

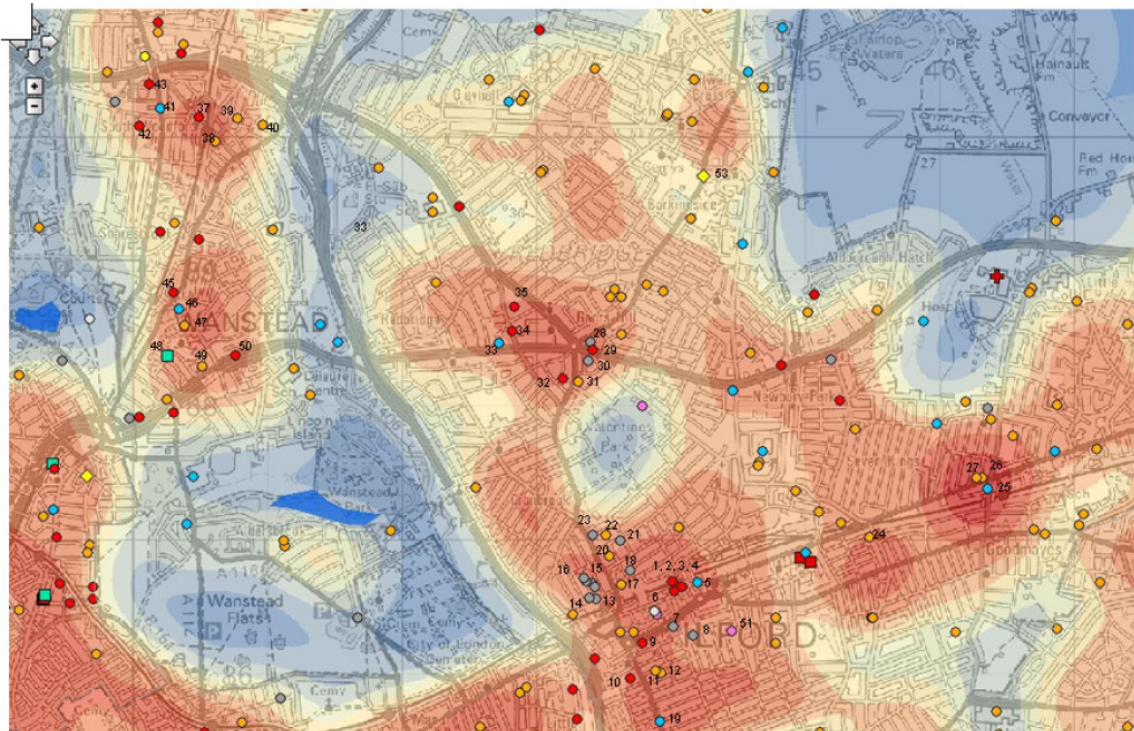
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## Appendix D: Heat Mapping Study Appendices

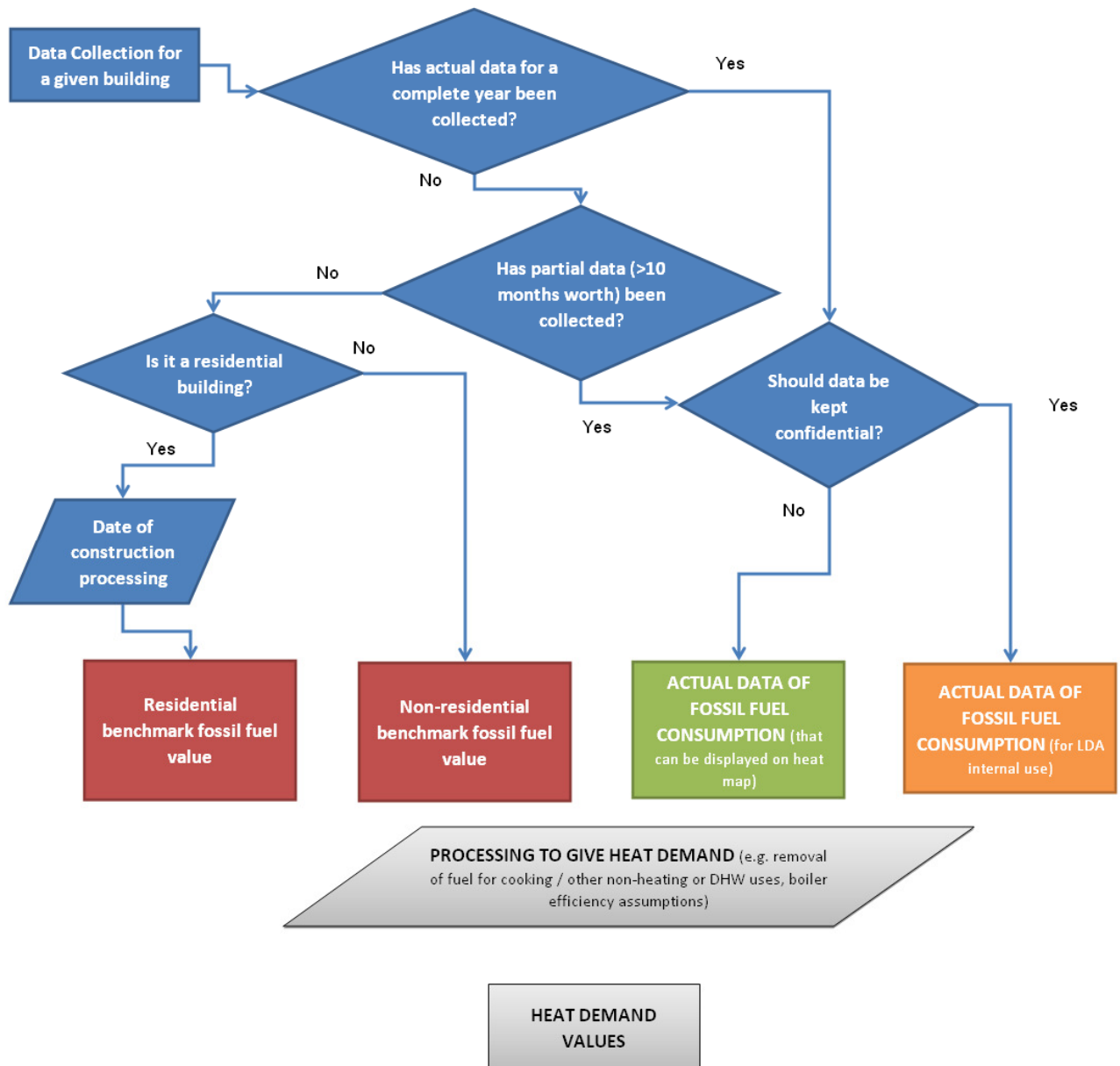
# Appendix D.1: Index of developments in Redbridge with high heat demand

