

Three Rivers District Council



Carbon Intelligence Reporting



March 2010

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Document History

Author:	Aidan Dunsdon
Owner:	ECSC Ltd
Client:	Three Rivers District Council
Status:	Issued to client

Revision

Revision date	Previous revision date	Summary of Changes	Changes marked?
10 March		C-Plan summary screens and additional reports added following discussion with Claire May	N

Approvals

Name	Title	Date	Version
Sean Rendall	Head of Policy and Strategy	11 March 2010	1.2

Distribution

Name	Date of Issue	Version
Claire May, Peter Kerr (TRDC)	11 March 2010	1.2

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Purpose of this report

This document provides an overview of the energy statements that have been assessed by C-Plan at Three Rivers District Council since commencement of its use in May 2008. Analysis of these statements has been carried out to evaluate the effectiveness of the council's targets for the reduction of CO₂ emissions and use of renewable energy in new developments. It is important to note the data presented in the first part of this report relates to energy statements submitted to Three Rivers District Council in support of planning applications. No analysis has been carried out on whether these proposals have been granted planning consent or implemented.

A number of the headline trends and outcomes in relation to compliance with the council's preferred options policy are summarised below and illustrated in graphical outputs. At the request of the council we have also carried out further analysis to identify the performance of small (10 dwelling or less) residential developments in meeting the draft policy targets.

This report also includes an overview of development proposals granted planning consent by Woking Borough Council and completed during the period April 2008 – March 2009. This is a sample of monitoring information provided to Woking Borough Council in December 2009 as part of its AMR and has been provided at the request of Three Rivers District Council to provide evidence of small residential development schemes that have been built and have complied with the local planning authority's policy target requiring at 10% of energy to be generated by renewable means on-site.

Testing of draft policy

Three Rivers District Council has set a CO₂ reduction target of 25% over Part L Building Regulations, of which at least 10% must be achieved through on-site renewable energy technologies. This target was adopted for the purposes of testing the policy threshold prior to the Council publishing its Development Plan Preferred Options for consultation.

Performance of all Planning Applications

We have analysed all energy statements for planning applications submitted via C-Plan during the period April 2008 – March 2010. It should be noted that in this analysis, no assessment of schemes progressed to construction has been carried out. Therefore, the following conclusions are based on the assumption that all development proposals that had energy statements submitted to the council via C-Plan were granted consent and subsequently built.

The total predicted carbon footprint of energy in use would be 373,217 kgCO₂ (equivalent emissions) per annum (red column on figure 1). This compares with a predicted total baseline emissions for these developments (i.e. if built to be compliant with current Building Regulations only) of 553,575kg CO₂ Baseline bar on figure 1). The combined effects of the Council's planning targets would achieve a reduction in emissions of just over 180,000 kgCO₂ per annum. This is equivalent to a 33% overall reduction in carbon emissions against the baseline and comfortably exceeds the council's minimum target of 25% reduction in emissions.

The contribution in CO₂ reductions made by renewable energy across these applications equates to a total reduction in emissions of 14% (compared to the Building Regulations baseline). Hence, both parts of the draft policy target have been met, and the overall CO₂ savings target has been exceeded by 8%. This reflects an improvement over the equivalent data for the period April 2008-March 2009 when the overall CO₂ reduction target was exceeded by just 3%. Only two of the schemes assessed failed to achieve a 10% reduction in emissions through renewable energy. Four proposals would achieve over 20% reduction through renewable energy, with the highest predicted to achieve a 42% reduction in emissions through the use of biomass heating.

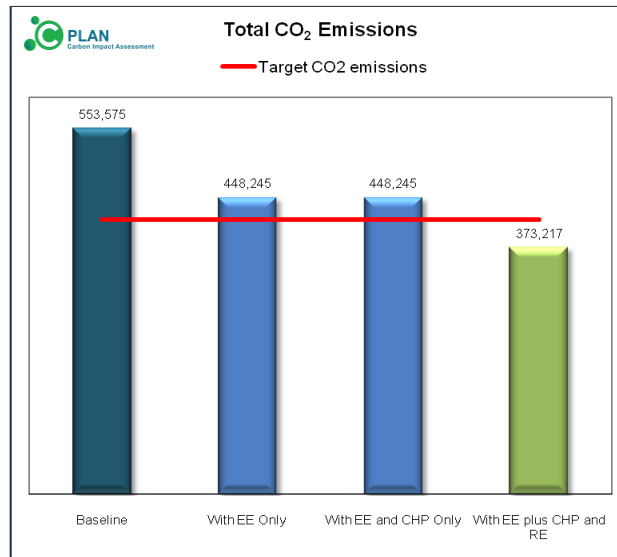


Figure 1 – The carbon footprint of development proposals at Three Rivers District Council April 2008 – March 2010

Figure 2 shows that 58% of the reduction in emissions is a result of enhanced energy efficiency (EE) measures over Part L of Building Regulations, whilst the remaining 42% is as a result of the proposed installation of renewable energy (RE) technologies. There have been no proposals to include Combined Heat and Power (CHP) in the energy statements processed through C-Plan to date.

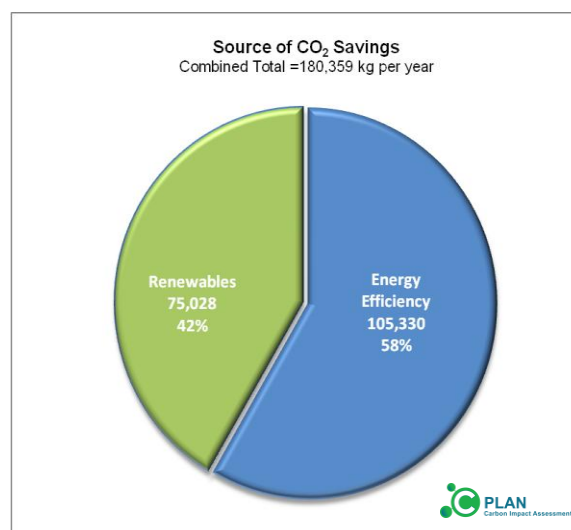


Figure 2 – Source of reductions in emissions April 2008 – March 2010

Using energy efficient design to meet the council’s emissions reduction target

A significant majority of schemes targeted between 11 and 15 % improvement in energy efficiency. Five development proposals were predicted to exceed Code for Sustainable Homes Level 3 equivalent CO₂ emissions through energy efficiency measures alone.

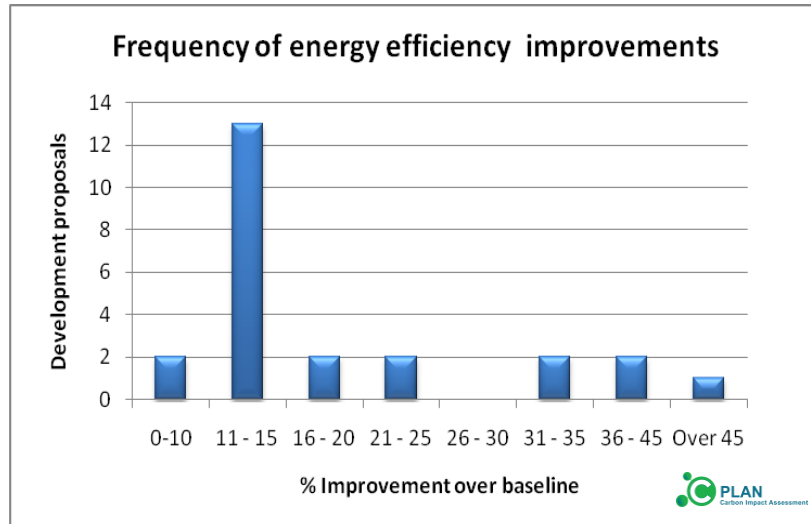


Figure 3 – Contribution made by different renewable energy technologies April 2008 – March 2010

Renewable energy measures proposed to meet planning targets

Figure 4 shows that the frequency of different renewable energy technologies proposed by applicants. A number of developments proposed to use a combination of renewable energy technologies. There was strong preference for meeting the target through generating renewable heat (77% of total renewable energy) compared with renewable electricity. To date there have been no proposals for wind powered renewable energy.

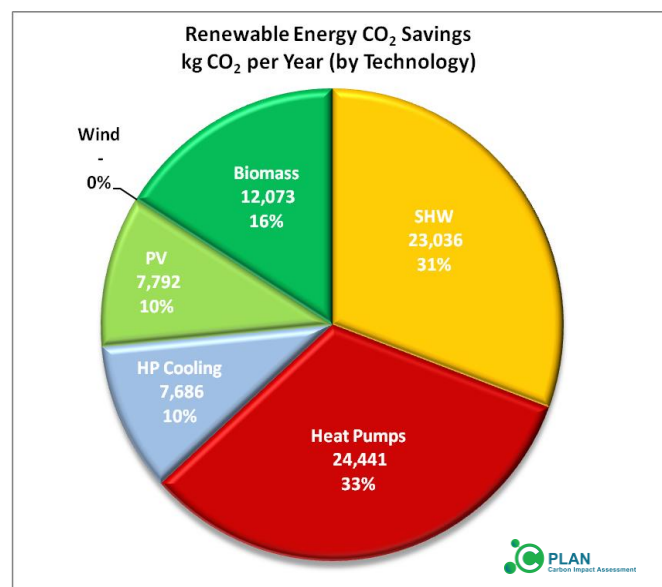


Figure 4 – Contribution made by different renewable energy technologies April 2008 – March 2010

Figure 5 shows the frequency that different types of renewable energy technology have been proposed by developers to meet the draft policy's targets. The data is based on the number of times each type of renewable energy was included in an energy statement and shows a clear preference for the use of solar hot water panels. This is likely to reflect a number of factors:

- The capital installation cost for solar hot water is often perceived to be lower than other microgeneration technologies
- The majority of energy statements related to residential developments where a steady domestic hot water demand suits the use of solar hot water panels.
- The proportion of renewable energy required by the council can generally be met through solar hot water panels. If higher levels of renewable energy were required, it is unlikely that this will be met through this technology alone.

