008, with enforced closure by the end of 2015.

Hydro Power Turbine Design & Layout

The proposal is for the development of new hydro-electric facilities, located in each local authority region, and will be installed at any suitable swaths of river & water courses and associated land, with an installed capacity of up to 1MW each.

The hydro turbine structure will blend into and be in keeping & scale with the surrounding landscape and, if any, existing buildings & structures.

Modern hydro-electric turbines are extremely efficient and quiet and indicative images are shown for one of our current projects below:



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Project Overview



The facility will be installed, operated and managed by EcoEnergy and will meet all UK & European Legislation.

Energy Output

The initial River Clyde weir site chosen in Glasgow city centre records sufficient head and water flow rates to meet the minimum project standards designed to install feasible hydro facilities.

Under anticipated site operating conditions, due to scheduled and unscheduled maintenance & downtime, the hydro-electric turbine would be available to generate energy for approx: 8,000 hours per annum and be operationally efficient in excess of 60% of this period.

Project Process & Timeline

In order for a renewable energy project to become operational, a complete set of procedures must be finalised, which include investigation into relevant factors, gathering supporting information, achieving planning consent and construction of the resource.

With suitable sites prudently chosen and with the support of the relevant local authority, anticipated preparation and construction timescales will be approximately 18 months +, with the first hydro-electric turbines expected to be operational by the second quarter 2010.

<u>Process</u>	<u>Timeline</u>	<u>Costs</u>
Pre-feasibility	2 - 4 months	£15,000
Feasibility studies	5 -12 months	£80,000
Detailed Design & Planning	8 -18 months	£15,000
Construction Scheduling	3 -12 months	£10,000
Electricity Generation starts	18 months +	£120,000

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Project Overview

Pre-Feasibility

A pre-feasibility study determines whether there is a possibility of development, including site location, initial water resource data etc. Areas of investigation must encompass contacting, informing, enquiring and liaising with all relevant stakeholders both locally & nationally.

Feasibility Study

The aim of the feasibility study is to detail relevant aspects of the pre-construction process and to also create a forward looking checklist for the project as a whole. The full feasibility study process includes full analysis of any concerns raised in the pre-feasibility and other such applicable tasks, including full Environmental Impact Statements and mitigating measures.

Detailed Design & Planning

This stage involves the responsibility to project manage the process for the detailed surveys and design of the turbine installation & the planning application submission.

Construction Scheduling

A successful application signals the start of the construction phase of the project.

This final stage involves planning the phased task of installing and connecting any renewable energy resource.

At the end of this construction & installation process, the renewable energy facility will be online & generating sustainable electricity.

EcoEnergy Group Overview

Objectives & Aims

EcoEnergy focuses on investing in sustainable & renewable energy generation projects in the UK & Europe. We back high growth, reliable clean technology projects, or companies, who contribute to a lower carbon economy and a more sustainable environment, yet generate and maximise income & asset values.

The EcoEnergy investment objective is to generate long-term sustainable growth through investment of funds into a diverse portfolio of renewable energy generation projects, companies or ventures.

Our Vision

EcoEnergy has established itself as a specialised investment group focused on the investment opportunities created by the transition towards the low carbon/renewable global economy. Our vision is to reconcile environmental responsibility without compromising investment discipline, project focus and accountability.

EcoEnergy invests in renewable energy schemes ranging from 50kW to 100MW, with planning permission. Given the target project size, most investments are in projects too small to be of interest to the large development companies, major utilities and larger investment funds. Generally these are projects that have been initiated by small-scale developers, land-owners, community groups or on industrial sites.

Our Method

EcoEnergy independently and internally evaluate each proposition and aim to mitigate risks. We only progress with presented opportunities when we are in the position to add value to a project and that meet our sustainable criteria.

Keeping our goals and priorities in mind, we act both professionally, ethically and efficiently in our pursuit of sustainable success.

EcoEnergy will continue to identify and negotiate potential investment opportunities and seek contractually commitments to invest in and / or sign exclusivity agreements for new sustainable energy projects from both on & off market sources.

