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SUSTAINABILITY STATEMENT

Boorley Green, Phase 2C

REPORT STATUS: 6.0



Document Control Sheet

REPORT STATUS: 6.0

Client	Miller Homes Southern		
Development	Boorley Green, Phase 2C – Hedge End		
Report Title:	Sustainability Statement		
Author	Naomi Sadler	Reviewed by	Naomi Sadler
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5.0	18.04.2023	Plot update (ESD1 only)	Naomi Sadler	Naomi Sadler
6.0	19.04.2023	Plot Updates, AS BUILT (ESD1 only)	Naomi Sadler	Jayne Dakin

About Sadler Energy and Environmental Services Ltd.

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry from the concept and planning stage through to the completion of the project.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for energy efficiency, quality and practical on-site applications.



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1 Executive Summary

This sustainability statement has been commissioned by Miller Homes Southern Ltd in respect of a development proposal for Boorley Green, Phase 2C, Hedge End. The full proposals include the construction of 90 dwelling (Plots 355-444 with Phase 2C of the outline consent) to respond to local planning authority, Borough of Eastleigh Council's policy and guidance, all of which is promoting low carbon development. The following Essential Requirements apply:

- ESD1: General Sustainable Development, the Council requires all residential development to achieve Level 4 of the Code from January 2012.
- ESD2: Rainwater Harvesting/ Grey Water Recycling (not applicable to houses)
- ESD3: External water Consumption (residential only)
- ESD4: Reducing Surface Water Runoff
- ESD5: Passive Solar Heat Gain
- ESD6: Carbon Dioxide Reduction (small scale zero/low carbon technologies), two Code Ene 7 credits (15% carbon dioxide emissions reductions via local low/zero carbon energy)
- ESD7: Green Roofs (not applicable to houses)
- ESD8: Trees

The purpose of this report is a submission of the first phase of completed plots to confirm Miller Homes have met the requirements in planning Permission Ref: O/15/75953 As Amended by X/19/84943 condition 29 and condition 30.

2 Information and Background

This Energy Strategy has been produced to identify the design stage evidence in accordance with Eastleigh Borough Council in accordance with ESD 1, 3, 6 and 8.

In summary:

	Comments	Evidence
ESD 1	Developer has committed to achieving a Code Level 4 in the Code for Sustainable Homes	As Built SAP Calculations (Appendix A).
ESD 2	Submit details of the rainwater harvesting and/or grey water recycling systems supplying all WC flushing and other appropriate uses for that development	ESD 2 is not applicable due to the nature of the development. As confirmed in at the planning stage.
ESD 3	Code compliant Water Butts are allocated to all dwellings. One and two bedroom homes will be provided with water butts of minimum 150 litre capacity. Three bedroom and above homes will be provided with water butts of a minimum 200 litre capacity.	Site plan showing the location of the water butts provide (Appendix C)



ESD 4	Miller Homes will address the mandatory requirement for CfSH as stipulated for Sur 1 any run-off from the site will be channelled through Sustainable Urban Drainage Techniques.	A Flood Risk and Drainage Statement was reviewed and approved as part of Reserved Matters 2 for 143 units, and updated work done earlier for RM1. A separate application for discharge of condition 11 will be made and that with the work done at RM will satisfy the requirements of ESD 4.
ESD 5	Solar gain – The development should make full use of potential passive solar heat gain through orientation, building design and landscape design (while avoiding excessive summer heat gain and glare) within a framework of good urban design unless there are particular site or building use factors which make it unfeasible	This is addressed in the Design and Access Statement and the update to the update which was approved at grant of Reserved Matters for these plots.
ESD 6	10 or more houses to achieve: ✎ Up to the end of 2011 at least one Code Ene 7 credit (10% carbon dioxide emissions reductions via local low/zero carbon energy) ✎ From January 2012 two Code Ene 7 credits (15% carbon dioxide emissions reductions via local low/zero carbon energy)	As Built SAP Calculations in accordance with the design stage included within Appendix A. PV Schedule and PV site layout is included within Appendix E.
ESD 7	Green roofs	ESD 7 is not applicable due to the nature of the development. As confirmed in at the planning stage.
ESD 8	The tree requirements have been addressed by the Landscape Designer: ✎ all new streets created for residential development to provide at least 1 street tree 1 per 30 linear metres of street ✎ All new off-street car parks accessible to the public to provide at least 1 tree per 6 vehicle spaces ✎ All new private back gardens to retain existing trees or (if no existing trees to retain) receive at least 1 newly planted tree	Landscape proposals have submitted, assessed, and approved during the Reserved Matters process. As built drawings in Appendix D



2.1 Planning Condition

The Eastleigh Borough Council Environmental Sustainable Development Supplementary Planning Document was adopted in March 2009 and sets measures to respond to the declared climate emergency. The specific planning conditions for the development are detailed below:

“CONDITION 28 REQUIRES:

In respect of energy efficiency, a standard of a 19% improvement of dwelling emission rate over the target emission rate as set in the 2013 Building Regulations being equivalent to and not exceeding the requirement as set by Code Level 4 (as defined by ENE1) in the, now revoked, Code for Sustainable Homes (or equivalent requirements that are set out in national legislation or policy).

