

The table below details the estimated development cost for this system, it has been assumed that the services offered by Highland Eco-Design will be fully utilised throughout:

**Table V.1: Estimated Costs**

Item	Cost
<i>Development</i>	
Feasibility study and outline design	£2,000
Planning permission and abstraction license application (including environmental surveys)	£8,000
<i>Civil Engineering</i>	
Site clearing	£0
Intake civil-engineering	£20,000
Intake screen and sluice	£30,000
Fish pass (if proposed)	£0
Turbine foundation/enclosure	£60,000
Excavation and pipe laying	£27,000
Pipe supply	£11,865
Pipe ancillaries (valves, flanges etc)	£17,798
Signal cable	£203
Electrical cable	£2,022
Cable trenching	£2,000
<i>Electro-Mechanical</i>	
Turbine and controller	£50,104
Electrical sub-contracting	£10,000
Transformer / grid connection	£10,000
<i>Specialist Services</i>	
Design, management & supervision	£50,198
Installation, commissioning and testing	£12,550
Sub-total	£313,739
VAT	£0
<b>Total</b>	<b>£313,739</b>

Please note that this is not a quotation. If you would like us to compile a quotation for the next phase of the work then please let us know.

Assuming an export value total of 22.3p/kWh, made up of the Feed-in Tariff (17.8p/kWh) and exported electricity (4.5p/kWh), the system will generate a partially tax exempt income of approximately **£58,200** a year. It should be noted that the actual value of exported energy is dependant on negotiations with electricity suppliers.

There is some income tax exemption for income from the current ROC system although it is unclear if this will apply to the Feed-in Tariff: HM Revenue & Customs, "MICROGENERATION: TAX TREATMENT OF RENEWABLES OBLIGATION CERTIFICATES", BN64, 21 March 2007

Table V.2: Financial Summary

Annual Energy Balance						Yearly Cash Flows				
Project name	Harlaw Reservoir					Year	Pre-tax	After-tax	Cumulative	
Project location	Balerno					#	£	£	£	
Renewable energy delivered	MWh	261	Net GHG reduction	t <sub>CO2</sub> /yr	129	0	(313,739)	(313,739)	(313,739)	
Excess RE available	MWh	-				1	56,216	56,216	(257,524)	
Firm RE capacity	kW	3				2	57,682	57,682	(199,842)	
Grid type	Central-grid					3	59,186	59,186	(140,655)	
			Net GHG emission reduction - 20 yrs	t <sub>CO2</sub>	2,578	4	60,730	60,730	(79,925)	
						5	62,315	62,315	(17,611)	
						6	63,941	63,941	46,330	
						7	65,609	65,609	111,939	
						8	67,322	67,322	179,261	
						9	69,079	69,079	248,340	
						10	70,883	70,883	319,223	
						11	72,734	72,734	391,956	
						12	74,634	74,634	466,590	
						13	76,583	76,583	543,173	
						14	78,584	78,584	621,757	
						15	80,638	80,638	702,395	
						16	82,745	82,745	785,140	
						17	84,908	84,908	870,048	
						18	87,128	87,128	957,175	
						19	89,406	89,406	1,046,581	
						20	91,744	91,744	1,138,326	

Financial Parameters					
Avoided cost of energy	£/kWh	0.0450	Debt ratio	%	0.0%
RE production credit	£/kWh	0.178			
RE production credit duration	yr	20			
RE credit escalation rate	%	2.5%			
GHG emission reduction credit	£/t <sub>CO2</sub>	-	Income tax analysis?	yes/no	No
Avoided cost of capacity	£/kW-yr	-			
Energy cost escalation rate	%	3.0%			
Inflation	%	2.5%			
Discount rate	%	6.0%			
Project life	yr	20			

Project Costs and Savings					
<b>Initial Costs</b>			<b>Annual Costs and Debt</b>		
Feasibility study	0.6%	£ 2,000	O&M	£	3,452
Development	2.5%	£ 8,000			
Engineering	19.2%	£ 60,198			
Energy equipment	20.0%	£ 62,654	<b>Annual Costs and Debt - Total</b>	£	<b>3,452</b>
Balance of plant	57.7%	£ 180,887			
Miscellaneous	0.0%	£ -	<b>Annual Savings or Income</b>		
<b>Initial Costs - Total</b>	100.0%	£ <b>313,739</b>	Energy savings/income	£	11,752
Incentives/Grants		£ -	Capacity savings/income	£	-
			RE production credit income - 20 yrs	£	46,487
<b>Periodic Costs (Credits)</b>			<b>Annual Savings - Total</b>	£	<b>58,240</b>
Turbine overhaul	£	62,654	Schedule yr #		
	£	-			
	£	-			
End of project life - Credit	£	-			

Financial Feasibility					
Pre-tax IRR and ROI	%	19.7%	Calculate energy production cost?	yes/no	No
After-tax IRR and ROI	%	19.7%	Calculate GHG reduction cost?	yes/no	No
Simple Payback	yr	5.7	Project equity	£	313,739
Year-to-positive cash flow	yr	5.3			
Net Present Value - NPV	£	478,911			
Annual Life Cycle Savings	£	41,754			
Benefit-Cost (B-C) ratio	-	2.53			