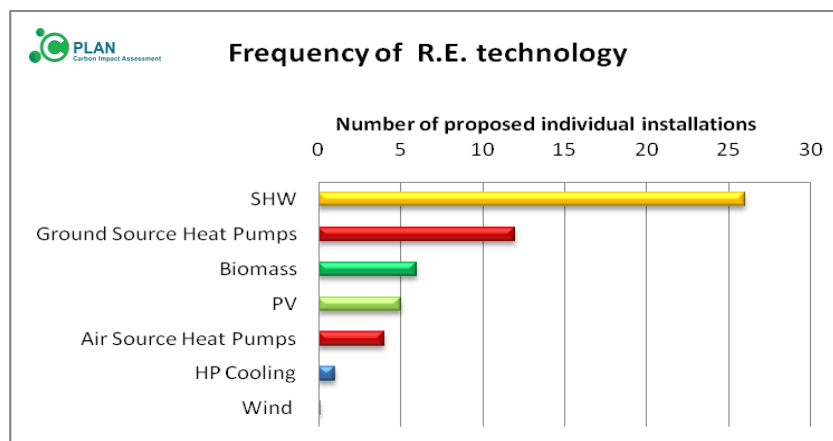


Figure 5– Frequency of specification of different renewable energy technologies April 2008 – March 2010

It should be noted that the above figures reflect the number of times each technology is proposed by a developer. In some cases, this may include multiple installations of a technology in a single development.

Performance of Planning Applications for Minor Residential Developments

Analysis has been carried out of minor applications for dwellings only (10 dwellings or less). Based on a sample of 19 developments submitted for planning consent to Three Rivers District Council, the performance of development proposals in meeting the council's targets for carbon reduction has been assessed (figure 6).

The key conclusion from this analysis is that found that the Council's minimum standards for CO₂ reduction have been met in all energy statements that have been assessed via C-Plan. The total predicted CO₂ emissions for these small housing schemes is equivalent to a 37% improvement over the 2006 Building Regulations baseline. This exhibits a greater level of performance improvement than the overall improvement achieved when all applications are assessed (including commercial and mixed use schemes). The contribution made by renewable energy microgeneration is 14% across all schemes. In only one case did the proposal fail to meet the council's minimum

requirement of 10% reduction in emissions through renewable energy, with 4 applications predicted to achieve more than 20% CO₂ savings through renewable energy.

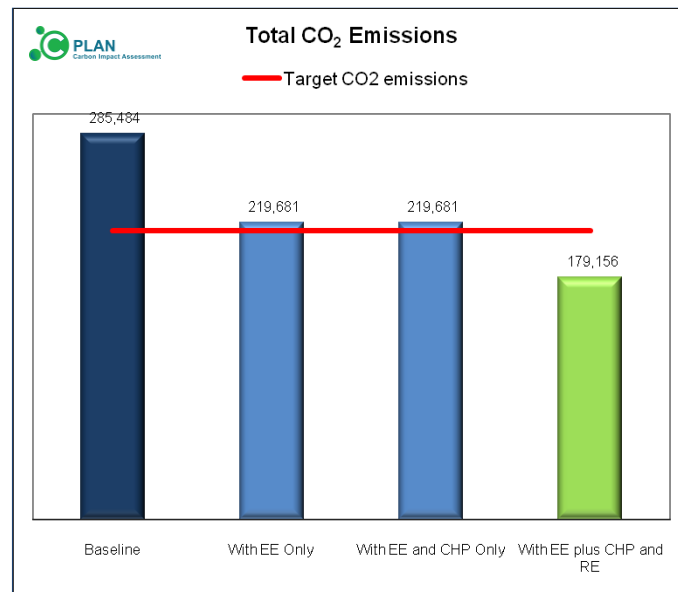


Figure 6 – The carbon footprint of minor residential development proposals at Three Rivers District Council April 2008 – March 2010

Developments of Minor Residential Schemes in Woking Borough

From March 2005 onwards Woking Borough Council implemented Surrey Structure Plan policy SE2 (SSP adopted December 2004). This included a requirement that all development should meet a minimum of 10% of predicted energy use through renewable sources generated on site. In addition, the policy sought to establish the adoption of ‘best practice’ standards of energy efficiency in all new development. Whilst the policy provided no definition of ‘best practice’, in Woking this was generally interpreted to mean the ‘Energy Efficiency Best Practice in Housing’ (EEBPH) standard promoted by the Energy Saving Trust. EEBPH sets a standard equivalent to a 25% improvement over the 2006 Building Regulations. In practice, planning officers encouraged developments to demonstrate significant improvement in energy efficiency, although failure to achieve 25% was not considered to be grounds for refusal of planning consent.

Significantly, the SSP policy included no minimum size threshold. Initially the council implemented the policy for larger schemes only, but within 12 months it had removed any size threshold and was applying the policy down to single new houses and conversions.

In December 2009 an analysis of planning applications completed or granted consent between 1 April 2008 and 31 March 2009 was provided for inclusion in the council’s AMR. The following data has been extracted from that analysis.

During this period 17 minor residential schemes (10 units or less) were completed subject to a planning condition requiring a minimum of 10% renewable energy to be generated on site. The majority of these schemes were of three dwellings or fewer, with no developments greater than 5

dwellings being completed during the year (figure 7). The total number of dwellings completed in minor schemes during this period was 37.

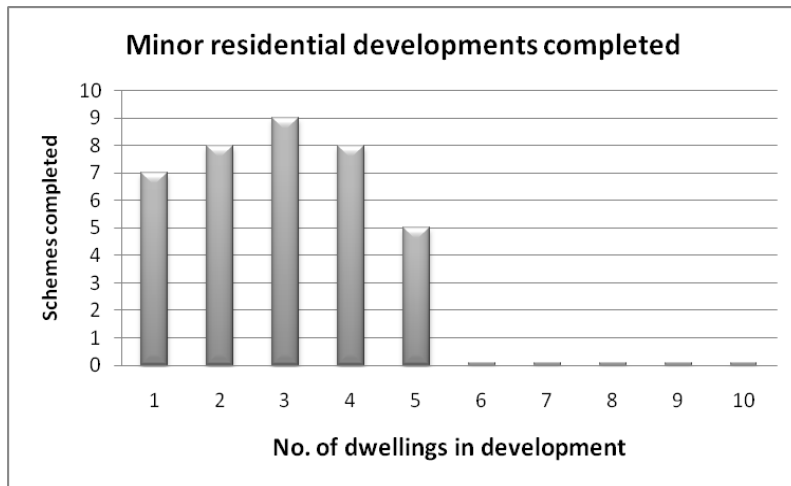


Figure 7 – size of minor residential schemes in Woking completed during April 2008 - March 2009 subject to planning condition requiring at least 10% renewable energy

Over half of all small residential schemes completed during this period comprised detached dwellings, with a total number of 21 detached dwellings

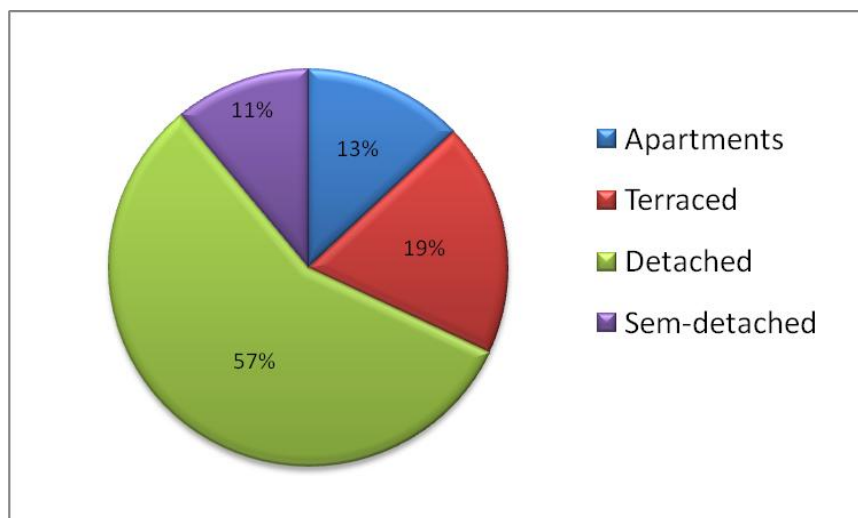


Figure 8 – Minor residential schemes in Woking completed during April 2008 - March 2009 subject to planning condition requiring at least 10% renewable energy

The 10% renewable energy target has been achieved through the use of solar hot water panels in 11 of the 17 developments completed during this period, and one development used photovoltaic panels. In the 5 remaining schemes, information is not available on the technology used to achieve the target level of renewable energy. It should be noted that a number of these developments submitted details to discharge the planning consent prior to the adoption of C-Plan by the council.

Appendix: C-Plan Summary Screen Reports

Hampermill Lane

PLAN
Carbon Impact Assessment

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My Portal Site > C-Plan > Hampermill Lane : User

Hampermill Lane

User: Administrator (Not you? Register here)

My Developments: View All | Hampermill Lane | My Development | Parvis Road

Energy Statement: Edit Energy Statement

Summary | Energy Efficiency | CHP | Renewables | Emissions Breakdown

Savings
Carbon Dioxide Savings (Percentage Improvement over 2006 Building Regulations)

Development Details

Class	Use	Units	Area (m ²)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)	Target Met?
Class C3 Dwelling houses	Semi detached	1.00	208.00	4765	●	1192	
Class C3 Dwelling houses	Semi detached	1.00	208.00	4765	●	1192	
Class C3 Dwelling houses	Semi detached	1.00	179.00	4101	●	1092	
Class C3 Dwelling houses	Semi detached	1.00	179.00	4101	●	1092	
Class C3 Dwelling houses	Semi detached	2.00	222.00	5086	●	1240	
6.00			996.00	22816	●	5810 (25%)	●

Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)		Proposed Total Emissions (kg CO ₂ /year)		CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
2006 Building Regulations	Target	Target	Proposed	Target	Proposed	Target	Proposed
22816	17112	17112	17007	1939 (10.00%)	2387 (12.31%)	0.00 (10%)	12305 (14.99%)

Total Building CO₂ Emissions (kg CO₂/year)

Total CO₂ Emissions - Baseline and Proposed

Category	Value (kg CO ₂ /year)
Baseline	22816
With proposed EE, CHP and RE	17007
With proposed EE and CHP only	19394
With proposed EE only	19394

Overall Savings from Proposed Measures (kg CO₂/year)

Proposed CO₂ Savings Breakdown
Total = 5810 (25%) Over Building Regs.

