

# 20 year project cash flows (Tropical World)

kWh produced based on 199 kW boiler & hours of operation

	kWh	Hours
Tier 1 RHI claim - kWh	261,486	1,314 <sup>^</sup>
Tier 2 RHI claim - kWh	733,514	3,686
<b>Total kWh RHI claim for biomass</b>	<b>995,000*</b>	<b>5,000</b>

RHI year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Totals
Tariff rate tier 1 - p/kWh - RPI linked	7.60p	7.83p	8.06p	8.30p	8.55p	8.81p	9.07p	9.35p	9.63p	9.92p	10.21p	10.52p	10.84p	11.16p	11.50p	11.84p	12.20p	12.56p	12.94p	13.33p	N/A
Tariff rate 1 - payment (£)	19,873	20,469	21,083	21,716	22,367	23,038	23,729	24,441	25,174	25,930	26,708	27,509	28,334	29,184	30,060	30,961	31,890	32,847	33,832	34,847	533,993
Tariff rate tier 2 - p/kWh - RPI linked	2.00p	2.06p	2.12p	2.19p	2.25p	2.32p	2.39p	2.46p	2.53p	2.61p	2.69p	2.77p	2.85p	2.94p	3.03p	3.12p	3.21p	3.31p	3.40p	3.51p	N/A
Tariff rate 2 - payment (£)	14,670	15,110	15,564	16,031	16,512	17,007	17,517	18,043	18,584	19,141	19,716	20,307	20,916	21,544	22,190	22,856	23,541	24,248	24,975	25,724	394,196
<b>Total RHI income (£)</b>	<b>34,543</b>	<b>35,580</b>	<b>36,647</b>	<b>37,746</b>	<b>38,879</b>	<b>40,045</b>	<b>41,246</b>	<b>42,484</b>	<b>43,758</b>	<b>45,071</b>	<b>46,423</b>	<b>47,816</b>	<b>49,250</b>	<b>50,728</b>	<b>52,250</b>	<b>53,817</b>	<b>55,432</b>	<b>57,095</b>	<b>58,808</b>	<b>60,572</b>	<b>928,189</b>

Fuel costs/savings	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Totals
Gas unit rate (p/kWh)	2.89p	3.09p	3.31p	3.54p	3.79p	4.05p	4.34p	4.64p	4.97p	5.31p	5.69p	6.08p	6.51p	6.96p	7.45p	7.97p	8.53p	9.13p	9.77p	10.45p	N/A
Pre-project gas cost (£)	-120,166	-128,577	-137,578	-147,208	-157,513	-168,539	-180,336	-192,960	-206,467	-220,920	-236,384	-252,931	-270,636	-289,581	-309,851	-331,541	-354,749	-379,581	-406,152	-434,582	-4,926,251
Post-project gas cost (£)	-70,078	-74,983	-80,232	-85,849	-91,858	-98,288	-105,168	-112,530	-120,407	-128,835	-137,854	-147,504	-157,829	-168,877	-180,698	-193,347	-206,882	-221,363	-236,859	-253,439	-2,872,881
Gas cost savings (£)	50,088	53,594	57,345	61,360	65,655	70,251	75,168	80,430	86,060	92,084	98,530	105,427	112,807	120,704	129,153	138,194	147,867	158,218	169,293	181,144	2,053,371
Wood pellet unit rate (p/kWh)	4.20p	4.33p	4.46p	4.59p	4.73p	4.87p	5.02p	5.17p	5.32p	5.48p	5.64p	5.81p	5.99p	6.17p	6.35p	6.54p	6.74p	6.94p	7.15p	7.36p	N/A
Wood pellet cost (£)	-49,165	-50,640	-52,159	-53,724	-55,335	-56,995	-58,705	-60,466	-62,280	-64,149	-66,073	-68,055	-70,097	-72,200	-74,366	-76,597	-78,895	-81,262	-83,700	-86,211	-1,321,074
Electricity unit rate (p/kWh)	9.40p	10.06p	10.76p	11.52p	12.32p	13.18p	14.11p	15.09p	16.15p	17.28p	18.49p	19.79p	21.17p	22.65p	24.24p	25.93p	27.75p	29.69p	31.77p	34.00p	N/A
Project electricity savings (£)	1,949	2,086	2,232	2,388	2,555	2,734	2,925	3,130	3,349	3,584	3,835	4,103	4,390	4,697	5,026	5,378	5,755	6,157	6,588	7,050	79,912
Net heating savings (£)	923	2,954	5,187	7,636	10,319	13,255	16,463	19,964	23,780	27,935	32,457	37,372	42,710	48,504	54,787	61,597	68,972	76,956	85,593	94,933	732,297
<b>Overall energy cost savings (£)</b>	<b>2,872</b>	<b>5,040</b>	<b>7,418</b>	<b>10,024</b>	<b>12,875</b>	<b>15,989</b>	<b>19,388</b>	<b>23,094</b>	<b>27,129</b>	<b>31,519</b>	<b>36,291</b>	<b>41,475</b>	<b>47,100</b>	<b>53,201</b>	<b>59,813</b>	<b>66,975</b>	<b>74,727</b>	<b>83,114</b>	<b>92,182</b>	<b>101,983</b>	<b>812,208</b>