Index of developments with high heat demand

Ilford Town centre			Gants Hill			
1	Thamesview	centreway apartments	Multi residential	26	St Georgio hotel Ltd	Cranbrook road IG26LL
2	City view		Multi residential	29	City gate house 399-425	Flat 81, Eastern avenue IG26LQ
3	Spectrum tower		Multi residential	30	Valentine Hotel	Perth road IG26BX
4	Redbridge foyer	Flat 1 Sylvan road Ilford	Multi residential	31	Valentines high school	IG26HX
5	Fitness First	261-275 High road Ilford IG11NJ		32	Gabrielle house 332-336	45 Perth road IG26FF
6	LBR Town hall	High Road, IG11DD	Council Owned	33	Ilford cricket school	Beehive lane, IG45DR
7	Woodlands hotel	Woodlands road, Ilford IG11JJ		34	Home heather house	Flat 1, 128 beehive lane, IG45EF
8	Grosvenor hotel	Grosvenor road, IG11LB		35	Null	1 BEEHIVE lane, Limewood court, IG45EL
9	Null	1 Albert road, Oakfield lodge, Ilford IG11HJ	Multi residential	<b>Woodford</b>		
10	Null	1 fern ways, Ilford IG12EL	Multi residential	37	Null	113 George lane, London E161AB
11	Cleveland junior school	IG11EN	Council Owned	38	Victoria house special needs school	E181LW
12	Cleveland junior and infant school	IG11EN		39	Oakdale infant school	E181JU
13	York hotel	York road, Ilford IG13AD		40	Oakdale junior school	E181JX
14	Cedars hotel	Argyle road, Ilford IG13BH		41	Hoypoxi sports and leisure	24 High road London E182QL
15	Ferndale hotel,	Mansfield road, IG3BA		42	Malford Court	Flat 12A The drive London E182HR
16	Tudor rose hotel	Argyle road, Ilford IG13BQ		43	Regency Court 89-111	Flat 1, high road, E182JT
17	Montessori School	IG14HP		<b>Wanstead</b>		
18	Balfour hotel	Balfour road, IG14HP		45	Stavely Court	Flat 1 Herman Hill, E112BD
19	New Physique fitness centre	233 Ilford lane IG12RZ		46	The complete Studio	15 High street, Wanstead, E112AA
20	Ursuline high school	IG14JU		47	Wanstead Church school	E112SS
21	Cranbrook hotel	Coventry road, IG14QR		48	Wanstead Police Station	Spratt Hall road, E112RQ
22	Park school for girls	IG14RS		49	Treehouse Nursery school	E112RH
23	Banks hotel	park avenue, IG14RS		50	Null	1 Gardner Close E112HN
<b>Crossrail corridor</b>				51	Redbridge Town hall	High road, Ilford
24	Wenn stage school	IG3BBY		<b>CHP SITES</b>		
25	Goodmans health club	Goodmayes road IG39UN		53	Fulwell cross swimming pool	
26	Maytime Montessori Nursery school	IG38XB				
27	Eastcourt independent school	IG3BUW				











## Appendix D.2: Heat Mapping Process Flow Diagram






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## Appendix D.3: List of Stakeholders for Heat Mapping Study

