

Small Scale Hydro Calculator

Name/Location of Watercourse:

Intake Elevation (m) Kinematic Viscosity

Turbine Elevation (m) Roughness Coef (mm)

Head (m)

Pipe Length (m)

Hydraulic Gradient

Turbine Eff. (%)

Low Flows Summary

Annual		Monthly												
Annual mean flow		Monthly mean												
Annual Q95 (m³/s)		Monthly Q95												
P (%)		Q (m³/s)												
1	5	0.22	0.22	0.19	0.18	0.18	0.12	0.078	0.056	0.050	0.043	0.16	0.18	0.20
2	10	0.19	0.19	0.18	0.14	0.10	0.078	0.056	0.050	0.043	0.16	0.18	0.20	
3	20	0.18	0.18	0.14	0.10	0.078	0.056	0.050	0.043	0.16	0.18	0.20	0.20	
4	30	0.12	0.12	0.10	0.078	0.056	0.050	0.043	0.16	0.18	0.20	0.20	0.20	
5	40	0.078	0.078	0.078	0.056	0.050	0.043	0.16	0.18	0.20	0.20	0.20	0.20	
6	50	0.056	0.056	0.056	0.043	0.043	0.16	0.18	0.20	0.20	0.20	0.20	0.20	
7	60	0.05	0.05	0.05	0.043	0.043	0.16	0.18	0.20	0.20	0.20	0.20	0.20	
8	70	0.068	0.068	0.068	0.056	0.056	0.043	0.16	0.18	0.20	0.20	0.20	0.20	
9	80	0.098	0.098	0.098	0.078	0.078	0.056	0.043	0.16	0.18	0.20	0.20	0.20	
10	90	0.16	0.16	0.16	0.12	0.12	0.078	0.056	0.043	0.16	0.18	0.20	0.20	
11	95	0.16	0.16	0.16	0.12	0.12	0.078	0.056	0.043	0.16	0.18	0.20	0.20	
12	99	0.2	0.2	0.2	0.16	0.16	0.12	0.078	0.056	0.043	0.16	0.18	0.20	

Cost Of System

Sizing Turbine

Turbine Rating (kW)

Chosen Pipe Diameter (m)

Operational Range

Rated Flowrate (m³/s)

Cut in flow

Cut out flow

Cost Breakdown

Est. Pipe Cost (per m)

Est. Cost of Pipe

Est. Cost of Turbine

Groundwork/Power House

Transmission Distance (km)

Overhead

Underground

Est. Transmission Cost

Est. CapEx

Est. OpEx

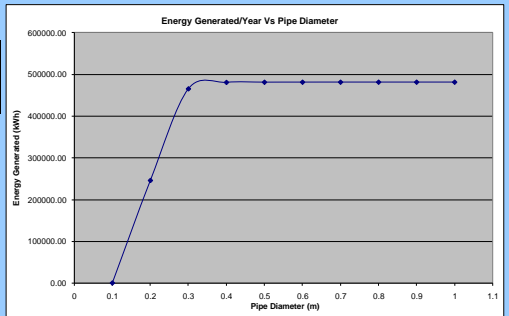
Feed-in Tariff

FTTS Range	Generation Price (£)	Export	Total
< 15kW	0.199	0.03	0.229
>15 - 100 kW	0.178	0.03	0.208
>100kW - 2MW	0.11	0.03	0.14
>2MW - 5MW	0.045	0.03	0.075

Tariff Price

Revenue Forecast

Pipe Diameter (m)	Energy Generated per year (kWh)	Revenue per year (£)
0.1	0.0	£0.00
0.2	246098.01	£51,188.39
0.3	465961.05	£96,919.90
0.4	481450.10	£100,141.62
0.5	481655.77	£100,236.00
0.6	481978.95	£100,251.62
0.7	482024.98	£100,261.20
0.8	482044.87	£100,265.33
0.9	482054.44	£100,267.32
1	482059.45	£100,268.37



Payback Period

Tax rate %

Long term interest rate %

Long term inflation rate %

% of profits to debt repayment %

Turbine (kW)

Pipe Dia. (m)

Year	Investment	Generation	Debt Interest	Annual OpEx	Total	Pre-Tax	Net	Cumulative	Debt Capital
	Balance	Income	Repayment		Outgoings	Profit/Loss	Profit/Loss	Profit/Loss	Repayment
1	£315,623	£96,920		£22,094	£33,944	£62,976	£40,935	-£274,688	£12,280
2	£303,343	£98,858	£21,234	£12,087	£33,321	£65,537	£42,509	-£232,089	£12,780
3	£290,263	£100,835	£20,339	£12,369	£32,688	£68,167	£44,309	-£187,780	£13,293
4	£277,201	£102,852	£19,492	£12,651	£31,981	£70,868	£46,064	-£141,716	£13,815
5	£263,451	£104,909	£18,642	£12,927	£31,268	£73,641	£47,867	-£93,850	£14,360
6	£249,091	£107,007	£17,793	£13,203	£30,520	£76,488	£49,717	-£44,133	£14,915
7	£234,126	£109,146	£16,924	£13,485	£29,747	£79,410	£51,617	-£7,484	£15,485
8	£219,691	£111,330	£16,038	£13,771	£28,920	£82,410	£53,567	£61,051	£16,070
9	£204,821	£113,557	£15,183	£14,061	£28,068	£85,488	£55,568	£116,619	£16,670
10	£189,560	£115,828	£14,317	£14,354	£27,178	£88,650	£57,622	£174,241	£17,287
11	£173,964	£118,145	£13,452	£14,651	£26,252	£91,893	£59,731	£233,972	£17,915
12	£158,745	£120,508	£12,582	£14,951	£25,296	£95,222	£61,894	£295,866	£18,565
13	£143,176	£122,918	£11,722	£15,252	£24,281	£98,637	£64,114	£359,980	£19,234
14	£117,942	£125,376	£10,861	£15,555	£23,235	£102,141	£66,392	£426,371	£19,918
15	£92,026	£127,881	£10,012	£15,861	£22,148	£105,798	£68,726	£495,097	£20,615
16	£77,496	£130,441	£9,168	£16,169	£21,017	£109,424	£71,126	£566,223	£21,338
17	£51,068	£133,050	£8,329	£16,479	£19,842	£113,208	£73,585	£639,811	£22,076
18	£28,993	£135,711	£7,492	£16,791	£18,622	£117,089	£76,108	£715,919	£22,822
19	£8,160	£138,425	£6,657	£17,105	£17,353	£121,070	£78,691	£796,614	£23,583
20	£0	£141,194	£5,823	£17,421	£16,032	£125,131	£81,332	£877,946	£0