Core Activities

EcoEnergy invests capital into high growth, reliable clean power/energy technology areas of renewable energy including:

- hydro
- wind
- biomass
- solar
- energy from waste

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EcoEnergy Group Overview

Investment Strategy

Our investment strategy is to develop a portfolio of renewable energy-related assets that provide superior returns with consistent & proven energy generation capability.

EcoEnergy has developed, and will continue to develop and maintain, strong relationships with major industry participants, including developers, lenders, utilities, investment bankers, lawyers, consultants, engineering firms, and others who are excellent sources of potential investment opportunities.

The team aims to deliver long-term performance by investing in projects with positive growth, supported by trends in environmental and social policies & regulations.

EcoEnergy seeks to invest in energy generating projects & assets that provide opportunities through improved operating performance, project expansions, plant enhancements and repowering.

Primary strategies include:

- Identifying & developing renewable energy generation assets
- Unlocking value embedded in undervalued utility and generation assets
- Owning significant equity positions in projects / generation companies
- Diversifying through allocation of investment capital by geography, location, technology, fuel type, stage of investment & type of investment

Major Investment Criteria

The principal investment focus is on operating assets utilising commercially proven technologies that generate electricity or other consumable energy products produced from renewable energy sources.

We also consider opportunities where we do not hold majority shareholding in assets, but that meet our risk and return requirements. Through this process, we ensure that we obtain key management representation, active management roles, and voting rights so to influence all issues critical to an asset's performance and value.

Underlying criteria to achieve our principles include:

- Potential to deliver 50kW - 100MW renewable energy assets
- High energy demand both residentially & commercially
- A convincing business model with realistic growth prospects

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Current Investment Projects

<u>Project name</u>	<u>Resource</u>	<u>Details</u>	<u>Total Investment</u>
NFU	Hydro	5MW	£14m
GSC, Glasgow	Wind	3MW	£4m
Cell Mast, UK	Wind	100MW	£120m
ComProp	Wind	15MW	£18m
Waste Plan	EfW	25MW	£215m

Investment Pipeline

We are actively assessing over 20 investment opportunities developing in excess of 400 megawatts of generating capacity. The Company's investment strategy includes pursuing opportunities with companies developing multi megawatt energy schemes, companies owning existing operational assets and companies seeking planning permission for new schemes.

On the basis of the current rate of investment and an assessment of the potential investments in the pipeline, we are satisfied that sufficient projects are available to fully attain the investment returns in accordance with the investment strategy.

Structure

EcoEnergy will develop and own the renewable energy assets as a consortium with specialist international environmental engineering and consultancy, Royal Haskoning and international bank, The Santander Group (owner of the UK banks Abbey, Alliance & Leicester and Bradford & Bingley).

Appropriate consortium partners, board members and members of staff will be chosen and appointed to be responsible for relevant project roles, including full investment & asset management services, to ensure the project is both efficient and successful.

The EcoEnergy Board will be Responsible For:

- oversight of the company, including its control, accountability and resources;
- setting the overall strategic direction;
- overseeing business activities and performance;
- instituting and maintaining business processes to ensure proper controls, transparency and accountability;
- ensuring compliance with plans, constitutions and applicable laws;
- monitoring financial position and setting financial performance objectives;

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- monitoring and evaluating the performance of the asset manager and other service providers to whom the responsible entity has delegated key functions;
- comply with legal, regulatory, ethical & market requirements and standards;
- approving and monitoring financial and other reporting; and
- ensuring effective communication with security holders and other stakeholders.

Full meetings of the board are held regularly and at least monthly, and non-scheduled meetings are called as required.