### Heat Mapping Study: List of Stakeholders

<p>Contact 1: Phone call on 18/3/10 by PN, email addresses and contact names were obtained                      Contact 2: Letters were sent out by post to Stakeholders on 25/3/10                      Contact 3: Emails sent out to Stakeholders on 25/3/10                      Contact 4: Phone calls on 7/4/10 and 8/4/10 with follow up emails on 8/4/10                      Contact 5: Site visit by Adam Hickman on 14/4/10 &amp; 15/4/10 followed by phone calls by PN on 15/4/10</p> <p><b>Summary of Actions:</b></p>									
Name	Address	Type of establishment	Phone	Email	Responses to Phone call on 7/4/10 by Priti Nigam	Responses to Site visits on 14/4/10 and 15/4/10 by Adam Hickman	Responses to follow up phone calls by Priti Nigam on 15/4/10	Number of floors based on Streetview	Pictures
<b>Ilford</b>									
1	The Manager, Thamesview	Flat 66 Axon place centreway apartments Ilford IG11NB			No telephone number was found therefore telephone contact was not established. Letter has been sent by post to the Manager of the premises. Buildings appears to have 9 stories <b>ACTION:</b> Redbridge Council to establish contact locally			9	
2	City view				No telephone number or postal address were found therefore contact was not established. Buildings appears to have 11 stories based on Streetview <b>ACTION:</b> Redbridge Council to establish contact locally			11	
3	Spectrum tower				No telephone number or postal address were found therefore contact was not established. Buildings appears to have 11 stories based on Streetview <b>ACTION:</b> Redbridge Council to establish contact locally			11	
4	The Manager, Redbridge foyer	Flat 1 Sylvan road Ilford			No telephone number or postal address were found therefore contact was not established. Building appears to have 6 floors based on Streetview <b>ACTION:</b> Redbridge Council to establish contact locally	I was not able to speak to anyone who could complete the spreadsheet. It was suggested to speak to George Anastasi (020 8514 1952), however George is not available until tomorrow or Monday.		6	
5	Woodlands hotel	34-36 Woodlands road, Ilford IG11JJ	020 8478 5445		The telephone number listed on the website is incorrect therefore contact has only been established through letter sent by post. Streetview illustrates that the hotel has approximately 10-20 rooms and therefore a higher heat demand than the Council's average 2-3 bed housing stock. <b>ACTION:</b> Redbridge Council to establish contact locally			2	
6	Grosvenor hotel	Grosvenor road, Redbridge IG11LB	02089244142		The telephone number listed on the website is incorrect therefore contact has only been established through letter sent by post. No picture was found on Streetview <b>ACTION:</b> Redbridge Council to establish contact locally, but this is a low priority building as it is likely the establishment is no longer in existence.				NO picture found
7	Ferndale hotel;	13 Mansfield road, Ilford IG13BA	020 8478 3625		The telephone number listed on the website is incorrect therefore contact has only been established through letter sent by post. Streetview illustrates that the hotel has approximately 10-20 rooms and therefore a higher heat demand than the Council's average 2-3 bed housing stock. <b>ACTION:</b> Redbridge Council to establish contact locally	No answer when I knocked. The telephone number you have (which you mention is not correct) was the same number above the hotel door.		2	
8	Mr. Deep Banks hotel	7 Park Avenue Ilford, Essex IG1 4RS	02085542515	<a href="mailto:info@bankshotel.com">info@bankshotel.com</a>	Contact was not established with Mr Deep despite repeated calls, therefore it is presumed that he is not interested in the study. Contact was established via email and by post but no response was received. Streetview illustrates that the hotel has approximately 10-15 rooms and therefore a higher heat demand than the Council's average 2-3 bed housing stock. <b>ACTION:</b> Redbridge Council to establish contact locally	Seemed interested and I went back twice but the relevant person to complete the form (the Manager) was unavailable.		2	
9	Ursuline high school	Morland Road Ilford IG1 4JU	020 8554 1995		No telephone contact was established despite repeated calls as the school appeared to be closed for the Easter break. Building appears to have 2 stories based on Streetview <b>ACTION:</b> Redbridge Council to establish contact locally			2	






