

## Fernaig Trust Desktop Hydro Study

LOW FLOW ESTIMATES													HYDRO POTENTIAL						ANNUAL VALUE					CAPITAL COST						
Pipe int.dia 250mm	AREA Ha.	BFI	X %	SAAR mm	Q95(10) mm l/sec	MAM(10) mm l/sec	MAM(1) mm l/sec	runoff factor	mean flow l/sec	avge yield l/day	low yield l/day	total	net	AVERAGE			INSTALLED Kw	ANNUAL VALUE			CAPITAL COST									
												HEAD m	length m	head m	mean Q cumec	effy %		kW	availability %	energy kWh/yr	tariff £/kWh	value £/year	pipe £	turbine+gen £1300/kw	total £	total £/kw	IRR			
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	93	8,025,766	2,808,179	120	600	114	0.09	0.85	88	89	50	389,820	0.05	19,491	48,000	115,700	163,700	1,839	12%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	93	8,025,766	2,808,179	120	600	114	0.09	0.85	88	89	55	428,802	0.05	21,440	48,000	115,700	163,700	1,839	14%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	83	7,161,766	2,808,179	120	600	115	0.08	0.85	80	80	60	420,480	0.05	21,024	48,000	104,000	152,000	1,900	15%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	73	6,297,766	2,808,179	120	600	116	0.07	0.85	71	71	65	404,274	0.05	20,214	48,000	92,300	140,300	1,976	16%
allt cadh an eas	220	0.80	<b>4.56</b>	<b>1654</b>	<b>1.87</b>	<b>47.7</b>	<b>1.86</b>	<b>47.3</b>	<b>1.28</b>	<b>32.5</b>	<b>0.8</b>	63	<b>5,433,766</b>	<b>2,808,179</b>	120	600	<b>117</b>	<b>0.06</b>	<b>0.85</b>	<b>61</b>	<b>62</b>	<b>70</b>	<b>380,184</b>	<b>0.05</b>	<b>19,009</b>	<b>48,000</b>	<b>80,600</b>	<b>128,600</b>	<b>2,074</b>	<b>16%</b>
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	53	4,569,766	2,808,179	120	600	118	0.05	0.85	52	52	75	341,640	0.05	17,082	48,000	67,600	115,600	2,223	16%
	220	0.80													120	600		0.00												
Pipe int.dia 146mm	220	0.80													120	600		0.00												
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	93	8,025,766	2,808,179	120	600	40	0.09	0.85	31	31	50	135,780	0.05	6,789	27,786	40,300	68,086	2,196	9%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	50	4,320,000	2,808,179	120	600	95	0.05	0.85	39	40	75	262,800	0.05	13,140	27,786	52,000	79,786	1,995	19%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	40	3,456,000	2,808,179	120	600	103	0.04	0.85	34	35	80	245,280	0.05	12,264	27,786	45,500	73,286	2,094	19%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	35	3,024,000	2,808,179	120	600	107	0.04	0.85	31	32	85	238,272	0.05	11,914	27,786	41,600	69,386	2,168	20%
allt cadh an eas	220	0.80	<b>4.56</b>	<b>1654</b>	<b>1.87</b>	<b>47.7</b>	<b>1.86</b>	<b>47.3</b>	<b>1.28</b>	<b>32.5</b>	0.80	<b>30</b>	<b>2,592,000</b>	<b>2,808,179</b>	120	600	<b>110</b>	<b>0.03</b>	<b>0.85</b>	<b>28</b>	<b>28</b>	<b>90</b>	<b>220,752</b>	<b>0.05</b>	<b>11,038</b>	<b>27,786</b>	<b>36,400</b>	<b>64,186</b>	<b>2,292</b>	<b>20%</b>
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	25	2,160,000	2,808,179	120	600	113	0.03	0.85	24	24	95	199,728	0.05	9,986	27,786	31,200	58,986	2,458	20%
	220	0.80													120	600		0.00												
Pipe int.dia 101mm	220	0.80													120	600		0.00												
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	25	2,160,000	2,808,179	120	600	78	0.03	0.85	16	17	50	74,460	0.05	3,723	12,888	22,100	34,988	2,058	10%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	20	1,728,000	2,808,179	120	600	92	0.02	0.85	15	16	70	98,112	0.05	4,906	12,888	20,800	33,688	2,106	16%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	15	1,296,000	2,808,179	120	600	104	0.02	0.85	13	13	75	85,410	0.05	4,271	12,888	16,900	29,788	2,291	16%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	10	864,000	2,808,179	120	600	112	0.01	0.85	9	10	80	70,080	0.05	3,504	12,888	13,000	25,888	2,589	14%
allt cadh an eas	220	0.80	<b>4.56</b>	<b>1654</b>	<b>1.87</b>	<b>47.7</b>	<b>1.86</b>	<b>47.3</b>	<b>1.28</b>	<b>32.5</b>	0.80	<b>5</b>	<b>432,000</b>	<b>2,808,179</b>	120	600	<b>118</b>	<b>0.01</b>	<b>0.85</b>	<b>5</b>	<b>5</b>	<b>85</b>	<b>37,230</b>	<b>0.05</b>	<b>1,862</b>	<b>12,888</b>	<b>6,500</b>	<b>19,388</b>	<b>3,878</b>	<b>8%</b>
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	0	0	2,808,179	120	600	120	0.00	0.85	0	0	90	0	0.05	0	12,888	0	12,888	#DIV/0!	#NUM!
	220	0.80													120	600														
Pipe int.dia 89mm	220	0.80													120	600														
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	10	864,000	2,808,179	120	600	106	0.01	0.85	9	9	75	59,130	0.05	2,957	9,978	11,700	21,678	2,409	15%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	5	432,000	2,808,179	120	600	116	0.01	0.85	5	5	80	35,040	0.05	1,752	9,978	6,500	16,478	3,296	10%
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	0	0	2,808,179	120	600	120	0.00	0.85	0	0	85	0	0.05	0	9,978	0	9,978	#DIV/0!	#NUM!
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	-5	-432,000	2,808,179	120	600	#NUM!	-0.01	0.85	#NUM!	#NUM!	90	#NUM!	0.05	#NUM!	9,978	#NUM!	#NUM!	#NUM!	#VALUE!
allt cadh an eas	220	0.80	<b>4.56</b>	<b>1654</b>	<b>1.87</b>	<b>47.7</b>	<b>1.86</b>	<b>47.3</b>	<b>1.28</b>	<b>32.5</b>	<b>0.8</b>	<b>-10</b>	<b>-864,000</b>	<b>2,808,179</b>	120	600	<b>#NUM!</b>	<b>-0.01</b>	<b>0.85</b>	<b>#NUM!</b>	<b>#NUM!</b>	<b>95</b>	<b>#NUM!</b>	<b>0.05</b>	<b>#NUM!</b>	<b>9,978</b>	<b>#NUM!</b>	<b>#NUM!</b>	<b>#NUM!</b>	<b>#VALUE!</b>
allt cadh an eas	220	0.80	4.56	1654	1.87	47.7	1.86	47.3	1.28	32.5	0.80	-15	-1,296,000	2,808,179	120	600	#NUM!	-0.02	0.85	#NUM!	#NUM!	100	#NUM!	0.05	#NUM!	9,978	#NUM!	#NUM!	#NUM!	#VALUE!

BFI = Base Flow Index

X = Mean annual daily rainfall

SAAR = Standard annual average rainfall

Q95(10)= 10 day average flow exceeded by 95 % of 10 day averages

MAM(10)= Mean annual 10 day minimum flow

MAM(1) = Mean annual minimum daily flow

observed discharge