The Investment & Asset Division will be Responsible For:

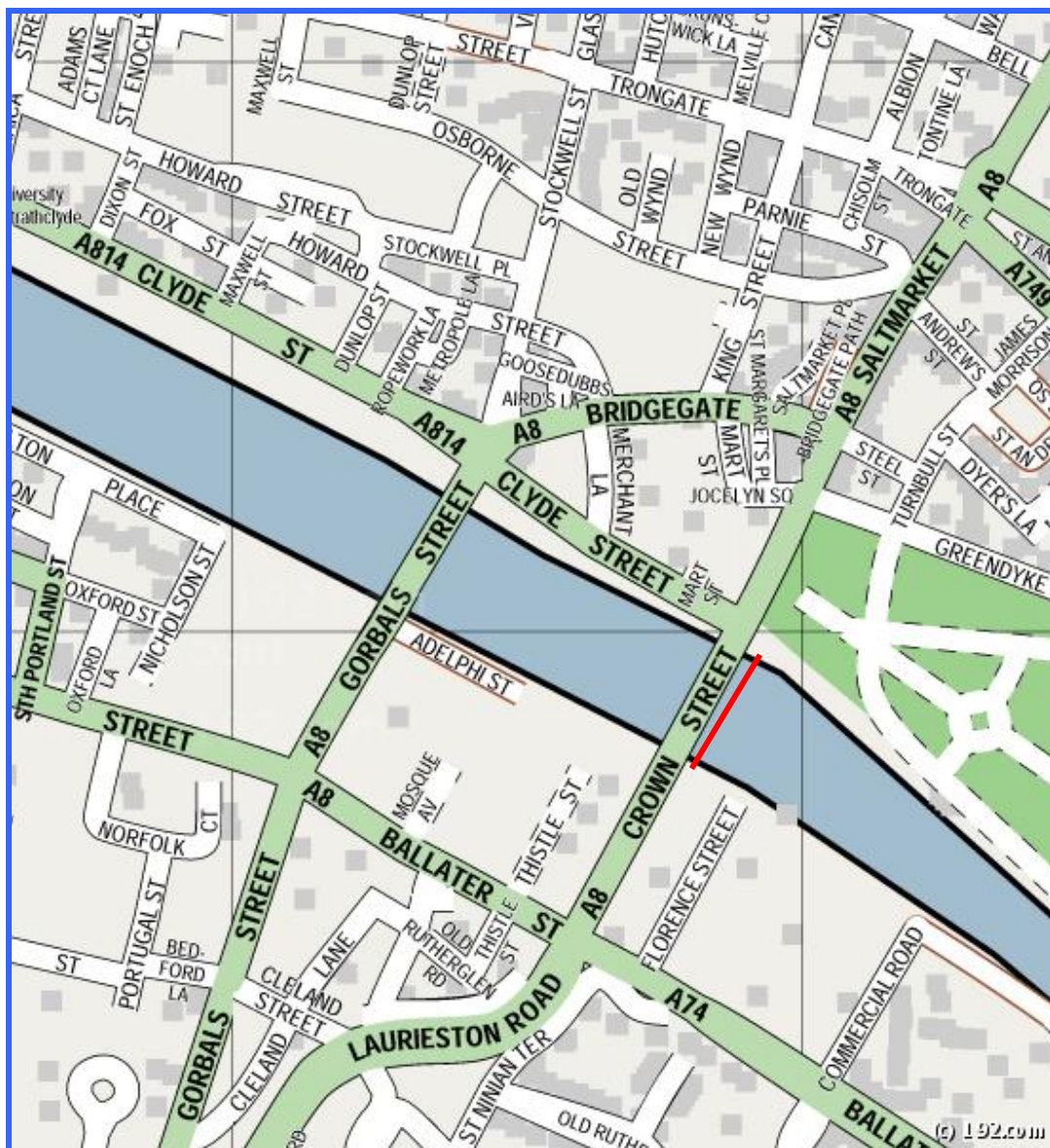
- providing asset management services, including managing and reporting on asset performance;
- providing risk management services;
- providing capital and investment advice, including identifying investment opportunities that meet specified investment guidelines; and
- implementing investments and divestments approved by the board.

APPENDICES

- LOCATION
- PROJECT DEVELOPMENT
- INVESTMENT & ASSESSMENT MANAGEMENT

APPENDIX

Indicative Location - Hydro Project Development



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APPENDIX

Hydro Project Development

Developing a hydro-electric project requires investigation and evaluation of the proposed location on a wide range of criteria, including:-

- water resource quality (head height & water flow strength)
- ability to obtain planning consents
- access to power transmission
- impact on the surrounding environment
- constructability
- identifying the customer

Water Resource Quality

The energy produced by hydro facilities depends on the local water resource. This resource is determined by calculating the maximum available vertical fall in the water – the head – and the volume of water passing per second – the flow rate.