In respect of water consumption, a maximum predicted internal mains water consumption of 105 litres/person/day, i.e. the equivalent requirement as set by Code Level 4 (as defined by WAT1) in the, now revoked, Code for Sustainable Homes (or equivalent requirements that are set out in national legislation or policy). This is a performance condition which sets limits and does not require a submission. The ways in which this are achieved are set out in the response to condition 29.”

OUTLINE PLANNING CONDITION 31 REQUIRES:

“Prior to the first occupation of each type of building within each phase a (for residential development) an as built stage SAP data, and an as built stage water calculator confirming energy efficiency and the predicted internal mains water consumption; which shall meet the requirements set out in condition 24 above; shall be submitted to and approved in writing by the LPA. The development shall not be carried out otherwise than in accordance with the approved details.”

OUTLINE PLANNING CONDITION 32 REQUIRES:

“Prior to the first occupation of each type of building within each phase of development a report highlighting how the essential requirements set out within ESD2-8 of the Eastleigh Borough Council’s adopted Environmentally Sustainable Development SPD, set out by condition 26 above, have been achieved in that phase of the development shall be submitted to and approved in writing by the LPA. The development shall not be carried out otherwise than in accordance with the approved details.”



3 Energy Efficiency

A fabric first approach has been adopted to minimise energy demand as much as practical. Energy efficiency features that were proposed include: Built form, Insulation standards, Glazing, Heating systems, Ventilation, Lighting, and Controls.

Three main sources of heat loss:

-  Thermal Envelope
-  Thermal Bridging
-  Uncontrolled Air Leakage

3.1 Thermal Envelope

The table below summarises the proposed performance of the thermal envelope. It is proposed that all areas significantly improve upon the minimum building fabric standards stated within BR Part L 2013.

Thermal Element	BR U-value (Part L 2013) W/m ² K	Proposed target values (Block A) W/m ² K	% Improvement over BR 2013 (Block A)
Ground Floor	0.25	0.19	31%
External wall	0.30	0.27	11%
Cold roof	0.20	0.11	45%
Flat Roof	0.20	0.16	25%
Warm Roof	0.20	0.16	25%
External Doors	2.00	1.5	33%
Windows & Glazed Doors	2.00	1.3	53%

Table 1 – As Built Fabric Standard

The as built fabric specification shows an improvement on BR 2013 standards and are conducive to energy efficiency within built form and insulation standards.

3.2 Energy Demand and Emissions

The tables below show the summary AS DESIGNED and AS BUILT percentage reduction in TER as modelled in SAP 2012. A copy of the as built SAP Calculation are included within Appendix A. Updated As Built figures shown in **'BOLD'**.

Plot	DER	TER	% improvements	ENE 7 - % reduction in CO2
Plot 355	14.43	19.23	25%	11
Plot 356	12.28	16.82	27%	10%
Plot 357	11.89	16.54	28.1%	10%
Plot 358	12.25	16.82	27.2%	10%



Plot 359	11.97	16.54	27.6%	10%
Plot 360	12.42	16.82	26.2%	10%
Plot 361	12.03	16.54	27.3%	10%
Plot 362	12.48	16.82	25.8%	10%
Plot 363	12.06	16.54	27.1%	10%
Plot 364	14.71	18.79	21.7%	9%
Plot 365	14.55	18.70	22.2%	6%
Plot 366	14.06	18.44	23.8%	9%
Plot 367	14.99	19.01	21.1%	7%
Plot 368	14.99	19.01	21.1%	7%
Plot 369	14.99	19.01	21.1%	7%
Plot 370	14.99	19.01	21.1%	7%
Plot 371	14.12	18.73	24.6%	10%
Plot 372	14.02	18.73	25.1%	10%
Plot 373	13.27	17.56	24.4%	11%
Plot 374	13.18	17.56	24.9%	11%
Plot 375	15.01	18.75	19.9%	7%
Plot 376	14.47	18.70	22.6%	9%
Plot 377	14.54	18.79	22.6%	9%
Plot 378	14.56	18.70	22.1%	9%
Plot 379	14.52	18.79	22.7%	9%
Plot 380	15.31	19.65	22.1%	7%
Plot 381	13.71	18.78	27%	9%
Plot 382	12.67	17.41	27.2%	10%
Plot 383	12.67	17.41	27.2%	10%
Plot 384	13.71	18.78	27%	9%
Plot 385	15.31	19.65	22.1%	7%
Plot 386	14.14	18.26	22.6%	7%
Plot 387	12.09	16.79	28%	8%
Plot 388	14.14	18.26	22.6%	7%
Plot 389	12.67	17.41	27.2%	10%
Plot 390	12.67	17.41	27.2%	10%
Plot 391	14.14	18.26	22.6%	7%
Plot 392	12.09	16.79	28%	8%
Plot 393	14.14	18.26	22.6%	7%
Plot 394	13.36	18.40	27.4%	9%
Plot 395	14.18	18.99	25.3%	9%
Plot 396	14.44	18.70	22.8%	9%