- Renewable Energy 10.46%: 2387 kg
- Energy Efficiency 15.00%: 3422 kg
- CHP 0.00%: 0.00 kg


Savings from Proposed Measures (kg CO₂/year)

Feasibility


Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan-ning
SHW	Evacuated Tubes 4m2	1.00	477.43	2461.00	●	●
SHW	Evacuated Tubes 4m2	1.00	477.43	2461.00	●	●
SHW	Evacuated Tubes 4m2	1.00	477.40	2460.85	●	●
SHW	Evacuated Tubes 4m2	1.00	477.40	2460.85	●	●
SHW	Evacuated Tubes 2m2	2.00	477.40	2460.85	●	●
EE	15% beyond Part L		3422	14464	●	●

Walnut Burrow



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Parvis Road

Energy Statement:

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[Summary](#)

[Energy Efficiency](#)

[CHP](#)


[Renewables](#)

[Emissions Breakdown](#)

Walnut Burrow

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m ²)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)	Target Met?
Class C3 Dwelling houses	Small detached	1.00	192.00	4873.96	●	3016.09	●
		1.00	192.00	4873.96		3016.09 (61.88%)	

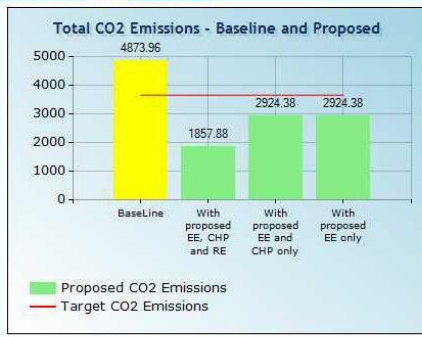
Energy Statement - Summary Page

Summary
Energy Efficiency
CHP
Renewables
Emissions Breakdown

Baseline Total Emissions (kg CO ₂ /year)		Proposed Total Emissions (kg CO ₂ /year)		CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
2006 Building Regulations	Target	Target	Proposed	Target	Proposed	Target	Proposed
4873.96	3655.47	3655.47	1857.88	292.44 (10.00%)	1066.50 (36.47%)	0.00 (10%)	7104.00 (56.30%)

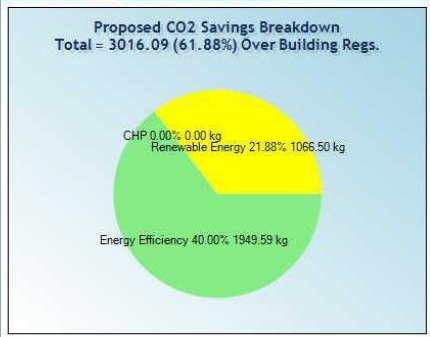
Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel



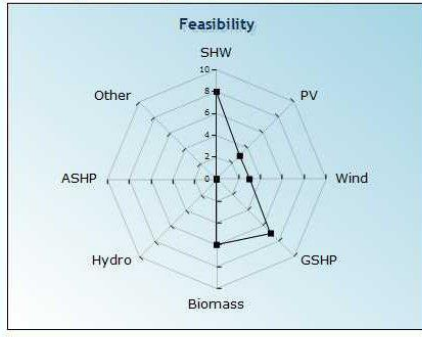
Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel



Savings from Proposed Measures

(kg CO₂/year) Feasibility Cost Planning Risk



Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
GSHP	GSHP Vertical 6 kW	1.00	484.50	4104.00	●	●
SHW	Evacuated Tubes 4.5 m ²	1.00	582.00	3000.00	●	●
EE	40% beyond Part L		1949.59	6609.40	●	●

Energy Centre for Sustainable Communities

10

The Garden House

My Portal Site > C-Plan > The Garden House : User

The Garden House

User: **Administrator**
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[The Garden House](#)

[My Development](#)

[Parvis Road](#)

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)

Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)	Target Met?
Class C3 Dwelling houses	Small detached	1.00	709.00	16778.46	●	5620.50	
1.00	709.00	16778.46		5620.50 (33.50%)	●		

Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
16778.46	12583.84	11157.96

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target	Proposed
1258.38 (10.00%)	1425.89 (11.33%)	0.00 (10%)	14667.53 (27.98%)

Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel

Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel

Proposed CO₂ Savings Breakdown
Total = 5620.50 (33.50%) Over Building Regs.

Savings from Proposed Measures

(kg CO₂/year) Feasibility Cost Planning Risk

Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
GSHP	GSHP Horizontal 32 kW	1.00	1425.89	14667.53	●	●
EE	25% beyond Part L		4194.61	18584.44	●	●

Energy Centre for Sustainable Communities

11

Berry Lane

PLAN
Carbon Impact Assessment

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My Portal Site > C-Plan > Berry Lane, Rickmansworth : User

Berry Lane, Rickmansworth

User:
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[Berry Lane, Rickmansworth](#)

[My Development](#)

[Parvis Road](#)

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)

Development Details

Class	Use	Units	Area (m ²)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)	Target Met?
Class A1 Shops - Retail	retail 2	1.00	375.00	57825.10	●	12,777	
Class C3 Dwelling houses	Mid flat 2 sides	1.00	303.00	6328.60	●	1,584	
Class C3 Dwelling houses	Top flat 2 sides	1.00	304.00	7161.04	●	1,802	
		3.00	982.00	71,314	●	16,174 (23%)	●

Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
71,315	54,555	55,141

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target	Proposed
6,062 (10%)	5,476 (9%)	0.00 (10%)	38759.00 (21.39%)

Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel

Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel

Savings from Proposed Measures

(kg CO₂/year) Feasibility Cost Planning Risk


Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
ASHP	Air to water 8 kW	2.00	1592	17336.00	●	●
PV	PV 1 kW Domestic	7.00	2,510	5950.00	●	●
ASHP	Air to water 14 kW	1.00	645	7272.00	●	●
ASHP	Air to water 14 kW	1.00	728	8,201	●	●
EE	15% beyond Part L		10697.21	40377.00	●	●


Energy Centre for Sustainable Communities

12

Queens Drive



C-Plan Home
My Tasks
My Developments

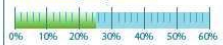


My Portal Site > C-Plan > Site to the side of 34 The Queens Drive, Rickmasworth : User

Site to the side of 34 The Queens Drive

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



0% 10% 20% 30% 40% 50% 60%

Development Details + View More Details

Class	Use	Units	Area (m ²)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)	Target Met?
Class C3 Dwelling houses	Semi detached	2.00	202.00	4627.40	●	1171.54	
		2.00	202.00	4627.40	●	1171.54 (25.32%)	●

Energy Statement - Summary Page

Baseline Total Emissions (kg CO₂/year)
2006 Building Regulations

4627.40

Proposed Total Emissions (kg CO₂/year)

Target	Proposed
3470.55	3455.85

CO₂ Savings from Renewables (kg CO₂/year) (over adjusted baseline)

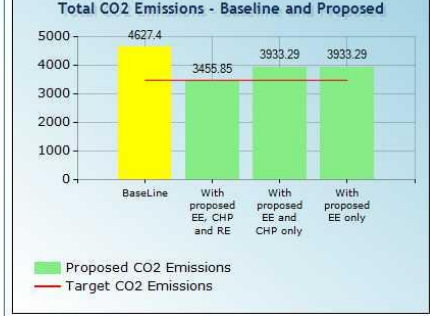
Target	Proposed
393.33 (10.00%)	477.43 (12.14%)

Energy Savings from Renewables (kWh/year)

Target	Proposed
0.00 (10%)	2461.00 (14.78%)

Total Building CO₂ Emissions (kg CO₂/year)

Total Use Fuel



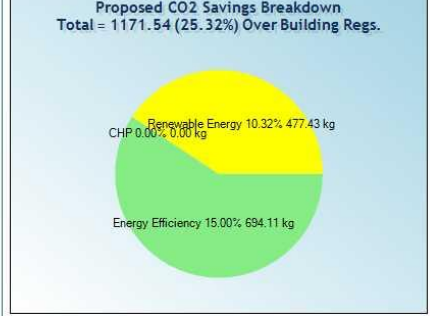
Total CO2 Emissions - Baseline and Proposed

Category	Value (kg CO ₂ /year)
BaseLine	4627.4
With proposed EE, CHP and RE	3455.85
With proposed EE and CHP only	3933.29
With proposed EE only	3933.29

Proposed CO2 Emissions (Green bars)
Target CO2 Emissions (Red line)

Overall Savings from Proposed Measures (kg CO₂/year)

All EE RE Use Fuel

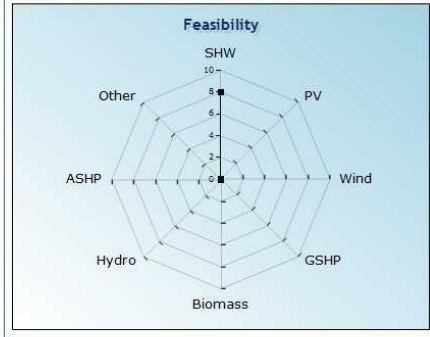


Proposed CO2 Savings Breakdown
Total = 1171.54 (25.32%) Over Building Regs.