### Heat Mapping Study: List of Stakeholders

<p>Contact 1: Phone call on 18/3/10 by PN, email addresses and contact names were obtained                      Contact 2: Letters were sent out by post to Stakeholders on 25/3/10                      Contact 3: Emails sent out to Stakeholders on 25/3/10                      Contact 4: Phone calls on 7/4/10 and 8/4/10 with follow up emails on 8/4/10                      Contact 5: Site visit by Adam Hickman on 14/4/10 &amp; 15/4/10 followed by phone calls by PN on 15/4/10</p> <p><b>Summary of Actions:</b></p>										
	Name	Address	Type of establishment	Phone	Email	Responses to Phone call on 7/4/10 by Priti Nigam	Responses to Site visits on 14/4/10 and 15/4/10 by Adam Hickman	Responses to follow up phone calls by Priti Nigam on 15/4/10	Number of floors based on Streetview	Pictures
10	G Mussenden Park school for girls	20-22 Park Avenue Ilford IG1 4RS	Educational	020 8554 2466	gmussenden@parkschool.org.uk	Ms Mussenden had confirmed on 25/3/10 that she would be happy to help with the study, however she would be unable to provide any information until mid April. Telephone contact could not be established on 7/4/10 despite repeated calls, therefore a message was left on the answering machine. No response was received to the email or letter sent by post. <b>ACTION:</b> Redbridge Council to establish contact locally	Not open.		2	NO picture found
11	Fitness First	261-275 High road Ilford IG11NJ	Sports/leisure	020 8514 7666, 01202845000, <b>01202845920</b>	nickdent@fitnessfirst.com	Nick Dent at the head office was contacted via telephone and a follow up email was sent on 8/4/10 with details of the heat mapping letter. Nick has confirmed that he will try and send information over to SW by week ending 16/4/10. Nick was contacted again on 14/4/10, but he was not available. A message was left for him on his answering machine.			1-2	
12	LBR Town hall	255 - 259 High Road, Ilford, Essex, IG1 1NN 1 Albert road	Council Owned			Information for this premises has already been provided to SW by the Council <b>ACTION:</b> SW to consolidate data, no action from Redbridge Council				
13	The Manager	Oakfield lodge, Ilford IG11HJ	Council owned adult care home	020 8708 9221		Information for this premises has already been provided to SW by the Council <b>ACTION:</b> SW to consolidate data, no action from Redbridge Council				
14	The Manager	1 fern ways, Ilford IG12EL	Council owned adult care home	020 8708 9401		Information for this premises has already been provided to SW by the Council <b>ACTION:</b> SW to consolidate data, no action from Redbridge Council				
15	Cleveland junior school	IG11EN	Council Owned	020 8478 3601		Information for this premises has already been provided to SW by the Council <b>ACTION:</b> SW to consolidate data, no action from Redbridge Council				
16	Cleveland junior and infant school	IG11EN	Council owned			Information for this premises has already been provided to SW by the Council <b>ACTION:</b> SW to consolidate data, no action from Redbridge Council				
17	Mr Ikram, Cranbrook hotel	22-24 Coventry Road Ilford, Essex IG1 4QR	Hotel	02085546544	manager@expresslodging.co.uk	Contact was not established with Mr Ikram despite repeated calls, therefore it is presumed that he is not interested in the study. Contact was established via email and by post but no response was received. Streetview illustrates that the hotel has approximately 10-20 rooms and therefore a higher heat demand than the Council's average 2-3 bed housing stock. <b>ACTION:</b> Redbridge Council to establish contact locally	The Manager does not have time at the moment to be part of the study.		2	
18	The Manager York hotel	8 York road, Ilford IG13AD	Hotel	02085141166	manager@expresslodging.co.uk	Shama at the hotel confirmed that Mr Ikram does not wish to participate in the study, as the hotel is closing down for refurbishment and will only reopen in 2-3 years. Streetview illustrates that the hotel has approximately 10 rooms and therefore a higher heat demand than the Council's average 2-3 bed housing stock. <b>ACTION:</b> Redbridge Council to establish contact locally, but this is a low priority building as there appear to be approximately 10 rooms.	It seems as though the Manager of this hotel is the same as the Cranbrook Hotel, and therefore insufficient time to participate in the study.		2	
19	Harry Cedars hotel	1 Argyle Road Ilford IG1 3BH	Hotel	020 8478 2046, 02085543481		Contact was not established with Mr Deepu despite repeated calls, therefore it is presumed that he is not interested in the study. Contact was established via email and by post but no response was received. Streetview illustrates that the hotel has approximately 10-20 rooms and therefore a higher heat demand than the Council's average 2-3 bed housing stock. <b>ACTION:</b> Redbridge Council to establish contact locally			2	







### Heat Mapping Study: List of Stakeholders

Contact 1: Phone call on 18/3/10 by PN, email addresses and contact names were obtained  
 Contact 2: Letters were sent out by post to Stakeholders on 25/3/10  
 Contact 3: Emails sent out to Stakeholders on 25/3/10  
 Contact 4: Phone calls on 7/4/10 and 8/4/10 with follow up emails on 8/4/10  
 Contact 5: Site visit by Adam Hickman on 14/4/10 & 15/4/10 followed by phone calls by PN on 15/4/10