Plot 397	14.54	18.79	22.6%	9%
Plot 398	14.71	19.23	23.5%	9%
Plot 399	15.00	18.87	20.5%	7%
Plot 400	13.11	17.56	25.3%	11%
Plot 401	13.13	17.56	25.2%	11%
Plot 402	14.57	18.73	22.2%	9%
Plot 403	13.08	17.17	23.8%	10%
Plot 404	14.57	18.73	22.2%	9%
Plot 405	15.08	18.73	19.5%	7%
Plot 406	15.08	18.73	19.5%	7%
Plot 407	12.90	17	24.1%	11%
Plot 408	13.06	16.27	19.7%	9%
Plot 409	15.02	18.59	19.2%	8%
Plot 410	15.02	18.59	19.2%	8%
Plot 411	15.46	20.40	24.2%	9%
Plot 412	14.87	20.84	28.6%	10%
Plot 413	14.14	18.26	22.6%	7%
Plot 414	14.14	18.26	22.6%	7%
Plot 415	14.87	20.84	28.6%	10%
Plot 416	15.46	20.40	24.2%	9%
Plot 417	14.80	20.09	26.3%	9%
Plot 418	14.24	19.58	27.3%	10%
Plot 419	14.52	18.51	21.6%	7%
Plot 420	12.67	17.41	27.2%	10%
Plot 421	12.67	17.41	27.2%	10%
Plot 422	14.14	18.26	22.6%	7%
Plot 423	14.14	18.26	22.6%	7%
Plot 424	14.14	18.26	22.6%	7%
Plot 425	14.14	18.26	22.6%	7%
Plot 426	15.46	20.40	24.2%	9%
Plot 427	14.87	20.84	28.6%	10%
Plot 428	14.72	18.42	20.1%	7%
Plot 429	14.72	18.42	20.1%	7%
Plot 430	14.87	20.84	28.6%	10%
Plot 431	15.46	20.40	24.2%	9%
Plot 432	14.18	18.99	25.3%	9%
Plot 433	13.70	18.57	26.2%	9%
Plot 434	13.92	17.95	22.5%	8%



Plot 435	16.64	17.71	23%	8%
Plot 436	13.43	16.80	20.1%	8%
Plot 437	13.07	16.95	22.9%	10%
Plot 438	13.42	16.60	19.2%	9%
Plot 439	12.71	16.73	24%	10%
Plot 440	13.36	16.85	20.7%	8%
Plot 441	13.09	17.17	23.8%	10%
Plot 442	13.74	17.92	23.3%	9%
Plot 443	13.36	16.85	20.7%	8%
Plot 444	13.36	16.85	20.7%	8%

4.0 Water Efficiency

In accordance with Eastleigh Borough Council Environmental Sustainable Development Supplementary Planning it is proposed that all dwellings achieve a minimum water efficiency standard of 105 litres/person/day as set out in Building Regulations Part G. The following maximum water consumption criteria, as stated in table 2.2 of approved document Part G has been followed, see Table 4 below.

Water Fitting	Maximum Consumption	
WC	4/2.6 litres dual flush	Ideal Standard Close coupled cistern 4/2.6 litre dual flush
Shower	8 l/min	Vado Celsius with FR/shower/8-PLA
Bath	181 litres	Ideal Standard Tempo Arc
Basin Taps	3 l/min	Vado Life basin mounted taps FR/tap/3-PLA
Sink Taps	6 l/min	Vado Kori taps FR/tap/6 - PLA
Dishwasher	1.25 l/place setting	No dishwasher or base unit; plumbing & electric point to space only
Washing Machine	8.17 l/kilogram dry load	Not provided; plumbing & electric point to space only

Table 2 - (Part G2 Table 2.2) Maximum fittings consumption

The code for sustainable homes calculator tool has been completed within Appendix B and has confirmed a flow rate of 99.5 l/p/p/d using the as built specifications and manufactures information is included within Appendix F.



5 Conclusion

The report shows compliance with ESD 1, 3, 6 & 8 has been achieved as in accordance with Eastleigh Borough Council Environmental Sustainable Development Supplementary Planning Document.



APPENDIX A – CSH **AS BUILT** SAP REPORTS



This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

This As Built Assessment has been carried out by an On-Construction Domestic Energy Assessor. The Assessor has confirmed any changes from the Design Submission with the builder. Code calculations are from the Technical Guide (2014 combined addendum).

Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	17/11/2022
Address	Downshire - Det - Plot 355 2 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.43
TER	19.23

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 25%	3.5	4
Fabric Energy Efficiency	FEE = 58.0	3.4	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 11%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.43
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.43
CO ₂ reduction compared to TER			4.80
CO ₂ reduction as % of TER	25.0		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.43	(ZC1)
CO ₂ emissions from appliances (equation L14)	15.33	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.89	(ZC3)
Total CO ₂ emissions	31.65	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	31.65	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	58.0	Fail
Net CO ₂ emissions	<= 0	31.65	Fail
Result: Not level 6			
Number of credits for Ene 1			3.5

Ene 2 - fabric energy efficiency

FEE		58.0
Number of credits for Ene 2		3.4

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1866.78	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	205.99	
Appliances and cooking	1677.57	
Total CO ₂	3789.26	
Actual case		
Space and water heating (265) or (376)	1866.78	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		434.59
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		434.59
LZCT thermal generation		0.00
Total from specified LZCT		434.59
Reduction in CO₂ Emissions		
Standard case CO ₂	38.90	
Actual case CO ₂	34.44	
Reduction in CO ₂ (%)	11	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

This As Built Assessment has been carried out by an On-Construction Domestic Energy Assessor. The Assessor has confirmed any changes from the Design Submission with the builder. Code calculations are from the Technical Guide (2014 combined addendum).

Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	17/11/2022
Address	Edale ritr - Semi - Plot 356 4 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	12.28
TER	16.82

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 27%	3.6	4
Fabric Energy Efficiency	FEE = 46.3	6.9	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			12.28
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			12.28
CO ₂ reduction compared to TER			4.54
CO ₂ reduction as % of TER	27.0		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	12.28	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.43	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.43	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	46.3	Fail
Net CO ₂ emissions	<= 0	28.43	Fail
Result: Not level 6			
Number of credits for Ene 1			3.6

Ene 2 - fabric energy efficiency

FEE		46.3
Number of credits for Ene 2		6.9

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1738.10	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3832.41	
Actual case		
Space and water heating (265) or (376)	1738.10	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		34.08
Actual case CO ₂		30.62
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

This As Built Assessment has been carried out by an On-Construction Domestic Energy Assessor. The Assessor has confirmed any changes from the Design Submission with the builder. Code calculations are from the Technical Guide (2014 combined addendum).

Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	25/11/2022
Address	Edale ritr - Semi - Plot 357 6 Goldcrest Road, Boorley Green, Southampton , SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	11.89
TER	16.54

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 28.1%	3.7	4
Fabric Energy Efficiency	FEE = 44.6	7.4	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			11.89
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			11.89
CO ₂ reduction compared to TER			4.65
CO ₂ reduction as % of TER	28.1		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	11.89	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.04	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.04	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	44.6	Pass
Net CO ₂ emissions	<= 0	28.04	Fail
Result: Not level 6			
Number of credits for Ene 1			3.7

Ene 2 - fabric energy efficiency

FEE		44.6
Number of credits for Ene 2		7.4

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1691.05	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3785.36	
Actual case		
Space and water heating (265) or (376)	1691.05	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		33.66
Actual case CO ₂		30.20
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

This As Built Assessment has been carried out by an On-Construction Domestic Energy Assessor. The Assessor has confirmed any changes from the Design Submission with the builder. Code calculations are from the Technical Guide (2014 combined addendum).

Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	02/12/2022
Address	Edale ritr - Semi - Plot 358 8 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	12.25
TER	16.82

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 27.2%	3.6	4
Fabric Energy Efficiency	FEE = 46.2	6.9	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			12.25
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			12.25
CO ₂ reduction compared to TER			4.57
CO ₂ reduction as % of TER	27.2		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	12.25	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.40	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.40	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	46.2	Fail
Net CO ₂ emissions	<= 0	28.40	Fail
Result: Not level 6			
Number of credits for Ene 1			3.6

Ene 2 - fabric energy efficiency

FEE		46.2
Number of credits for Ene 2		6.9

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1733.70	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3828.01	
Actual case		
Space and water heating (265) or (376)	1733.70	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		34.04
Actual case CO ₂		30.58
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	07/12/2022
Address	Edale ritr - Semi - Plot 359 10 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	11.97
TER	16.54

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 27.6%	3.7	4
Fabric Energy Efficiency	FEE = 45.0	7.3	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			11.97
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			11.97
CO ₂ reduction compared to TER			4.57
CO ₂ reduction as % of TER	27.6		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	11.97	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.12	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.12	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	45.0	Pass
Net CO ₂ emissions	<= 0	28.12	Fail
Result: Not level 6			
Number of credits for Ene 1			3.7

Ene 2 - fabric energy efficiency

FEE		45.0
Number of credits for Ene 2		7.3

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1700.72	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3795.03	
Actual case		
Space and water heating (265) or (376)	1700.72	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		33.75
Actual case CO ₂		30.28
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	02/12/2022
Address	Edale ritr - Semi - Plot 360 12 Goldcrest Road, Boorley Green , Southampton , SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	12.42
TER	16.82

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 26.2%	3.6	4
Fabric Energy Efficiency	FEE = 47.0	6.7	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			12.42
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			12.42
CO ₂ reduction compared to TER			4.40
CO ₂ reduction as % of TER	26.2		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	12.42	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.57	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.57	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	47.0	Fail
Net CO ₂ emissions	<= 0	28.57	Fail
Result: Not level 6			
Number of credits for Ene 1			3.6

Ene 2 - fabric energy efficiency

FEE		47.0
Number of credits for Ene 2		6.7

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1755.75	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3850.06	
Actual case		
Space and water heating (265) or (376)	1755.75	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		34.24
Actual case CO ₂		30.77
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	02/12/2022
Address	Edale ritr - Semi - Plot 361 14 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	12.03
TER	16.54

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 27.3%	3.6	4
Fabric Energy Efficiency	FEE = 45.3	7.2	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			12.03
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			12.03
CO ₂ reduction compared to TER			4.51
CO ₂ reduction as % of TER	27.3		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	12.03	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.18	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.18	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	45.3	Pass
Net CO ₂ emissions	<= 0	28.18	Fail
Result: Not level 6			
Number of credits for Ene 1			3.6