- Renewable Energy 10.32% 477.43 kg
- Energy Efficiency 15.00% 694.11 kg
- CHP 0.00% 0.00 kg

Savings from Proposed Measures (kg CO₂/year)

Feasibility Cost Planning Risk




Feasibility

SHW PV Wind GSHP Biomass Hydro ASHP Other


Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
SHW	Evacuated Tubes 1m ²	4.00	477.43	2461.00	●	●
EE	15% beyond Part L		694.11	2934.00	●	●

Hilltop Farm



PLAN
Carbon Impact Assessment



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Hilltop Farm

User:
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Parvis Road

Energy Statement:
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[Energy Efficiency](#)


[CHP](#)

[Renewables](#)

[Emissions Breakdown](#)

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details [View More Details](#)

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)	Target Met?
Class C3 Dwelling houses	Small detached bungalow	1.00	259.40	7,117	●	1,783.79	
Class C3 Dwelling houses	Small detached bungalow	1.00	257.20	7057.52	●	1774.74	
Class C3 Dwelling houses	Small detached bungalow	1.00	257.20	7057.52	●	1774.74	
		3.00	773.80	21233	●	5333 (25%)	●

Energy Statement - Summary Page

Summary
Energy Efficiency
CHP
Renewables
Emissions Breakdown

Baseline Total Emissions (kg CO ₂ /year)		Proposed Total Emissions (kg CO ₂ /year)		CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
2006 Building Regulations		Target	Proposed	Target	Proposed	Target	Proposed
21233		15925	15900	1805 (10.00%)	2148 (11.9%)	0.00 (10%)	11073.84 (14.5%)

Total Building CO₂ Emissions
(kg CO₂/year)

Total CO₂ Emissions - Baseline and Proposed



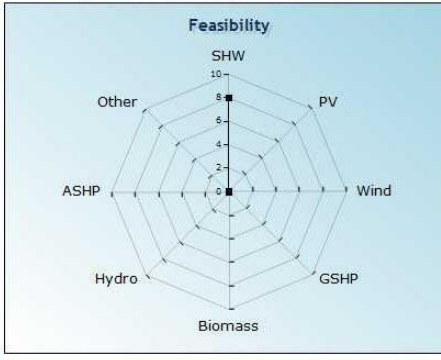
Overall Savings from Proposed Measures
(kg CO₂/year)

Proposed CO₂ Savings Breakdown
Total = 5333 (25%) Over Building Regs.



Savings from Proposed Measures
(kg CO₂/year)


Feasibility



Sustainable Energy Measures


Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
SHW	Evacuated Tubes 1m2	6	716	3691.28	●	●
SHW	Evacuated Tubes 1m2	6.00	716.11	3691.28	●	●
SHW	Evacuated Tubes 1m2	6.00	716.11	3691.28	●	●
EE	15% beyond Part L		3185	13460.54	●	●

High Street, Rickmansworth



PLAN
Carbon Impact Assessment

C-Plan Home
My Tasks
My Developments



My Portal Site > C-Plan > High St Rickmansworth (Revised EE) : User

1 High St

User:
richard.house2
(Not you? Register here)

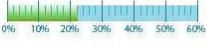
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1 High St

Energy Statement:
[Edit Energy Statement](#)

[Summary](#)
[Energy Efficiency](#)
[CHP](#)
[Renewables](#)
[Emissions Breakdown](#)

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m ²)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)	Target Met?
Class C3 Dwelling houses	GF flat 2 sides	2.00	155.00	3680.17	●	1156.24	
Class C3 Dwelling houses	Mid flat 2 sides	7.00	774.00	18377.45	●	5773.10	
Class C3 Dwelling houses	Top flat 2 sides	5.00	418.00	9924.55	●	3117.76	
		14.00	1347.00	29731	●	5314 (22%)	●

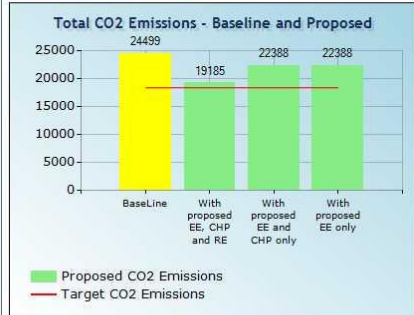
Energy Statement - Summary Page

Summary
Energy Efficiency
CHP
Renewables
Emissions Breakdown

Baseline Total Emissions (kg CO ₂ /year) 2006 Building Regulations	Proposed Total Emissions (kg CO ₂ /year)		CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
	Target	Proposed	Target	Proposed	Target	Proposed
24499	18375	19185	6124 (10%)	3202 (14.3%)	0.00 (10%)	26293.00 (36%)

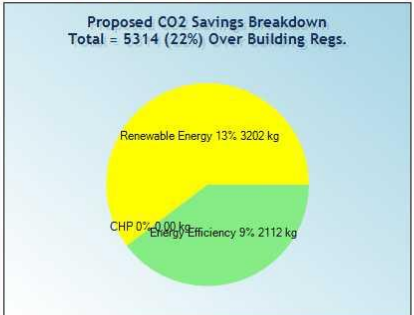
Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel



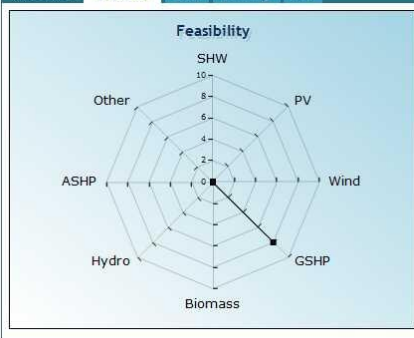
Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel



Savings from Proposed Measures


(kg CO₂/year) Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan-ning
GSHP	GSHP Vertical 6 kW	2.00	52.19	3026.00	●	●
GSHP	GSHP Vertical 6 kW	7.00	259.86	15108.00	●	●
GSHP	GSHP Vertical 6 kW	5.00	140.41	8159.00	●	●
EE	9% beyond Part L		9594.65	22085.00	●	●

Gade View Gardens



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My Tasks
My Developments



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Gade view gardens

User: **sean rendall**
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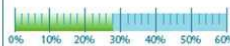
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[Summary](#)
[Energy Efficiency](#)
[CHP](#)
[Renewables](#)
[Emissions Breakdown](#)

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Semi detached	7.00	623.00	12816.90	●	3533.12
Class C3 Dwelling houses	Mid flat 2 sides	27.00	1724.00	44715.65	●	12579.15
		34.00	2347.00	57532.55	●	16112.27 (28.01%)

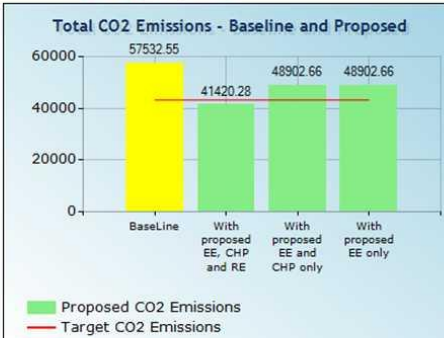
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
57532.55	43149.41	41420.28

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target	Proposed
4890.27 (10.00%)	7482.39 (15.30%)	0.00 (10%)	38569.00 (100%)

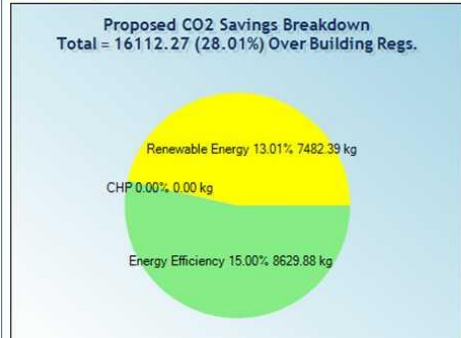
Total Building CO₂ Emissions (kg CO₂/year)

Total Use Fuel



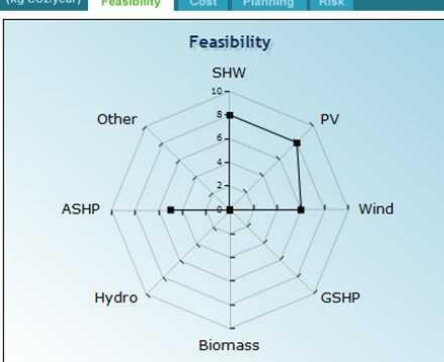
Overall Savings from Proposed Measures (kg CO₂/year)

All EE RE Use Fuel



Savings from Proposed Measures (kg CO₂/year)

Feasibility Cost Planning Risk




Sustainable Energy Measures


Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
SHW	Flat Plate 4m2	7.00	1610.59	8302.00	●	●
SHW	Flat Plate 3m2	27.00	5871.60	30267.00	●	●
EE	15% beyond Part L		8629.88	222301.00	●	●

Energy Centre for Sustainable Communities

16

Three Crofts





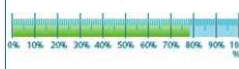
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My Tasks
My Developments

[My Portal Site](#) > [C-Plan](#) > Three Crofts Dawes Lane : User

Three Crofts

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Small detached	1.00	210.00	7732.99	●	6127.47
		1.00	210.00	7732.99	●	6127.47 (79.24%)

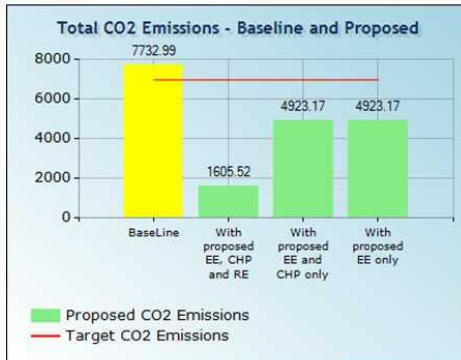
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year) 2006 Building Regulations	Proposed Total Emissions (kg CO ₂ /year)	
7732.99	Target	Proposed
	6959.69	1605.52

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)	Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target
492.32 (10.00%)	3317.66 (67.39%)	2180.98 (10%)
		3384.00 (15%)

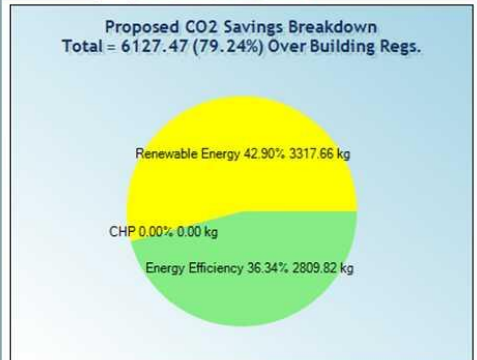
Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel



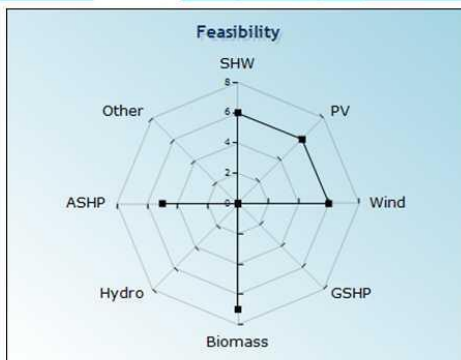
Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel



Savings from Proposed Measures

(kg CO₂/year) Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan - ning
SHW	Evacuated Tubes 4m2	1.00	656.50	3384.00	●	●
Biomass	Biomass Boiler 15 kW	1.00	2661.16	0.00	●	●
EE	36.34% beyond Part L		2809.82	12320.30	●	●


Energy Centre for Sustainable Communities

17

Clitheroe Gardens



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Queens Drive

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Energy Statement:
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[Summary](#)

[Energy Efficiency](#)

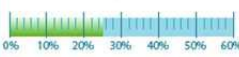
[CHP](#)

[Renewables](#)

[Emissions Breakdown](#)

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Semi detached	2.00	202.00	4627.40	●	1171.54
		2.00	202.00	4627.40	●	1171.54 (25.32%)

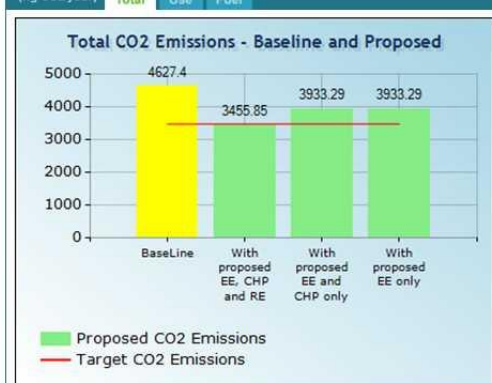
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
4627.40	3470.55	3455.85

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)	Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target
393.33 (10.00%)	477.43 (12.14%)	0.00 (10%)

Total Building CO₂ Emissions (kg CO₂/year)

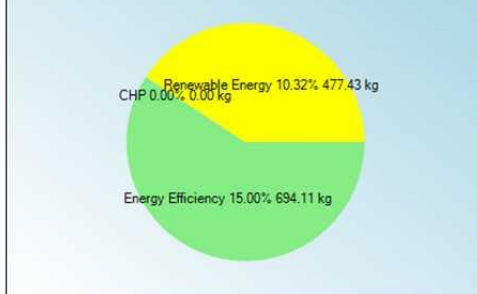
Total Use Fuel



Overall Savings from Proposed Measures (kg CO₂/year)

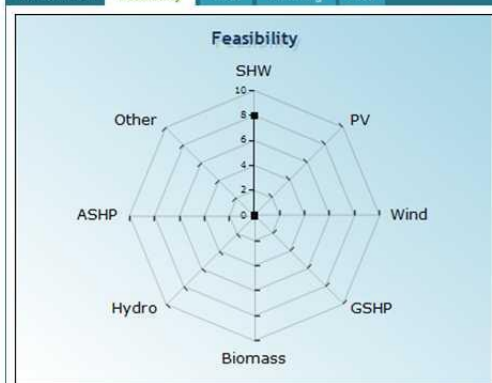
All EE RE Use Fuel

Proposed CO₂ Savings Breakdown
Total = 1171.54 (25.32%) Over Building Regs.



Savings from Proposed Measures (kg CO₂/year)


Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
SHW	Evacuated Tubes 4m ²	1.00	477.43	2461.00	●	●
EE	15% beyond Part L		694.11	2933.00	●	●

High View



C-Plan Home
My Tasks
My Developments



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rendall

Developments:

Statement:

Energy Statement

Efficiency

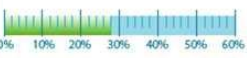
ables

ns Breakdown

High View

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Flats	16.00	1055.20	25541.95	●	7206.77
		16.00	1055.20	25541.95	●	7206.77 (28.22%)

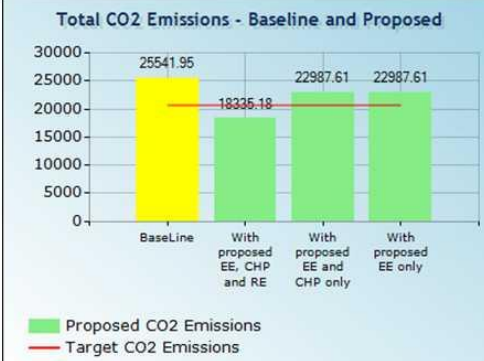
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)
25541.95	18335.18

CO ₂ Savings from Renewables (kg CO ₂ /year)	Energy Savings from Renewables (kWh/year)
4652.43 (20.24%)	45257.14 (46.22%)

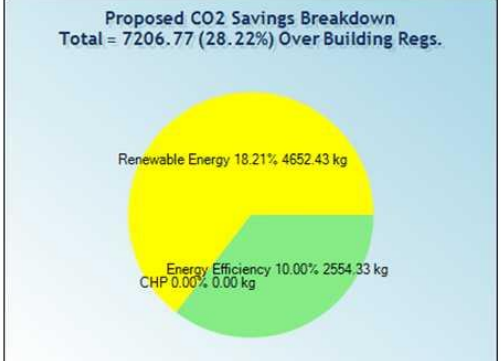
Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel



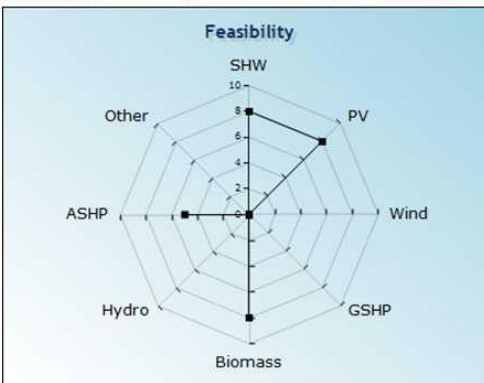
Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel



Savings from Proposed Measures


(kg CO₂/year) Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan-ning
AS	ASHP Air Source Heat Pumps 8 kW	8	4652.43	45257.14	●	●
EE	10% beyond Part L	0.00	2554.33	10909.00	●	●

Gallows Hill Lane



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[My Tasks](#)
[My Developments](#)

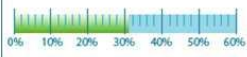


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Gallows Hill Lane

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Semi detached	6.00	624.00	22480.58	●	6885.53
Class C3 Dwelling houses	Small detached	3.00	348.00	12422.82	●	3796.69
		9.00	972.00	34903.40	●	10682.22 (30.61%)

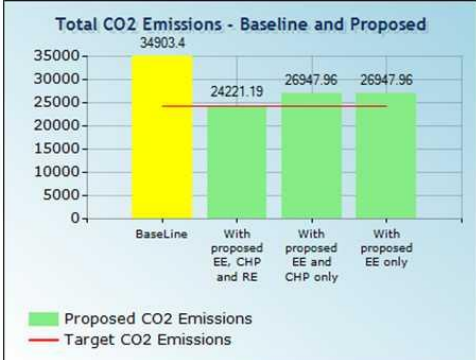
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
34903.40	24253.17	24221.19

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target	Proposed
2694.80 (25.00%)	2726.78 (10.12%)	9218.85 (10%)	14055.56 (15%)

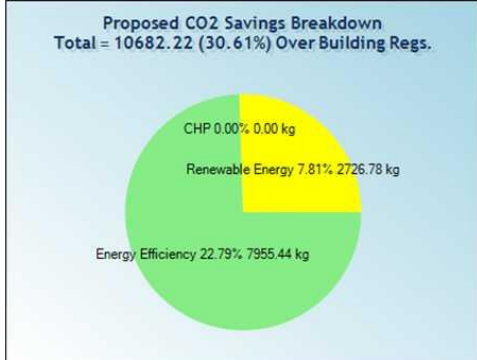
Total Building CO₂ Emissions (kg CO₂/year)

■ Total
 ■ Use
 ■ Fuel



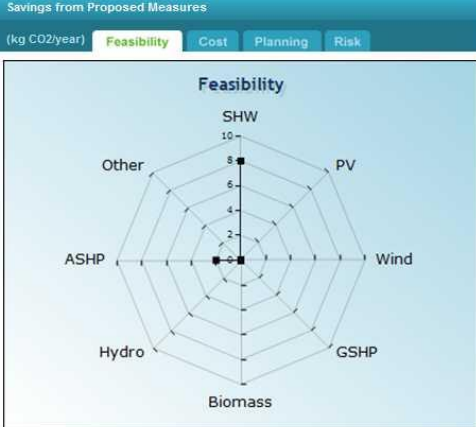
Overall Savings from Proposed Measures (kg CO₂/year)

Proposed CO₂ Savings Breakdown
Total = 10682.22 (30.61%) Over Building Regs.