Calculations must take account of the fact that a proportion of the water flow, known as the compensation flow, will be required to by-pass the facility for environmental & aesthetic reasons.

Using remote and on-site water data & measurements and surrounding data, where available, including modeling software, the water resource can be calculated.

The estimated energy produced for each location should range between 50 kW and 1MW in order to progress.

Ability to Obtain Planning Consents

Early in the process, it is essential to work closely with the local community and the local authority to make sure all regulations and requirements are complied with and to create an amicable, yet commercially viable, proposition for all involved parties.

Access to Power Transmission

Electricity generated at a commercial hydro project must be moved onto the power grid. A key component of project viability is a transmission study which determines how best to make that connection.

Impacting on the Surrounding Environment

Extensive environmental impact studies evaluating existing land use as well as impacts on animal & fish life, rare plants, and waterways to determine whether a site is suitable for a hydro-electric facility.

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Hydro Project Development

We select and design renewable energy developments to minimise impacts, and work hard to ensure our energy is as environmentally friendly to the land and communities as it is to the rivers.

Results have indicated that on carefully chosen sites, the projects will not materially or adversely impact the surrounding environment.

Constructability

Construction involves such activities as waterways construction, underground cabling, foundation pouring, turbine installation etc. After construction, surrounding property that may have been disturbed during construction is restored to its pre-construction state.

Proximity to existing urban or industrial sites and developments and main road infrastructure and networks allows the cost-competitive and site-appropriate equipment procurement & maintenance for the project.

Identifying the Customer

In many cases, a project's success is dependent upon identifying potential purchasers of a project's electricity and executing sales agreements to create renewable energy products that will effectively and profitably market the renewable power generated.

The project has already identified an energy deal for all electricity generated with the local authority.

APPENDIX

Investment & Asset Management

An investment & asset management team will be appointed as the owner's representative on site to ensure site peak performance and to add value by improving project structure, operations, performance, and returns for portfolio optimisation and to maximise energy returns.

A summary of a manager's remit includes, where applicable:

Pre Development Phase:

- Water resource and site evaluation and qualifications
- River power program planning
- Power equipment technology evaluation
- Preliminary hydro project economic and feasibility assessments

Development Phase:

- Site specific project evaluations
- Project business model development
- Project operating cost assessment and development
- Power purchase agreement evaluations
- Project design evaluations
- Project engineering and construction evaluations

Operational Phase:

- Operations and Asset Management assessments
- Project valuation analysis
- Project acquisition analysis and support services
- Project divesture and support services
- Project asset value improvement programs
- Project repowering evaluation and planning

Specifically, the asset manager will concentrate on:

Operational management

The asset managers are responsible for all operational activities including planning & maintenance, managing health and safety, controlling and initiating work and complying with industry best practice, including the British Hydro Association hydro-electric turbine safety rules.

The asset management team also provide the ability to manage High Voltage faults or site emergencies, responding swiftly and managing the situation to minimise site downtime and consequential power & financial loss.

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Investment & Asset Management

Performance analysis

The operational asset management team will also conduct performance analysis and optimisation studies to ensure analysis of turbine performance, providing the in-depth information required to manage sites to their optimum level.

Utilising raw power & site data, the operational team provide an independent analysis of turbine performance and availability, detailing all relevant instances.

If required and in combination with operational data analysis, the operational asset management team may conduct studies to determine if changes to rainfall, river intake, water flow, river landscape etc are affecting turbine performance. With this knowledge the data can be analysed with optimisation solutions proposed.

The operational asset team can also represent interests in discussions with turbine suppliers on performance and warranty.

Inspections, Reviews & Audits

The operational asset managers provide audits and inspections covering operational management, health and safety, maintenance procedures, quality of ecology management, and end of warranty turbine inspections.

In addition, the asset managers can provide, when required, an overview of the condition of turbines and analysis of historical data so to determine each of the turbine's power curves which can be used to identify any gradual slip or step change in performance.