Ene 2 - fabric energy efficiency

FEE		45.3
Number of credits for Ene 2		7.2

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1708.01	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3802.32	
Actual case		
Space and water heating (265) or (376)	1708.01	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		33.81
Actual case CO ₂		30.35
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	14/12/2022
Address	Edale ritr - Semi - Plot 362 16 Goldcrest Road, Boorley Green, Southampton , SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	12.48
TER	16.82

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 25.8%	3.5	4
Fabric Energy Efficiency	FEE = 47.2	6.6	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			12.48
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			12.48
CO ₂ reduction compared to TER			4.34
CO ₂ reduction as % of TER	25.8		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	12.48	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.63	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.63	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	47.2	Fail
Net CO ₂ emissions	<= 0	28.63	Fail
Result: Not level 6			
Number of credits for Ene 1			3.5

Ene 2 - fabric energy efficiency

FEE		47.2
Number of credits for Ene 2		6.6

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1763.33	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3857.64	
Actual case		
Space and water heating (265) or (376)	1763.33	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		34.31
Actual case CO ₂		30.84
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	16/12/2022
Address	Edale ritr - Semi - Plot 363 18 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	12.06
TER	16.54

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 27.1%	3.6	4
Fabric Energy Efficiency	FEE = 45.4	7.2	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			12.06
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			12.06
CO ₂ reduction compared to TER			4.48
CO ₂ reduction as % of TER	27.1		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	12.06	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.49	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.66	(ZC3)
Total CO ₂ emissions	28.21	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.21	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	45.4	Pass
Net CO ₂ emissions	<= 0	28.21	Fail
Result: Not level 6			
Number of credits for Ene 1			3.6

Ene 2 - fabric energy efficiency

FEE		45.4
Number of credits for Ene 2		7.2

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1712.25	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	239.32	
Appliances and cooking	1816.07	
Total CO ₂	3806.56	
Actual case		
Space and water heating (265) or (376)	1712.25	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		389.60
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		389.60
LZCT thermal generation		0.00
Total from specified LZCT		389.60
Reduction in CO₂ Emissions		
Standard case CO ₂		33.85
Actual case CO ₂		30.39
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	06/12/2022
Address	Beeley-Lomond - Semi - Plot 364 20 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.71
TER	18.79

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 21.7%	3.2	4
Fabric Energy Efficiency	FEE = 49.6	5.8	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 9%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.71
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.71
CO ₂ reduction compared to TER			4.08
CO ₂ reduction as % of TER	21.7		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.71	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	33.26	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	33.26	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	49.6	Fail
Net CO ₂ emissions	<= 0	33.26	Fail
Result: Not level 6			
Number of credits for Ene 1			3.2

Ene 2 - fabric energy efficiency

FEE		49.6
Number of credits for Ene 2		5.8

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1445.88	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3140.51	
Actual case		
Space and water heating (265) or (376)	1445.88	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		286.88
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		286.88
LZCT thermal generation		0.00
Total from specified LZCT		286.88
Reduction in CO₂ Emissions		
Standard case CO ₂	39.70	
Actual case CO ₂	36.08	
Reduction in CO ₂ (%)	9	
Number of credits for Ene 7	No credits	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	06/12/2022
Address	Beeley-Lomond - Semi - Plot 365 22 Goldcrest Road, Boorley Green, Southampton, SO32 2BZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.55
TER	18.70

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 22.2%	3.3	4
Fabric Energy Efficiency	FEE = 49.0	6	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 9%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.55
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.55
CO ₂ reduction compared to TER			4.15
CO ₂ reduction as % of TER	22.2		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.55	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	33.10	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	33.10	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	49.0	Fail
Net CO ₂ emissions	<= 0	33.10	Fail
Result: Not level 6			
Number of credits for Ene 1			3.3

Ene 2 - fabric energy efficiency

FEE		49.0
Number of credits for Ene 2		6

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1432.19	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3126.82	
Actual case		
Space and water heating (265) or (376)	1432.19	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		286.88
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		286.88
LZCT thermal generation		0.00
Total from specified LZCT		286.88
Reduction in CO₂ Emissions		
Standard case CO ₂	39.53	
Actual case CO ₂	35.90	
Reduction in CO ₂ (%)	9	
Number of credits for Ene 7	No credits	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	07/12/2022
Address	Downshire - Det - Plot 366 1 Wren Walk, Boorley Green, Southampton, SO32 2DX		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.06
TER	18.44

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 23.8%	3.4	4
Fabric Energy Efficiency	FEE = 53.3	4.6	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 9%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.06
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.06
CO ₂ reduction compared to TER			4.38
CO ₂ reduction as % of TER	23.8		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.06	(ZC1)
CO ₂ emissions from appliances (equation L14)	15.33	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.89	(ZC3)
Total CO ₂ emissions	31.28	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	31.28	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	53.3	Fail
Net CO ₂ emissions	<= 0	31.28	Fail
Result: Not level 6			
Number of credits for Ene 1			3.4