Savings from Proposed Measures (kg CO₂/year)

■ Feasibility
 ■ Cost
 ■ Planning
 ■ Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan-ning
SHW	Solar Thermal m2	23.00	2726.78	14055.56	●	●
EE	23% beyond Part L	0.00	7955.44	31554.47	●	●


Energy Centre for Sustainable Communities

20

8 Farm Way, Moor Park



C-Plan Home
My Tasks
My Developments

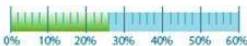


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8 Farm Way

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



0% 10% 20% 30% 40% 50% 60%

Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Small detached	1.00	396.00	9371.32	●	2477.59
		1.00	396.00	9371.32	●	2477.59 (26.44%)

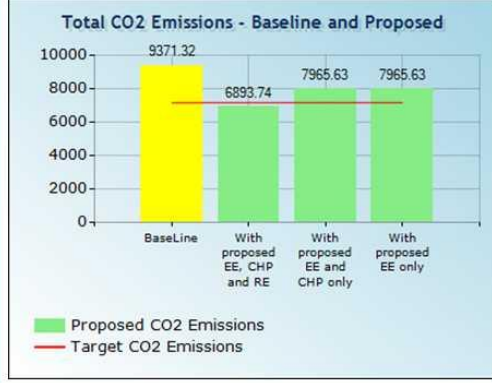
Energy Statement - Summary Page

Summary
Energy Efficiency
CHP
Renewables
Emissions Breakdown

Baseline Total Emissions (kg CO ₂ /year) 2006 Building Regulations	Proposed Total Emissions (kg CO ₂ /year)		CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)	Energy Savings from Renewables (kWh /year)
	Target	Proposed	Target	Proposed
9371.32	7169.06	6893.74	796.56 (25.00%)	12011.20 (35.00%)

Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel

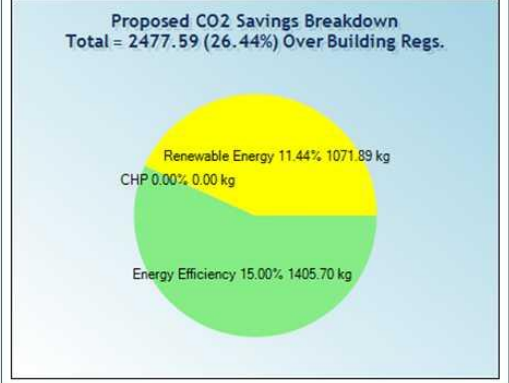


■ Proposed CO₂ Emissions
— Target CO₂ Emissions

Overall Savings from Proposed Measures

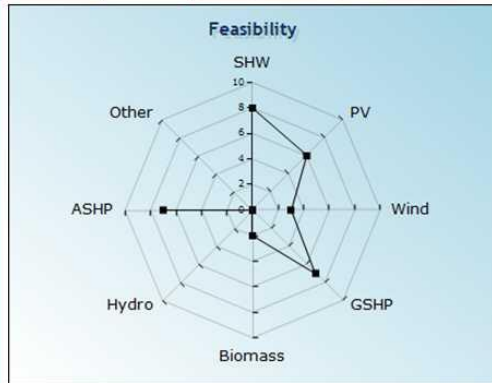
(kg CO₂/year) All EE RE Use Fuel

Proposed CO₂ Savings Breakdown
Total = 2477.59 (26.44%) Over Building Regs.



Savings from Proposed Measures


(kg CO₂/year) Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan - ning
SHW	Evacuated Tubes 1 m2	4	426.80	2200.00	●	●
GSHP	Ground Source Heat Pump 12 kW	1	645.09	9811.20	●	●
EE	15% beyond Part L	0.00	1405.70	5940.93	●	●

Bullisland Farm, Chorleywood



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My Tasks
My Developments




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Bullisland Farm

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Dwelling 16	1.00	720.00	19412.94	●	6562.51
		1.00	720.00	19412.94	●	6562.51 (33.80%)

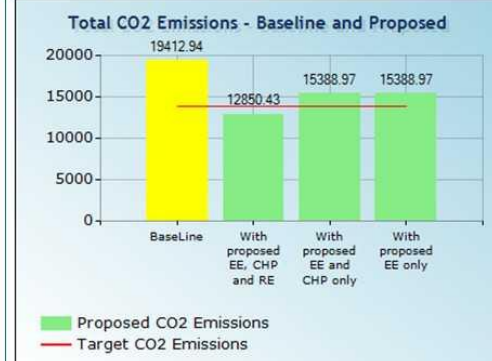
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
19412.94	13850.07	12850.43

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target	Proposed
1538.90 (25.00%)	2538.55 (16.50%)	6563.73 (10%)	22428.98 (34%)


Total Building CO₂ Emissions (kg CO₂/year)

Total Use Fuel



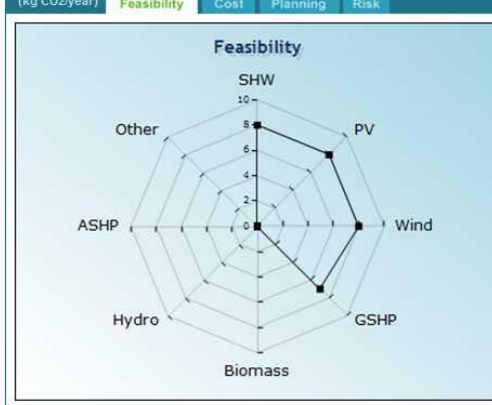
Overall Savings from Proposed Measures (kg CO₂/year)

All EE RE Use Fuel



Savings from Proposed Measures (kg CO₂/year)

Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan - ning
SHW	Solar Thermal Flat Plate 10 m ²	10.00	467.54	2410.00	●	●
GSHP	Ground Source Heat 24 kW	1.00	835.62	12708.98	●	●
B	Biomass Boiler 3 kW	1.00	1235.39	7310.00	●	●
EE	21% beyond Part L	0.00	4023.97	3416.69	●	●


Energy Centre for Sustainable Communities

22

44 Orchard Drive and 77 Green Street, Chorleywood



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My Tasks
My Developments




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Bullsland Farm

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Dwelling 16	1.00	720.00	19412.94	●	6562.51
		1.00	720.00	19412.94	●	6562.51 (33.80%)

Energy Statement - Summary Page

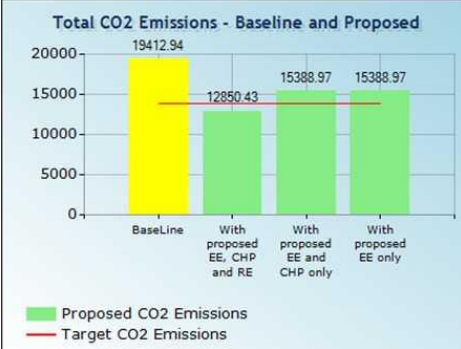
Summary
Energy Efficiency
CHP
Renewables
Emissions Breakdown

Baseline Total Emissions (kg CO ₂ /year)		Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations		Target	Proposed
19412.94		13850.07	12850.43

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target	Proposed
1538.90 (25.00%)	2538.55 (16.50%)	6563.73 (10%)	22428.98

Total Building CO₂ Emissions
(kg CO₂/year)

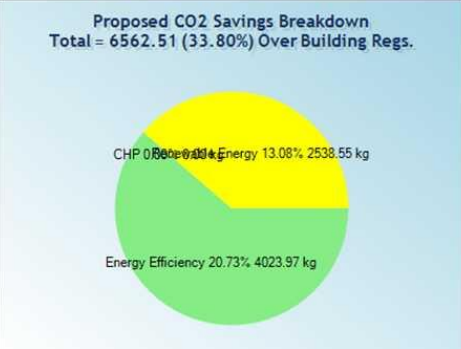
Total Use Fuel



Overall Savings from Proposed Measures
(kg CO₂/year)

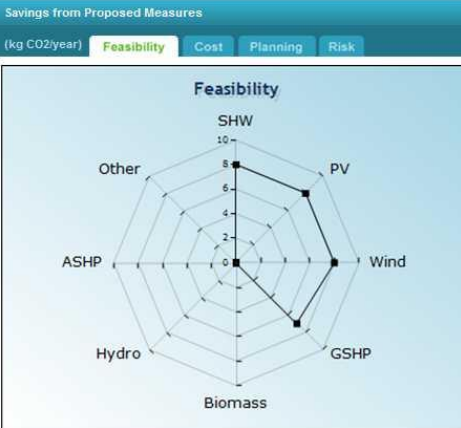
All EE RE Use Fuel

Proposed CO₂ Savings Breakdown
Total = 6562.51 (33.80%) Over Building Regs.



Savings from Proposed Measures
(kg CO₂/year)


Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan-ning
SHW	Solar Thermal Flat Plate 10 m2	10.00	467.54	2410.00	●	●
GSHP	Ground Source Heat 24 kW	1.00	835.62	12708.98	●	●
Biomass	Biomass Boiler 3 kW	1.00	1235.39	7310.00	●	●
EE	21% beyond Part L	0.00	4023.97	3416.69	●	●

Garden House Woodland Lane, Chorleywood (amended application)





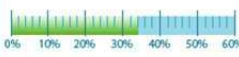
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'The Garden House', Woodland Lane, Chorleywood

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Small detached	1.00	192.00	4543.67	●	1541.93
		1.00	192.00	4543.67	●	1541.93 (33.94%)

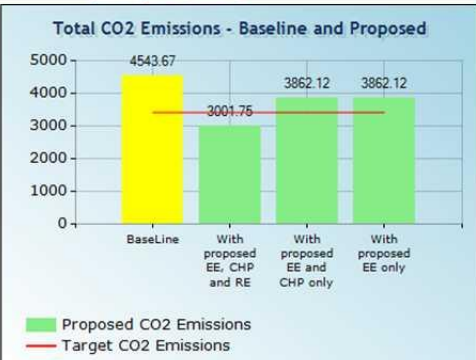
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
4543.67	3407.75	3001.75

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)		Energy Savings from Renewables (kWh /year)	
Target	Proposed	Target	Proposed
386.21 (10.00%)	860.37 (22.28%)	1634.80 (10%)	8317.48 (50.88%)

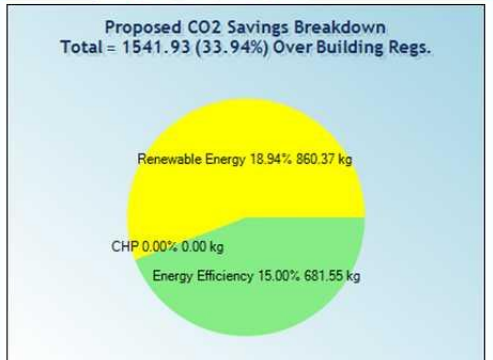
Total Building CO₂ Emissions
(kg CO₂/year)

Total CO₂ Emissions - Baseline and Proposed




Overall Savings from Proposed Measures
(kg CO₂/year)

Proposed CO₂ Savings Breakdown
Total = 1541.93 (33.94%) Over Building Regs.