**Summary of Actions:**

Name	Address	Type of establishment	Phone	Email	Responses to Phone call on 7/4/10 by Priti Nigam	Responses to Site visits on 14/4/10 and 15/4/10 by Adam Hickman	Responses to follow up phone calls by Priti Nigam on 15/4/10	Number of floors based on Streetview	Pictures
Mr Mann 20 Tudor rose hotel	20 Argyle road, Ilford IG13BQ	Hotel	020 8478 7472	oakwoodlodge@btinternet.com	The Manager (Irene Luton) has confirmed that the energy bills are in the possession of the accountant and that these cannot be obtained for the study. Streetview illustrates that the hotel has approximately 10-20 rooms and therefore a higher heat demand than the Council's average 2-3 bed housing stock. <b>ACTION:</b> No action as energy bills are not available			2	
21 Balfour hotel	31 Balfour Road Ilford, Essex IG1 4HP	Hotel	02085143238		Telephone conversation with the Proprietor on 7/4/10 confirmed that he does not wish to take part in the study. Streetview illustrates that the hotel has approximately 5-7 rooms and is therefore unlikely to have a significant heat demand <b>ACTION:</b> No action			2	
22 Montessori School	7 Balfour Road, Ilford, IG1 4HP	Educational	020 8553 1886	info@balfournursery.com	Telephone conversation with the receptionist confirmed that Hovinder Dhaliwal, who is in charge of energy bills and energy management of the premises, is on holiday until 27th April, and no one else is able to help in his absence. <b>ACTION:</b> No action as energy bills are not available within the timeframe of the Study				NO picture found
Ryan 23 New Physique fitness centre	233 Ilford lane Ilford IG12RZ	Sports/leisure	020 8553 5572	newphysique@btconnect.com	Telephone conversation with the proprietor's son confirmed that the proprietor is ill and will not return within the timeframe of the Study (i.e. he will only be back in May). He confirmed that the annual electricity bill was around £2000 <b>ACTION:</b> No action			2	
<b>Crossrail corridor</b>									
24 Wenn stage school	6-7 Seven Kings Rd Electric Pde, Ilford, IG38BY	Educational	020 8597 6033		No telephone contact was established despite repeated calls as the school appeared to be closed for the Easter break. <b>ACTION:</b> Redbridge Council to establish contact locally				Unsure about picture, seems quite big but hard to tell if building is a church or a school
25 Goodmans health club	16 Goodmayes road IG39UN	Sports/leisure	020 8599 8276		No telephone contact was established despite repeated calls, and no picture was found on Streetview <b>ACTION:</b> Redbridge Council to establish contact locally				NO picture found
Mrs J Mahoney 26 Maytime Montessori Nursery school	2 Eastwood Road, Ilford, IG3 8XB	Educational	020 8599 3744	maytimenursery@yahoo.co.uk	Mrs Mahoney, who is responsible for energy bills, is out of town until 16/4/10 and no one else can provide assistance with the Study. Natasha, who answered the phone, confirmed that she would chase the matter with Mrs Mahoney upon her return. <b>ACTION:</b> No action at present			2	
Mrs Bishop 27 Eastcourt independent school	1-5 Eastwood Road Ilford, Essex IG3 8UW	Educational	020 8590 5472	admin@eastcourt.org.uk	Jane Forbes has confirmed that she will attempt to provide SW with some information, but in the absence of Mrs Bishop, who will not return until 23/4/10, she cannot promise us energy bills. <b>ACTION:</b> No action at present			2	
<b>Gants Hill</b>									

### Heat Mapping Study: List of Stakeholders

<p>Contact 1: Phone call on 18/3/10 by PN, email addresses and contact names were obtained                      Contact 2: Letters were sent out by post to Stakeholders on 25/3/10                      Contact 3: Emails sent out to Stakeholders on 25/3/10                      Contact 4: Phone calls on 7/4/10 and 8/4/10 with follow up emails on 8/4/10                      Contact 5: Site visit by Adam Hickman on 14/4/10 &amp; 15/4/10 followed by phone calls by PN on 15/4/10</p> <p><b>Summary of Actions:</b></p>										
	Name	Address	Type of establishment	Phone	Email	Responses to Phone call on 7/4/10 by Priti Nigam	Responses to Site visits on 14/4/10 and 15/4/10 by Adam Hickman	Responses to follow up phone calls by Priti Nigam on 15/4/10	Number of floors based on Streetview	Pictures
28	The Manager St Georgio hotel Ltd	454 Cranbrook Road Gants Hill, Ilford, Essex IG2 6LL	Hotel		info@stgeorgio.co.uk	A telephone call was received by the Manager at St Georgio hotel confirming that they would provide us with the required information. However, no response has been received and no telephone contact could be established. This is a fairly big hotel as viewed on Streetview. <b>ACTION:</b> Redbridge Council to establish contact locally	George, one of the Managers. They seem happy to participate and would like a phone call to run through completing the form over the phone. I did leave a form, but due to timeframes I would follow up with a phone call.	Christina (The Manager) has confirmed that she will send SW the data by 20/4/10	2 plus attic	This is a big hotel as viewed on Streetview. Minimum 127 rooms on street front, attic rooms included
29	Valentines high school	IG26HX	Educational	020 8554 3608		No telephone contact was established despite repeated calls as the school appeared to be closed for the Easter break. <b>ACTION:</b> Redbridge Council to establish contact locally			2	
30	Ilford cricket school	Beehive lane, IG45DR	Educational	020 8550 0041		Telephone contact was established after repeated calls, and PN was advised to contact Paul Shukla, the Manager, by email. He was not available for a telephone conversation. Email was sent on 8/4/10. <b>ACTION:</b> Redbridge Council to establish contact locally			1	NO picture found
31	The Manager - Peverell Retirement Home heather house	Flat 1, 128 beehive lane, IG45EF	Multi residential	0845 880 5560	homeheatherhouse.10234@peverell.co.uk	Contact was established with the Manager, Angela Smith, who will try and send SW information by Monday <b>ACTION:</b> No action at present			3	
32	The Manager - Peverell Retirement	1 BEEHIVE lane, Limewood court, IG45EL	Multi residential	0845 880 5560		Contact was established with the Manager, Angela Smith, who will try and send SW information by Monday <b>ACTION:</b> No action at present			2	
33	The Manager Gabrielle house 332-336	45 Perth road IG26FF	Multi residential - George Wimpey developers	012 7723 6800		No response	The office was closed, but I did get a phone number - 0845 688 1553. This is a very large development so definitely worth calling.	Two attempts to call George Wimpy Developments were made, relevant person could not be located.	10	
34	The Manager, City gate house 399-425	Fairview New Homes - developers Flat 81, Eastern avenue IG26LQ	Multi residential	020 8366 1271	kirk.achibald@fnhlt.co.uk	Kirk Archibald has confirmed that the building does not have a concierge, and it includes a refurbished block and a new block. Most units have individual boilers, and since units are billed separately, he has suggested we contact energy providers, or contact each occupant individually to obtain energy bills. He will provide us with SAP calculations for the dwellings which will provide an indication of floor areas and number of units. <b>ACTION:</b> No action at present			12	
<b>Woodford</b>										
35	The Manager	113 George lane, London E181AB	Multi residential			No telephone number was found therefore telephone contact was not established. Letter has been sent by post to the Manager of the premises. <b>ACTION:</b> Redbridge Council to establish contact locally	No response			No picture found
36	The Manager- Tudorvale Properties Regency Court 89-111	Flat 1, High road, E182JT	Multi residential	0207 554 4801		No telephone contact was established as number connected to a fax machine. Letters were sent by post. <b>ACTION:</b> Redbridge Council to establish contact locally	The person to speak to is John Willis, 07908 709303, who is available to speak tomorrow morning. This is also a very large development and definitely worth following up on	John Willis is unable to assist us with any details as he does not have any knowledge of the property. He has confirmed that all bills are individualised.	5	