Ene 2 - fabric energy efficiency

FEE		53.3
Number of credits for Ene 2		4.6

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1745.22	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	205.99	
Appliances and cooking	1677.57	
Total CO ₂	3667.70	
Actual case		
Space and water heating (265) or (376)	1745.22	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		359.20
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		359.20
LZCT thermal generation		0.00
Total from specified LZCT		359.20
Reduction in CO₂ Emissions		
Standard case CO ₂		37.65
Actual case CO ₂		33.96
Reduction in CO ₂ (%)	9	
Number of credits for Ene 7	No credits	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	09/12/2022
Address	Beeley-Lomond - Semi - Plot 371 11 Wren Walk, Boorley Green, Southampton, SO32 2DX		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.12
TER	18.73

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 24.6%	3.4	4
Fabric Energy Efficiency	FEE = 48.7	6.1	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.12
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.12
CO ₂ reduction compared to TER			4.61
CO ₂ reduction as % of TER	24.6		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.12	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	32.67	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	32.67	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	48.7	Fail
Net CO ₂ emissions	<= 0	32.67	Fail
Result: Not level 6			
Number of credits for Ene 1			3.4

Ene 2 - fabric energy efficiency

FEE		48.7
Number of credits for Ene 2		6.1

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1433.54	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3128.17	
Actual case		
Space and water heating (265) or (376)	1433.54	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		323.73
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		323.73
LZCT thermal generation		0.00
Total from specified LZCT		323.73
Reduction in CO₂ Emissions		
Standard case CO ₂		39.55
Actual case CO ₂		35.45
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	13/12/2022
Address	Beeley-Lomond - Semi - Plot 372 15 Wren Walk, Boorley Green, Southampton, SO32 2DX		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.02
TER	18.73

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 25.1%	3.5	4
Fabric Energy Efficiency	FEE = 48.4	6.2	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 10%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.02
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.02
CO ₂ reduction compared to TER			4.71
CO ₂ reduction as % of TER	25.1		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.02	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	32.57	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	32.57	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	48.4	Fail
Net CO ₂ emissions	<= 0	32.57	Fail
Result: Not level 6			
Number of credits for Ene 1			3.5

Ene 2 - fabric energy efficiency

FEE		48.4
Number of credits for Ene 2		6.2

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1424.66	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3119.29	
Actual case		
Space and water heating (265) or (376)	1424.66	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		323.73
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		323.73
LZCT thermal generation		0.00
Total from specified LZCT		323.73
Reduction in CO₂ Emissions		
Standard case CO ₂		39.43
Actual case CO ₂		35.34
Reduction in CO ₂ (%)	10	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	15/12/2022
Address	Walton - Det - Plot 373 17 Wren Walk, Boorley Green, Southampton, SO32 2DX		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	13.27
TER	17.56

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 24.4%	3.4	4
Fabric Energy Efficiency	FEE = 53.7	4.4	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 11%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			13.27
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			13.27
CO ₂ reduction compared to TER			4.29
CO ₂ reduction as % of TER	24.4		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	13.27	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.22	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.60	(ZC3)
Total CO ₂ emissions	29.09	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	29.09	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	53.7	Fail
Net CO ₂ emissions	<= 0	29.09	Fail
Result: Not level 6			
Number of credits for Ene 1			3.4

Ene 2 - fabric energy efficiency

FEE		53.7
Number of credits for Ene 2		4.4

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	2036.52	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	249.16	
Appliances and cooking	1857.90	
Total CO ₂	4182.50	
Actual case		
Space and water heating (265) or (376)	2036.52	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		487.81
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		487.81
LZCT thermal generation		0.00
Total from specified LZCT		487.81
Reduction in CO₂ Emissions		
Standard case CO ₂		35.61
Actual case CO ₂		31.46
Reduction in CO ₂ (%)	11	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	13/12/2022
Address	Walton - Det - Plot 374 19 Wren Walk, Boorley Green, Southampton, SO32 2DX		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	13.18
TER	17.56

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 24.9%	3.5	4
Fabric Energy Efficiency	FEE = 53.3	4.6	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 11%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			13.18
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			13.18
CO ₂ reduction compared to TER			4.38
CO ₂ reduction as % of TER	24.9		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	13.18	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.22	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.60	(ZC3)
Total CO ₂ emissions	29.00	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	29.00	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	53.3	Fail
Net CO ₂ emissions	<= 0	29.00	Fail
Result: Not level 6			
Number of credits for Ene 1			3.5

Ene 2 - fabric energy efficiency

FEE		53.3
Number of credits for Ene 2		4.6

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	2024.45	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	249.16	
Appliances and cooking	1857.90	
Total CO ₂	4170.43	
Actual case		
Space and water heating (265) or (376)	2024.45	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		487.81
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		487.81
LZCT thermal generation		0.00
Total from specified LZCT		487.81
Reduction in CO₂ Emissions		
Standard case CO ₂		35.51
Actual case CO ₂		31.36
Reduction in CO ₂ (%)	11	
Number of credits for Ene 7	1	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	15/12/2022
Address	Downshire - Det - Plot 375 1 Blackcap Walk, Boorley Green, Southampton, SO32 2DZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	15.01
TER	18.75

