

## Appendix 9

**ON- FARM ANAEROBIC DIGESTER  
SIMPLE ECONOMIC ASSESSMENT**

		<b>Case A1</b>	<b>Case A2</b>	<b>Case A3</b>	<b>Case B1</b>	<b>Case B2</b>	<b>Case B3</b>
Annual Energy Crop Production	tonnes per year	6,367	6,367	6,367	6,367	6,367	6,367
Annual Slurry Production	tonnes per year	0	0	0	7,352	7,352	7,352
Total Digester Feedstock	tonnes per year	6,367	6,367	6,367	13,719	13,719	13,719
Biogas Yield from Energy Crop	m3 per day	2,003	2,003	2,003	2,003	2,003	2,003
Biogas Yield from Slurry	m3 per day	0	0	0	274	274	274
Total Biogas Yield	m3 per day	2,003	2,003	2,003	2,276	2,276	2,276
Energy Value of Biogas	kW (fuel)	438	438	438	545	545	545
Potential CHP Electricity Production	kW (electrical)	145	145	145	180	180	180
Potential CHP Heat Production	kW (heat)	228	228	228	284	284	284
Process Heat	kW (heat)	32	32	32	68	68	68
CHP Availability	%	95	95	95	95	95	95
Usage Factor for Surplus Heat	%	0	0	66	0	0	66
Gross Electricity Production	MW.hrs per year	1,203	1,203	1,203	1,498	1,498	1,498
Net Useful Heat Production	MW.hrs per year	0	0	1,174	0	0	1,298
Oil Equivalence of Useful Heat	litres per year	0	0	138,165	0	0	152,733
Value of Electricity	£ per MW.hr	75	75	75	75	75	75
Value of Heat	£ per MW.hr	20	20	20	20	20	20
Value of Gross Electricity Production	£ per year	90,227	90,227	90,227	112,338	112,338	112,338
Value of Net Heat Production	£ per year	0	0	23,488	0	0	25,965
Value of Energy Production	£ per year	90,227	90,227	113,715	112,338	112,338	138,302
Area of Land Required for Energy Crops	hectares	100	100	100	100	100	100
Cost of Production of Energy Crops	£ per year	45,000	45,000	45,000	45,000	45,000	45,000
Cost of Land for Energy Crops	£ per year	15,000	15,000	15,000	15,000	15,000	15,000
Percentage of Biofertiliser as Solid	%	7	7	7	5	5	5
Production of Solid Biofertiliser	tonnes per year	446	446	446	680	680	680
Production of Liquid Biofertiliser	tonnes per year	5,921	5,921	5,921	12,919	12,919	12,919
Value of Solid Biofertiliser	£ per tonne	0.00	5.00	5.00	0.00	5.00	5.00
Value of Solid Biofertiliser	£ per year	0	2,228	2,228	0	3,400	3,400
Labour Costs	£ per year	8,000	8,000	8,000	8,000	8,000	8,000
Operating & Maintenance Costs	£ per year	12,000	12,000	12,000	12,000	12,000	12,000

**Summary of Economics - £ per year****Income**

Value of Electricity	90,227	90,227	90,227	112,338	112,338	112,338
Value of Heat	0	0	23,488	0	0	25,965
Value of Solid Biofertiliser	0	2,228	2,228	0	3,400	3,400

**Total Income**

<b>90,227</b>	<b>92,455</b>	<b>115,943</b>	<b>112,338</b>	<b>115,737</b>	<b>141,702</b>
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**Expenditure**

Labour Costs	8,000	8,000	8,000	8,000	8,000	8,000
Maintenance & Operating Costs	12,000	12,000	12,000	12,000	12,000	12,000
Cost of Energy Crops	60,000	60,000	60,000	60,000	60,000	60,000

**Total Expenditure**

<b>80,000</b>	<b>80,000</b>	<b>80,000</b>	<b>80,000</b>	<b>80,000</b>	<b>80,000</b>
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**Income less Expenditure**

<b>10,227</b>	<b>12,455</b>	<b>35,943</b>	<b>32,338</b>	<b>35,737</b>	<b>61,702</b>
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**Capital Costs**

Capital Cost of Plant	£	500,000	500,000	500,000	560,000	560,000	560,000
Capital Grant	%	0	0	0	0	0	0
Net Capital Cost of Plant	£	500,000	500,000	500,000	560,000	560,000	560,000
Interest Rate	%	7.0	7.0	7.0	7.0	7.0	7.0
Capital Pay-Back Period	years	15	15	15	15	15	15
Average Annual Finance Cost	£ per year	50,833	50,833	50,833	56,933	56,933	56,933

**Income less Expenditure less Finance**

<b>-40,607</b>	<b>-38,378</b>	<b>-14,890</b>	<b>-24,596</b>	<b>-21,196</b>	<b>4,769</b>
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Case A

Ryegrass

Case B

Ryegrass &amp; Pig Slurry