### Heat Mapping Study: List of Stakeholders

<p>Contact 1: Phone call on 18/3/10 by PN, email addresses and contact names were obtained                      Contact 2: Letters were sent out by post to Stakeholders on 25/3/10                      Contact 3: Emails sent out to Stakeholders on 25/3/10                      Contact 4: Phone calls on 7/4/10 and 8/4/10 with follow up emails on 8/4/10                      Contact 5: Site visit by Adam Hickman on 14/4/10 &amp; 15/4/10 followed by phone calls by PN on 15/4/10</p> <p><b>Summary of Actions:</b></p>										
	Name	Address	Type of establishment	Phone	Email	Responses to Phone call on 7/4/10 by Priti Nigam	Responses to Site visits on 14/4/10 and 15/4/10 by Adam Hickman	Responses to follow up phone calls by Priti Nigam on 15/4/10	Number of floors based on Streetview	Pictures
37	Victoria house special needs school	62-64 George Lane, South Woodford, London E18 1LW	Educational			No telephone number was found therefore telephone contact was not established. Letter has been sent by post to the Manager of the premises. <b>ACTION:</b> Redbridge Council to establish contact locally				NO picture found
38	Oakdale infant school	E181JU	Educational	020 8532 9920						
39	Oakdale junior school	E181JX	Educational	020 8989 7471		No telephone contact was established despite repeated calls as the school appeared to be closed for the Easter break. <b>ACTION:</b> Redbridge Council to establish contact locally			2	
40	Sylvia Hypoxi sports and leisure	24 High road London E182QL	Sports/leisure	0208 989 2700	info@hypoxiws.co.uk	Sylvia has confirmed that she will send us some information by 12/4/10. Sylvia was contacted again on 14/4/10, but she was away. A message was left for her <b>ACTION:</b> No action at present			2	
41	The Manager - Strettons Malford Court	Flat 12A London E182HR	Multi residential Wanstead	0208 509 4423 , 02085094435		Lenn Church, the Manager for the property has confirmed that the building has 102 units, mainly 1-2 bed, built in 1930's. No significant refurbishment has been carried out, and almost all units are heated by gas boilers, with a few units using electric heating. Since all tenants are billed separately, he could not provide any information on energy bills or on floor areas <b>ACTION:</b> No action at present				
42	The Manager Staveley Court	Flat 1 Herman Hill, E112BD	Multi residential			No telephone number was found therefore telephone contact was not established. Letter has been sent by post to the Manager of the premises. <b>ACTION:</b> Redbridge Council to establish contact locally	I could not speak to anyone but the Managers number is 020 8530 3947. This is a small development, so if there are time pressures I would prioritise others over this one.	No response to phone call.	2	No picture found, building in picture is only 2 storey
43	The Manager	1 Gardner Close E112HN	Multi residential			No telephone number was found therefore telephone contact was not established. Letter has been sent by post to the Manager of the premises. <b>ACTION:</b> Redbridge Council to establish contact locally	I spoke to the caretaker, who informed me Redbridge Homes manage this estate (Bukola Williams, 020 8708 7734). This is a large development.	No response to phone call.	5	
44	The complete Studio	15 High street, Wanstead, E112AA	Sports/leisure			No telephone number was found therefore telephone contact was not established. Letter has been sent by post to the Manager of the premises. The establishment could not be located on Streetview <b>ACTION:</b> Redbridge Council to establish contact locally	Phone number is 020 8532 2778. This is not a large sports / leisure centre, it is very small (similar size to the shops along the High Street), so if there are time pressures this is probably not a priority.	No response to phone call.	1	NO picture found
45	Wanstead Church school	Church Path London E11 2SS	Educational	020 8989 6001		No telephone contact was established despite repeated calls as the school appeared to be closed for the Easter break. <b>ACTION:</b> Redbridge Council to establish contact locally			2	
46	Treehouse Nursery school	35 Woodbine Place London E11 2RH	Educational	020 8532 2535		No telephone contact was established despite repeated calls as the school appeared to be closed for the Easter break. <b>ACTION:</b> Redbridge Council to establish contact locally				NO picture found
47	Wanstead Police Station	Spratt Hall road, E112RO	Council owned			Information for this premises has already been provided to SW by the Council <b>ACTION:</b> SW to consolidate data, no action from Redbridge Council				
48	Redbridge Town hall	High road, Ilford	Council Owned			Information for this premises has already been provided to SW by the Council <b>ACTION:</b> SW to consolidate data, no action from Redbridge Council				