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 19.9%	3.1	4
Fabric Energy Efficiency	FEE = 54.0	4.3	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 7%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			15.01
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			15.01
CO ₂ reduction compared to TER			3.74
CO ₂ reduction as % of TER	19.9		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	15.01	(ZC1)
CO ₂ emissions from appliances (equation L14)	15.33	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.89	(ZC3)
Total CO ₂ emissions	32.23	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	32.23	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	54.0	Fail
Net CO ₂ emissions	<= 0	32.23	Fail
Result: Not level 6			
Number of credits for Ene 1			3.1

Ene 2 - fabric energy efficiency

FEE		54.0
Number of credits for Ene 2		4.3

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1765.81	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	205.99	
Appliances and cooking	1677.57	
Total CO ₂	3688.29	
Actual case		
Space and water heating (265) or (376)	1765.81	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		286.88
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		286.88
LZCT thermal generation		0.00
Total from specified LZCT		286.88
Reduction in CO₂ Emissions		
Standard case CO ₂	37.86	
Actual case CO ₂	34.91	
Reduction in CO ₂ (%)	7	
Number of credits for Ene 7	No credits	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	20/12/2022
Address	Beeley-Lomond - Semi - Plot 376 3 Blackcap Walk, Boorley Green, SOUTHAMPTON, SO32 2DZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.47
TER	18.70

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 22.6%	3.3	4
Fabric Energy Efficiency	FEE = 48.7	6.1	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 9%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.47
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.47
CO ₂ reduction compared to TER			4.23
CO ₂ reduction as % of TER	22.6		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.47	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	33.02	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	33.02	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	48.7	Fail
Net CO ₂ emissions	<= 0	33.02	Fail
Result: Not level 6			
Number of credits for Ene 1			3.3

Ene 2 - fabric energy efficiency

FEE		48.7
Number of credits for Ene 2		6.1

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1425.10	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3119.73	
Actual case		
Space and water heating (265) or (376)	1425.10	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		286.88
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		286.88
LZCT thermal generation		0.00
Total from specified LZCT		286.88
Reduction in CO₂ Emissions		
Standard case CO ₂	39.44	
Actual case CO ₂	35.81	
Reduction in CO ₂ (%)	9	
Number of credits for Ene 7	No credits	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	20/12/2022
Address	Beeley-Lomond - Semi - Plot 377 5 Blackcap Walk, Boorley Green , SOUTHAMPTON, SO32 2DZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.54
TER	18.79

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 22.6%	3.3	4
Fabric Energy Efficiency	FEE = 49.0	6	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 9%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.54
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.54
CO ₂ reduction compared to TER			4.25
CO ₂ reduction as % of TER	22.6		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.54	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	33.09	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	33.09	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	49.0	Fail
Net CO ₂ emissions	<= 0	33.09	Fail
Result: Not level 6			
Number of credits for Ene 1			3.3

Ene 2 - fabric energy efficiency

FEE		49.0
Number of credits for Ene 2		6

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1430.30	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3124.93	
Actual case		
Space and water heating (265) or (376)	1430.30	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		286.88
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		286.88
LZCT thermal generation		0.00
Total from specified LZCT		286.88
Reduction in CO₂ Emissions		
Standard case CO ₂	39.51	
Actual case CO ₂	35.88	
Reduction in CO ₂ (%)	9	
Number of credits for Ene 7	No credits	

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	20/12/2022
Address	Beeley-Lomond - Semi - Plot 378 7 Blackcap Walk, Boorley Green, SOUTHAMPTON, SO32 2DZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.56
TER	18.70

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 22.1%	3.2	4
Fabric Energy Efficiency	FEE = 49.0	5.9	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 9%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.56
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.56
CO ₂ reduction compared to TER			4.14
CO ₂ reduction as % of TER	22.1		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.56	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	33.11	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	33.11	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	49.0	Fail
Net CO ₂ emissions	<= 0	33.11	Fail
Result: Not level 6			
Number of credits for Ene 1			3.2

Ene 2 - fabric energy efficiency

FEE		49.0
Number of credits for Ene 2		5.9

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1433.32	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3127.95	
Actual case		
Space and water heating (265) or (376)	1433.32	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		286.88
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		286.88
LZCT thermal generation		0.00
Total from specified LZCT		286.88
Reduction in CO₂ Emissions		
Standard case CO ₂	39.54	
Actual case CO ₂	35.92	
Reduction in CO ₂ (%)	9	
Number of credits for Ene 7	No credits	

This report details the calculations and results for Ene 1, 2 and 7 of the Code For Sustainable Homes.

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	20/12/2022
Address	Beeley-Lomond - Semi - Plot 379 9 Blackcap Walk, Boorley Green , SOUTHAMPTON, SO32 2DZ		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	14.52
TER	18.79

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 22.7%	3.3	4
Fabric Energy Efficiency	FEE = 48.9	6	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 9%	No credits	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			14.52
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			14.52
CO ₂ reduction compared to TER			4.27
CO ₂ reduction as % of TER	22.7		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	14.52	(ZC1)
CO ₂ emissions from appliances (equation L14)	16.30	(ZC2)
CO ₂ emissions from cooking (equation L16)	2.25	(ZC3)
Total CO ₂ emissions	33.07	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	33.07	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	48.9	Fail
Net CO ₂ emissions	<= 0	33.07	Fail
Result: Not level 6			
Number of credits for Ene 1			3.3