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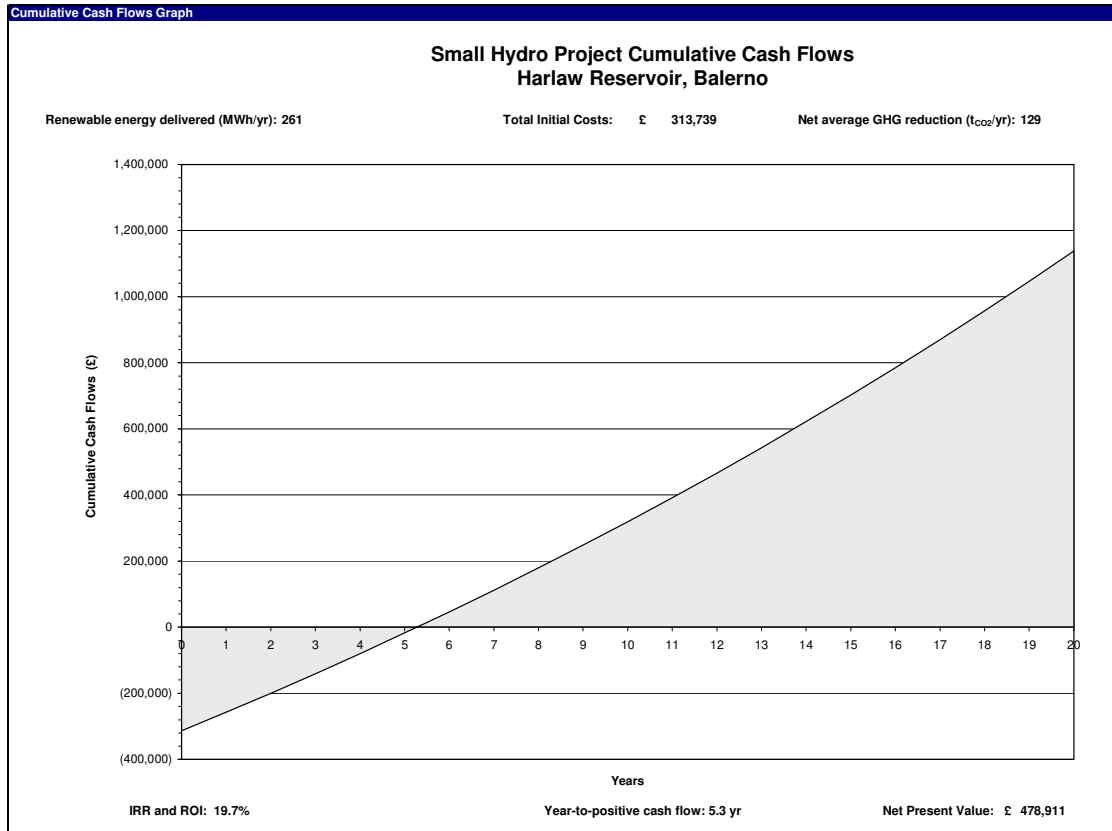


Table V.3: Risk Summary

Sensitivity Analysis for After-tax IRR and ROI						
		Avoided cost of energy (£/kWh)				
RE delivered (MWh)		0.0360 -20%	0.0405 -10%	0.0450 0%	0.0495 10%	0.0540 20%
209	-20%	11.9%	12.1%	12.4%	12.6%	12.9%
235	-10%	13.9%	14.1%	14.4%	14.7%	14.9%
<b>261</b>	0%	15.8%	16.0%	<b>16.3%</b>	16.6%	16.9%
287	10%	17.6%	17.9%	18.2%	18.5%	18.8%
313	20%	19.4%	19.7%	20.0%	20.3%	20.6%

		Avoided cost of energy (£/kWh)				
Initial costs (£)		0.0360 -20%	0.0405 -10%	0.0450 0%	0.0495 10%	0.0540 20%
250,992	-20%	19.9%	20.2%	20.5%	20.8%	21.2%
282,366	-10%	17.6%	17.9%	18.2%	18.5%	18.8%
<b>313,739</b>	0%	15.8%	16.0%	<b>16.3%</b>	16.6%	16.9%
345,113	10%	14.2%	14.5%	14.7%	15.0%	15.2%
376,487	20%	12.8%	13.1%	13.3%	13.6%	13.8%

		Avoided cost of energy (£/kWh)				
Annual costs (£)		0.0360 -20%	0.0405 -10%	0.0450 0%	0.0495 10%	0.0540 20%
2,762	-20%	16.1%	16.4%	16.6%	16.9%	17.2%
3,107	-10%	15.9%	16.2%	16.5%	16.8%	17.0%
<b>3,452</b>	0%	15.8%	16.0%	<b>16.3%</b>	16.6%	16.9%
3,797	10%	15.6%	15.9%	16.2%	16.4%	16.7%
4,143	20%	15.4%	15.7%	16.0%	16.3%	16.6%

		RE production credit (£/kWh)				
RE delivered (MWh)		0.142 -20%	0.160 -10%	0.178 0%	0.196 10%	0.214 20%
209	-20%	9.5%	11.0%	12.4%	13.8%	15.1%
235	-10%	11.3%	12.9%	14.4%	15.9%	17.3%
<b>261</b>	0%	13.0%	14.7%	<b>16.3%</b>	17.9%	19.5%
287	10%	14.6%	16.4%	18.2%	19.9%	21.6%
313	20%	16.2%	18.1%	20.0%	21.8%	23.6%

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