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# Appendix D.4: London Heat Map Data Template

Major Heat Loads

OXS	OYS	Object ID	Name	Address	Postcode	Ownership	New Development	Typology	Heating supply	Fuel source	Fuel consumption from all assets excluding CHP (MWh/year)	Fuel consumption from CHP (MWh/year)	Gross internal floor area (m <sup>2</sup> )	Number of dwellings	Assumed thermal capacity from all assets (MWe)	CHP Installed power (MWe)	CHP Installed thermal capacity (MWe)	CO2 emissions (tCO2/year)	Year of Construction	Year of data collection	Start date	Completion date	Data Source	Confidentiality of data	
S14665	159144	1	Example Site	1 A Street, Town	W1T 4BQ	Private	No	commercial (> 9,99	Assets including CHP	Natural gas	2151.013818	0	0	0.00	0.640162688	0.00	0.00	628.466		2009				Example	Yes
<b>TOTAL</b>											<b>2,151</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.64</b>	<b>0.00</b>	<b>0.00</b>	<b>628</b>	-	-	-	-	-	-	

Manual input (wording)
Select from drop-down list
Mandatory input
Desirable input

## Appendix D.5: List of Stakeholders for Heat Mapping Workshop

Name	Organisation	Attended
Karl Walker	Scott Wilson	Yes
James Eland	Scott Wilson	Yes
Sean Rendall	Thameswey	Yes
Thomas Briault	LDA	Yes
John Mitchinson	LBR, Property Services	Yes
Brian Hoy	LBR, Property Services	Yes
Adam Hickman	LBR, P&R	Yes
David Hughes	LBR, P&R	Yes
Sean O'Sullivan (Capital Programme Manager)	Redbridge PCT	Yes
Jandi Pearman	BHR Hospitals	Yes
John O'Keefe	Education	No
John Pearce	LBR, P&R	Yes
Bob Watling	Redbridge Homes	No
Kevin O'Brien	LBR, Culture, Sport & Community Learning	Yes
John Start	LBR, Community Care	No

**List of Stakeholders for Heat Mapping Workshop**

## APPENDIX E: Hydropower potential in Redbridge

Hydroelectric schemes are classified into three major categories based on their installed capacities; large hydro; medium hydro; and small hydro schemes. Small hydro schemes are further categorised as mini-, micro- and pico-hydro schemes.

The figure below illustrates the classification of hydropower schemes widely followed in UK.

Scale Description	Installed Capacity
Large hydro	50 MW and above
Medium hydro	5-50 MW
Small hydro*	Below 5 MW
Mini-hydro	500 kW-5 MW
Micro-hydro	500 kW -10 kW
Pico-hydro	Below 10 kW

*\*Small hydro further categorised into mini-, micro- and pico-hydro.*

### Flow data within Redbridge

The Environment Agency measures the flow rate in most significant rivers and streams in UK, and data from around 1,300 gauging stations can be obtained from 'Centre for Ecology & Hydrology' (CEH) in Wallingford or from CEH's web pages. Redbridge falls under the Environmental Agency Thames region.

Based on the above list, SW has identified a single gauge station within LBR boundaries, that for the river Roding. The identified FDC of the river Roding at Redbridge is illustrated below.