Savings from Proposed Measures
(kg CO₂/year)

Feasibility




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
SHW	Solar Thermal 4 m2	1.00	474.22	2444.44	●	●
GSHP	Ground Source Heat 12 kW	1	386.15	5873.04	●	●
EE	15% beyond Part L	0.00	681.55	2880.45	●	●


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24

Pinewood 2



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Pinewood 2

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Small detached bungalow	1.00	175.00	4586.65	●	1699.52
		1.00	175.00	4586.65	●	1699.52 (37.05%)

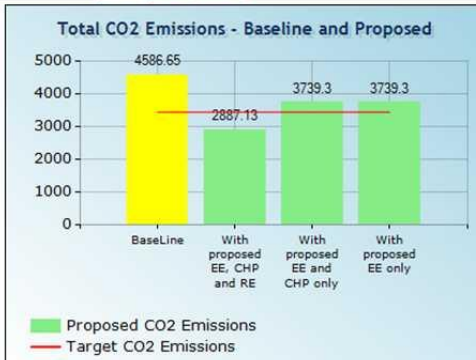
Energy Statement - Summary Page

Summary
Energy Efficiency
CHP
Renewables
Emissions Breakdown

Baseline Total Emissions		Proposed Total Emissions		CO ₂ Savings from Renewables		Energy Savings from Renewables	
(kg CO ₂ /year)		(kg CO ₂ /year)		(kg CO ₂ /year) (over adjusted baseline)		(kWh/year)	
2006 Building Regulations	Target	Proposed	Target	Target	Proposed	Target	Proposed
4586.65	3440	2887.13		373.93 (10%)	852.17 (22.79%)	1849.32 (10%)	11651.65 (63.0%)

Total Building CO₂ Emissions

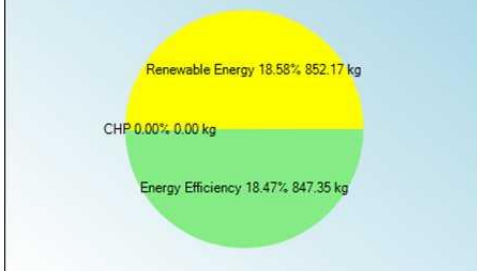
(kg CO₂/year) Total Use Fuel



Overall Savings from Proposed Measures

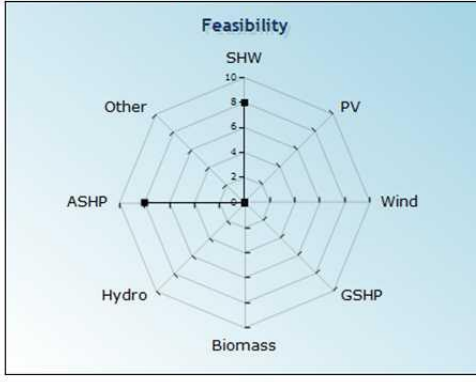
(kg CO₂/year) All EE RE Use Fuel

Proposed CO₂ Savings Breakdown
Total = 1699.52 (37.05%) Over Building Regs.



Savings from Proposed Measures

(kg CO₂/year) Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan - ning
SHW	Solar Thermal 2 m2	2.00	130.20	671.11	●	●
ASHP	Air Source Heat Pump 10 kW	1.00	721.97	10980.54	●	●
EE	18% beyond Part L	0.00	847.35	4367.80	●	●


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25

Ladyacre, Stags Lane, Chorleywood



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Ladyacre

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Small detached	1.00	446.80	10573.50	●	10573.58
		1.00	446.80	10573.50	●	10573.58 (100.00%)

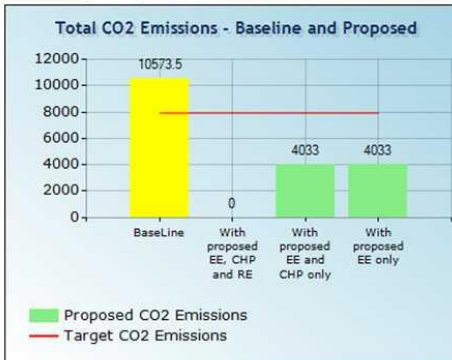
Energy Statement - Summary Page

Baseline Total Emissions <small>(kg CO₂/year) 2006 Building Regulations</small>	Proposed Total Emissions <small>(kg CO₂/year)</small>	
10573.50	Target	Proposed
	7930	0

CO ₂ Savings from Renewables <small>(kg CO₂/year) (over adjusted baseline)</small>		Energy Savings from Renewables <small>(kWh/year)</small>	
Target	Proposed	Target	Proposed
403.30 (10%)	4033.07 (100.00%)	1550.00 (10%)	14720.00 (94%)

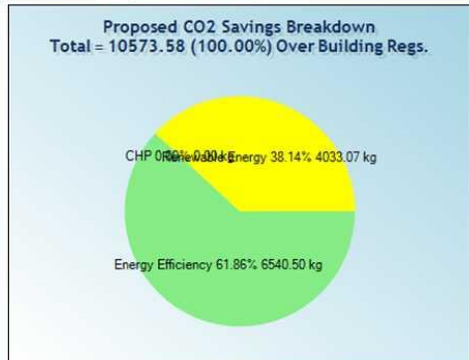
Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel



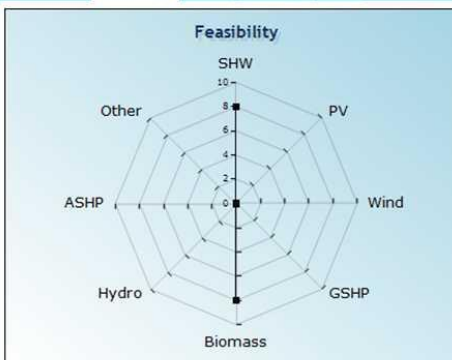
Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel



Savings from Proposed Measures


(kg CO₂/year) Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan-ning
SHW	Solar Thermal 4 m2	1.00	474.22	2444.44	●	●
PV	Photovoltaics 4 kW	4.00	2112.96	3720.00	●	●
B	Biomass Boiler 40 kW	1.00	1445.89	8555.56	●	●
EE	62% beyond Part L	0.00	6540.50	29246.10	●	●

Land at rear of Stubbs Farm, Chenies (7 new dwellings)



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Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Small detached	1.00	194.00	4591.00	●	1802.08
Class C3 Dwelling houses	Small detached	3.00	774.00	18316.68	●	9706.26
Class C3 Dwelling houses	Small detached	3.00	1065.00	25203.18	●	10669.30
		7.00	2033.00	48110.86	●	22177.64 (46.10%)

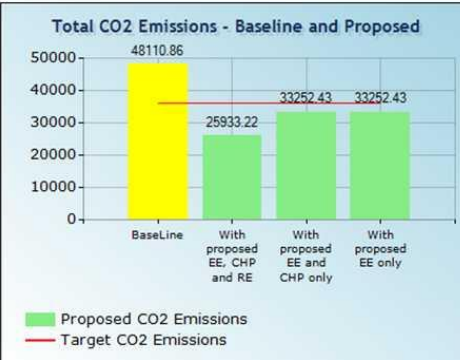
Energy Statement - Summary Page

Baseline Total Emissions	Proposed Total Emissions	
(kg CO ₂ /year) 2006 Building Regulations	Target	Proposed
48110.86	36083.15	25933.22

CO ₂ Savings from Renewables	Energy Savings from Renewables	
(kg CO ₂ /year) (over adjusted baseline)	(kWh /year)	
Target	Proposed	Target
3325.24 (0.00%)	7319.21 (22.01%)	14489.51 (10%)

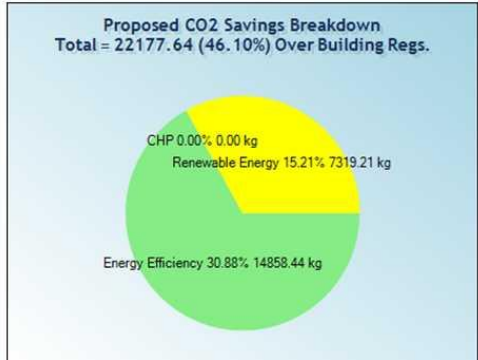
Total Building CO₂ Emissions

(kg CO₂/year) **Total** Use Fuel



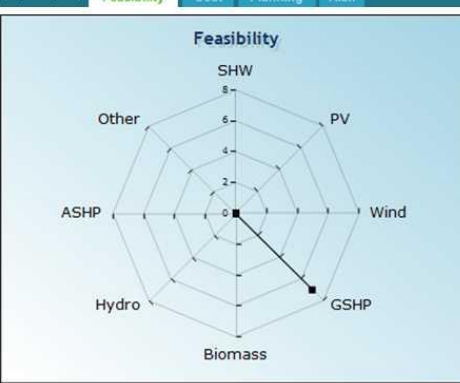
Overall Savings from Proposed Measures

(kg CO₂/year) **All** EE RE Use Fuel



Savings from Proposed Measures

(kg CO₂/year) **Feasibility** Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan
GSHP	Ground Source Heat 112 kW	7.00	4875.71	74155.23	●	●
Biomass	Biomass Boiler 12 kW	4.00	5824.28	5824.28	●	●
EE	31% beyond Part L	0.00	14858.44	58705.68	●	●


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27

Woodlands, Croxley Green



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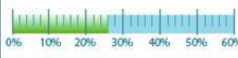
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Woodlands Croxley Green

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings CO ₂
Class C3 Dwelling houses	Small detached	1.00	427.00	10104.94	●	2660.29
		1.00	427.00	10104.94	●	2660.29 (26.33%)

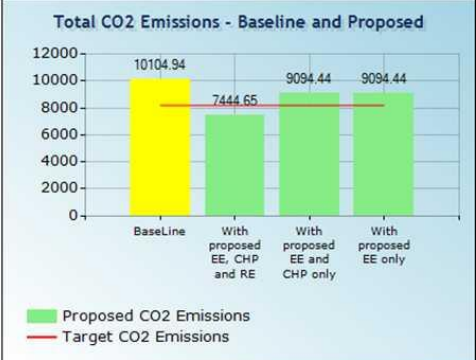
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
10104.94	8185.00	7444.65