<b>Total income / savings (£)</b>	<b>37,416</b>	<b>40,619</b>	<b>44,065</b>	<b>47,770</b>	<b>51,753</b>	<b>56,034</b>	<b>60,635</b>	<b>65,577</b>	<b>70,887</b>	<b>76,590</b>	<b>82,715</b>	<b>89,291</b>	<b>96,351</b>	<b>103,929</b>	<b>112,063</b>	<b>120,792</b>	<b>130,159</b>	<b>140,208</b>	<b>150,989</b>	<b>162,554</b>	<b>1,740,398</b>
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Operational expenditure (OPEX) costs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Totals
Maintenance costs (+RPI) & M&V (20 yrs) -£	3,248	3,368	3,491	3,619	3,750	3,885	4,024	4,167	4,315	4,466	4,623	4,784	4,950	5,121	5,297	5,479	5,666	5,858	6,056	6,261	92,428
Prudential borrowing per annum (£)	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-26,295	-525,894
Salix borrowing per annum (£)	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-8,344	-41,719

<b>Total OPEX costs (£)</b>	<b>-31,390</b>	<b>-31,270</b>	<b>-31,147</b>	<b>-31,020</b>	<b>-30,889</b>	<b>-22,410</b>	<b>-22,271</b>	<b>-22,128</b>	<b>-21,980</b>	<b>-21,828</b>	<b>-21,672</b>	<b>-21,511</b>	<b>-21,345</b>	<b>-21,174</b>	<b>-20,997</b>	<b>-20,816</b>	<b>-20,629</b>	<b>-20,437</b>	<b>-20,238</b>	<b>-20,034</b>	<b>-475,185</b>
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<b>Net cashflow (£)</b>	<b>6,025</b>	<b>9,349</b>	<b>12,918</b>	<b>16,751</b>	<b>20,865</b>	<b>33,624</b>	<b>38,364</b>	<b>43,450</b>	<b>48,907</b>	<b>54,762</b>	<b>61,043</b>	<b>67,780</b>	<b>75,006</b>	<b>82,755</b>	<b>91,065</b>	<b>99,976</b>	<b>109,529</b>	<b>119,772</b>	<b>130,751</b>	<b>142,520</b>	<b>1,265,212</b>
<b>Cumulative net cashflow (£)</b>	<b>6,025</b>	<b>15,374</b>	<b>28,292</b>	<b>45,043</b>	<b>65,908</b>	<b>99,532</b>	<b>137,896</b>	<b>181,345</b>	<b>230,252</b>	<b>285,014</b>	<b>346,057</b>	<b>413,837</b>	<b>488,843</b>	<b>571,599</b>	<b>662,664</b>	<b>762,640</b>	<b>872,170</b>	<b>991,941</b>	<b>1,122,692</b>	<b>1,265,212**</b>	<b>N/A</b>

Key assumptions	
Cost per kWh - gas (p)	2.89 pence
Old gas consumption (kWh)	4,157,982 kWh
New gas consumption (kWh)	2,424,843 kWh
Assumed cost per kWh - wood pellets (p)	4.2 pence
Assumed pellet consumption (kWh)	1,170,588 kWh
Cost per kWh - elec (p)	9.40 pence
Electricity savings (kWh)	20,737 kWh
Retail price index (RPI)	3%
Gas inflation	7%
Electricity inflation	7%
Wood pellet inflation	3%
Assumed biomass boiler efficiency	85%

Costs associated with project	
Combined capital costs	£342,040
Cost of finance	£183,854
Contribution from CPM	£55,937
BMS funding from Salix Finance	£41,719
<b>Total CAPEX (w/ cost of finance)</b>	<b>£623,550</b>
Annual maintenance costs	-£3,998
Annual M&V cost	£750
Prudential borrowing costs	£26,295
Salix borrowing (5 years only)	£8,344
Contingency <sup>^</sup>	TBC
<b>Total net OPEX<sup>~</sup></b>	<b>£31,390</b>

Net present value (NPV) based on 6% discount rate  
**£568,921**

<sup>^</sup> not factored into model currently but CPM/P&C may elect to syphon off some of the net maintenance benefit and hold it back as a contingency.  
<sup>^</sup> maximum number of hours claimable under tier 1 tariff.  
<sup>\*</sup> annual kWh produced by biomass @ 85% efficiency.  
<sup>\*\*</sup> equates to return on investment (ROI) of 203% over a 20 year period (although not based on NPV analysis).  
<sup>~</sup> annual OPEX is positive from day one and indeed, over the 20 year period, owing to the substantial cost savings from removing the AmbiRads & replacing the gas-fired boiler.  
<sup>#</sup> this 'measurement & verification' would be internally delivered to help verify the savings and RHI income delivered.