Ene 2 - fabric energy efficiency

FEE		48.9
Number of credits for Ene 2		6

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	1429.02	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	188.40	
Appliances and cooking	1467.31	
Total CO ₂	3123.65	
Actual case		
Space and water heating (265) or (376)	1429.02	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		286.88
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		286.88
LZCT thermal generation		0.00
Total from specified LZCT		286.88
Reduction in CO₂ Emissions		
Standard case CO ₂	39.49	
Actual case CO ₂	35.86	
Reduction in CO ₂ (%)	9	
Number of credits for Ene 7	No credits	

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	16/03/2023
Address	Walton - Det - Plot 400 21 Wren Walk , Boorley Green, Southampton, SO32 2DX		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	13.11
TER	17.56

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 25.3%	3.5	4
Fabric Energy Efficiency	FEE = 53.0	4.7	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 11%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			13.11
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			13.11
CO ₂ reduction compared to TER			4.45
CO ₂ reduction as % of TER	25.3		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	13.11	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.22	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.60	(ZC3)
Total CO ₂ emissions	28.93	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.93	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	53.0	Fail
Net CO ₂ emissions	<= 0	28.93	Fail
Result: Not level 6			
Number of credits for Ene 1			3.5

Ene 2 - fabric energy efficiency

FEE		53.0
Number of credits for Ene 2		4.7

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	2014.55	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	249.16	
Appliances and cooking	1857.90	
Total CO ₂	4160.53	
Actual case		
Space and water heating (265) or (376)	2014.55	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		487.81
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		487.81
LZCT thermal generation		0.00
Total from specified LZCT		487.81
Reduction in CO₂ Emissions		
Standard case CO ₂		35.43
Actual case CO ₂		31.27
Reduction in CO ₂ (%)	11	
Number of credits for Ene 7	1	

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Assessor name	Mr Matthew Hurd	Assessor number	3538
Client		Last modified	16/03/2023
Address	Walton - Det - Plot 401 23 Wren Walk , Boorley Green, Southampton, SO32 2DX		

Building regulation assessment - criterion 1

	kg/m ² /yr
DER	13.13
TER	17.56

Assessment of zero carbon home and low or zero carbon technologies

		Credits	Level
Dwelling emission rate (Ene 1)	CO ₂ reduction = 25.2%	3.5	4
Fabric Energy Efficiency	FEE = 53.1	4.6	
Low or zero carbon technologies (Ene 7)	CO ₂ reduction = 11%	1	

Ene 1 - dwelling emission rate

	%	kWh/m ²	kgCO ₂ /m ² /yr
Assessment of Ene 1 (level 1-5)			
DER from SAP 2012 DER worksheet			13.13
Additional allowable generation		0.00	
CO ₂ emissions offset from generation			0.00
CO ₂ emissions offset from community biofuel CHP systems			0.00
Total CO ₂ emissions offset from SAP section 16 allowances			0.00
DER accounting for SAP section 16 allowances			13.13
CO ₂ reduction compared to TER			4.43
CO ₂ reduction as % of TER	25.2		

Assessment of Ene 1 (level 6)

DER from SAP 2012 DER worksheet	13.13	(ZC1)
CO ₂ emissions from appliances (equation L14)	14.22	(ZC2)
CO ₂ emissions from cooking (equation L16)	1.60	(ZC3)
Total CO ₂ emissions	28.95	(ZC4)
Additional allowable generation and its CO ₂ emissions offset	0.00	(ZC6)
CO ₂ emissions offset from additional allowable generation	0.00	(ZC7)
CO ₂ emissions offset from community biofuel CHP systems	0.00	(ZC5)
Net CO ₂ emissions	28.95	(ZC8)

Ene 1 - dwelling emission rate - level 6

There is no Zero Carbon Home definition in the current technical guide

	Criterion	Value	Pass/Fail
FEE	<= 46	53.1	Fail
Net CO ₂ emissions	<= 0	28.95	Fail
Result: Not level 6			
Number of credits for Ene 1			3.5

Ene 2 - fabric energy efficiency

FEE		53.1
Number of credits for Ene 2		4.6

Ene 7 - low or zero carbon technologies

	Emissions kgCO ₂ /yr	Reduction kgCO ₂ /yr
Standard case		
Space and water heating (265)	2017.37	
Mechanical cooling (266)	0.00	
Pumps and fans (267)	38.92	
Lighting (268)	249.16	
Appliances and cooking	1857.90	
Total CO ₂	4163.35	
Actual case		
Space and water heating (265) or (376)	2017.37	
Space and water heating from LZCT considered in SAP 2012		0.00
Pumps and fans (267) or (378)	38.93	
Pumps and fans		0.00
Electricity generated by LZCT (269) + (380))		487.81
Additional allowable electricity generation considered in SAP 2012 section 16		0.00
Offset from biofuel CHP [-1 x [(363)..(366) + (368)...(372)]]		0.00
LZCT electricity generation		487.81
LZCT thermal generation		0.00
Total from specified LZCT		487.81
Reduction in CO₂ Emissions		
Standard case CO ₂		35.45
Actual case CO ₂		31.30
Reduction in CO ₂ (%)	11	
Number of credits for Ene 7	1	











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