CO ₂ Savings from Renewables (kg CO ₂ /year (over adjusted baseline))		Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target	Proposed
909.44 (0.00%)	1649.80 (18.14%)	3839.87 (10%)	20757.1


Total Building CO₂ Emissions (kg CO₂/year)

Use Fuel



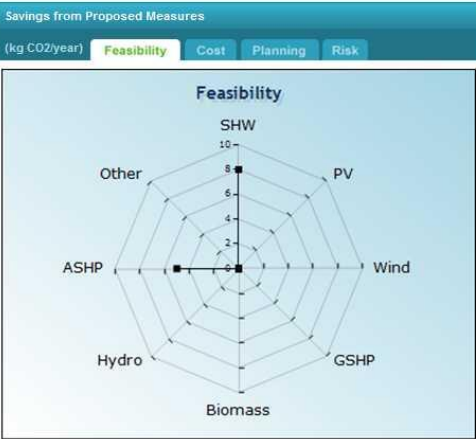
Overall Savings from Proposed Measures (kg CO₂/year)

All EE RE Use Fuel



Savings from Proposed Measures (kg CO₂/year)


Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
SHW	Solar Thermal 4 m2	1.00	431.11	2222.22	●	●
ASHP	Air Source Heat Pump 6 kW	1.00	1218.68	18535.12	●	●
EE	10% beyond Part L	0.00	1010.49	4364.47	●	●

Land at rear of Stubbs Farm, Chenies (2 new dwellings)



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Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m ²)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwelling houses	Small detached	1.00	258.00	6105.56	●	3246.36
Class C3 Dwelling houses	Small detached	1.00	355.00	8401.06	●	4698.49
		2.00	613.00	14506.62	●	7944.85 (54.77%)

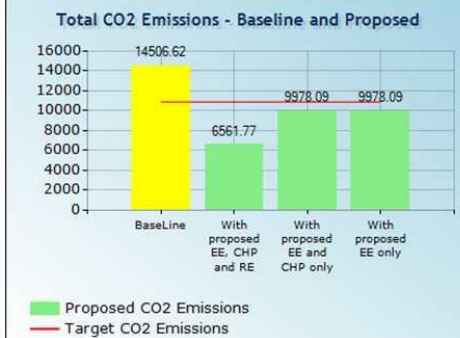
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)	
2006 Building Regulations	Target	Proposed
14506.62	10879.97	6561.77

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)	Energy Savings from Renewables (kWh/year)	
Target	Proposed	Target
997.81 (0.00%)	3416.32 (34.24%)	4341.24 (10%)

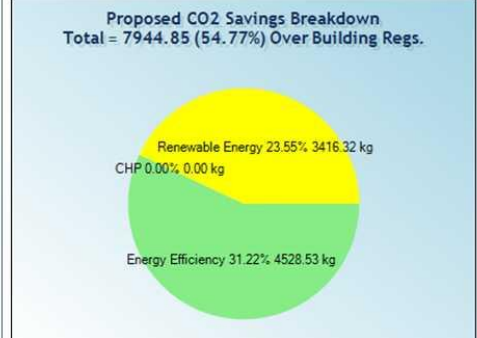
Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel



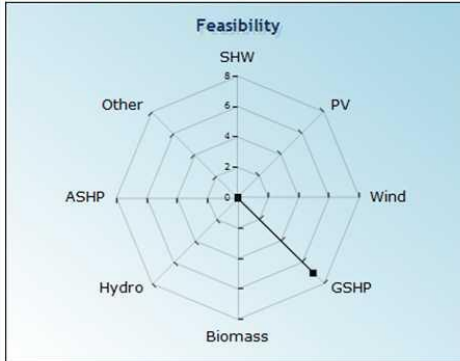
Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel



Savings from Proposed Measures


(kg CO₂/year) Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Planning
GSHP	Ground Source Heat 64 kW	4.00	1447.55	22015.92	●	●
Biomass	Biomass Boiler 6 kW	2.00	1968.77	1968.77	●	●
EE	31% beyond Part L	0.00	4528.53	17978.31	●	●

4-6 Station Road, Rickmansworth



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4-6 Station Road

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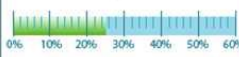
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Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class B1 Business	Top Floor Flat	2.00	48.84	1119.49	●	298.12
Class C3 Dwellings	Mid Floor Flat	2.00	109.18	2309.18	●	642.28
Class B1 Business	Office Nat Vent	1.00	59.93	1987.70	●	405.13
		5.00	217.95	5416.37	●	1345.53 (24.84%)

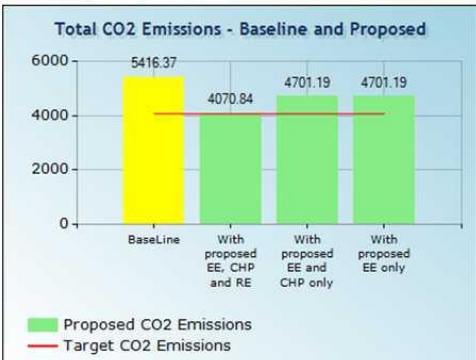
Energy Statement - Summary Page

Baseline Total Emissions (kg CO ₂ /year)	Proposed Total Emissions (kg CO ₂ /year)
2006 Building Regulations	Target
5416.37	4062.28
	Proposed
	4070.84

CO ₂ Savings from Renewables (kg CO ₂ /year) (over adjusted baseline)	Energy Savings from Renewables (kWh/year)
Target	Target
470.12 (0.00%)	1923.36 (10%)
Proposed	Proposed
630.35 (13.41%)	9587.11 (42%)

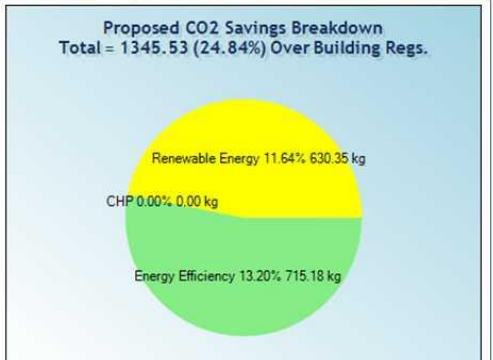
Total Building CO₂ Emissions (kg CO₂/year)

Total Use Fuel



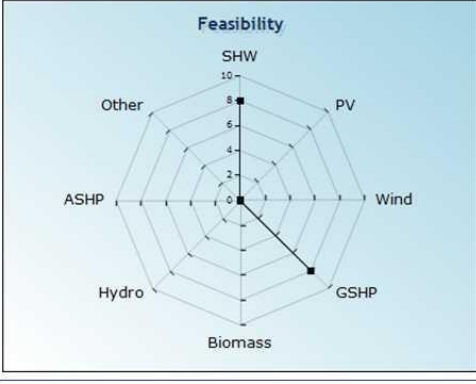
Overall Savings from Proposed Measures (kg CO₂/year)

All EE RE Use Fuel



Savings from Proposed Measures (kg CO₂/year)

Feasibility Cost Planning Risk




Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan - ning
GSHP	Ground Source Heat 4 kW	3.00	630.35	9587.11	●	●
EE	13% beyond Part L	0.00	715.18	3076.05	●	●


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30

55 Lower Road, Chorleywood



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55 Lower Road

Savings

Carbon Dioxide Savings
(Percentage Improvement over 2006 Building Regulations)



Development Details

Class	Use	Units	Area (m2)	Baseline (kg CO ₂)	Benchmark Met?	Proposed Savings (kg CO ₂)
Class C3 Dwellings	Ground Floor	1.00	99.30	2326.46	●	575.38
Class C3 Dwellings	Mid Floor	1.00	159.78	3380.90	●	899.96
Class C3 Dwellings	Top Floor	1.00	161.70	3848.64	●	906.50
		3.00	420.78	9556.01	●	2381.85 (24.93%)

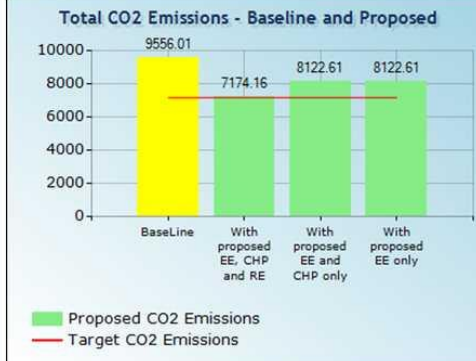
Energy Statement - Summary Page

Baseline Total Emissions <small>(kg CO₂/year)</small> 2008 Building Regulations	Proposed Total Emissions <small>(kg CO₂/year)</small> Target	Proposed
9556.01	7167.01	7174.16

CO ₂ Savings from Renewables <small>(kg CO₂/year) (over adjusted baseline)</small> Target	Proposed	Energy Savings from Renewables <small>(kWh /year)</small> Target	Proposed
812.26 (0.00%)	948.44 (11.68%)	3438.21 (10%)	4888.89 (12)

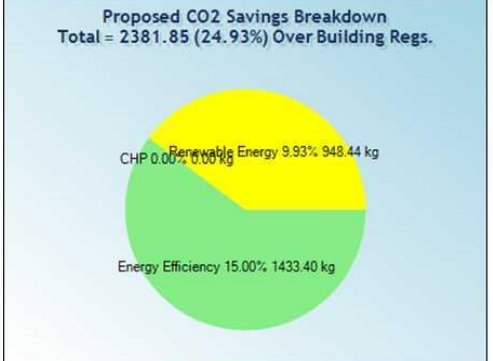
Total Building CO₂ Emissions

(kg CO₂/year) Total Use Fuel




Overall Savings from Proposed Measures

(kg CO₂/year) All EE RE Use Fuel



Savings from Proposed Measures

(kg CO₂/year) Feasibility Cost Planning Risk



Sustainable Energy Measures

Technology	Description	Units	CO ₂ Saving	kWh Saving	Feasibility	Plan - ning
SHW	Solar Thermal 8 m2	7.00	948.44	4888.89	●	●
EE	15% beyond Part L	0.00	1433.40	6058.01	●	●

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31