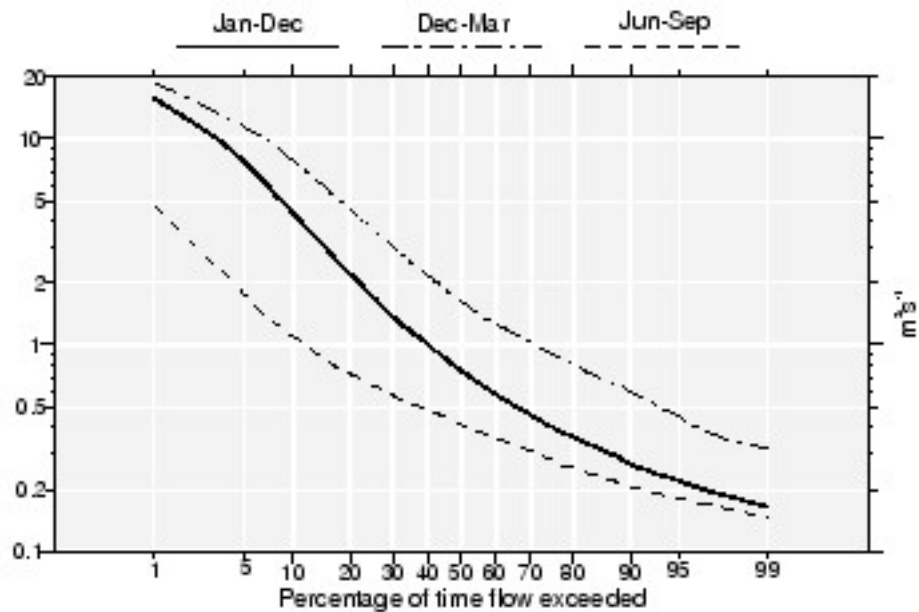


Figure 0-1: Flow Distribution Curve- River Roding at Redbridge (Gauge Station 37001) <sup>101</sup>

### Compensation Flow

An uncontrolled abstraction of water from rivers and streams for power generation purposes may lead to sections of the rivers/streams suffering from dry conditions. To avoid such conditions, a percentage of the river flow will need to by-pass the hydropower scheme for environmental reasons. In abstraction schemes, where water is diverted from the main course of the river, this percentage flow is termed as compensation flow. Compensation flow is needed to maintain the ecology and aesthetic appearance of the river/stream in the depleted stretch. Compensation flow is also termed as reserved flow, residual flow or minimum environmental flow, depending on the country and relevant authority. Guide to UK mini hydro developments suggests that the amount of compensation flow will depend on site-specific concerns, but a reasonable first estimate will lie between the  $Q_{90}$  and  $Q_{99}$  values of river flow. In the above example (Redbridge gauge station), the compensation flow could be circa  $0.3 \text{ m}^3/\text{s}$  ( $Q_{90}$  flow from FDC above), however for any hydropower development this should be agreed with the Environmental Agency.

### Available flow

British hydro power association's guide to mini hydro installation states that;

*It is unlikely that schemes using significantly more than the mean river flow ( $Q_{mean}$ ) will be either environmentally acceptable or economically attractive. Therefore the turbine design flow for a run-of river scheme (a scheme operating with no appreciable water storage) will not normally be greater than  $Q_{mean}$ . The exception would be a scheme specifically designed to capture very high winter flows, which is very rare in mini-hydro applications.*

<sup>101</sup> <http://www.nwl.ac.uk/ih/nrfa/webdata/037001/g.html>

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The mean flow at Redbridge is  $1.3 \text{ m}^3/\text{s}$  and the allowed compensation flow has been taken as  $0.3 \text{ m}^3/\text{s}$  ( $Q_{90}$  value). Although the example figures above can be used to illustrate the generic level of hydro power potential within LB Redbridge, different project locations will have different flow conditions based on several factors such as evaporation rate, soil conditions, catchment area, upstream water abductions and diversions, etc.

## Head

Considering the geography of Redbridge, the maximum feasible head for a site appears to be in the range of 0.5 m. The lower limit of head is often restricted by turbines that are available in the hydropower industry. Until recently it was thought that schemes with less than 3m head were not economically viable and any sites below 3m head were often called 'ultra low head'. However propeller and Kaplan type turbines now offer minimum head only up to 1m.

These results indicate that there neither the flow nor the head conditions are appropriate for hydropower within Redbridge

## APPENDIX F: Development Viability Modelling Assumptions

### a. Market Values

	Detached	Semi	Terraced	Flats
Iford Town Centre (IG1 with 10% market value uplift)	£545,943	£416,695	£291,938	£195,384
Gants Hill (IG2 with 10% market value uplift)	£352,000	£356,074	£295,247	£197,915
Crossrail Corridor (IG3 with 10% market value uplift)	£565,522	£456,390	£324,034	£181,823
Wanstead (E11 no uplift)	£576,505	£459,062	£356,130	£241,113
East Redbridge (RM6 no uplift)	£663,713	£390,123	£300,994	£228,281

1. Derived from [www.rightmove.co.uk](http://www.rightmove.co.uk)

2. Based on last two years actual sales values, accessed April 2010

3. The market uplift value is based upon an estimate of the additional value that new build properties will attract in comparison with the general market.

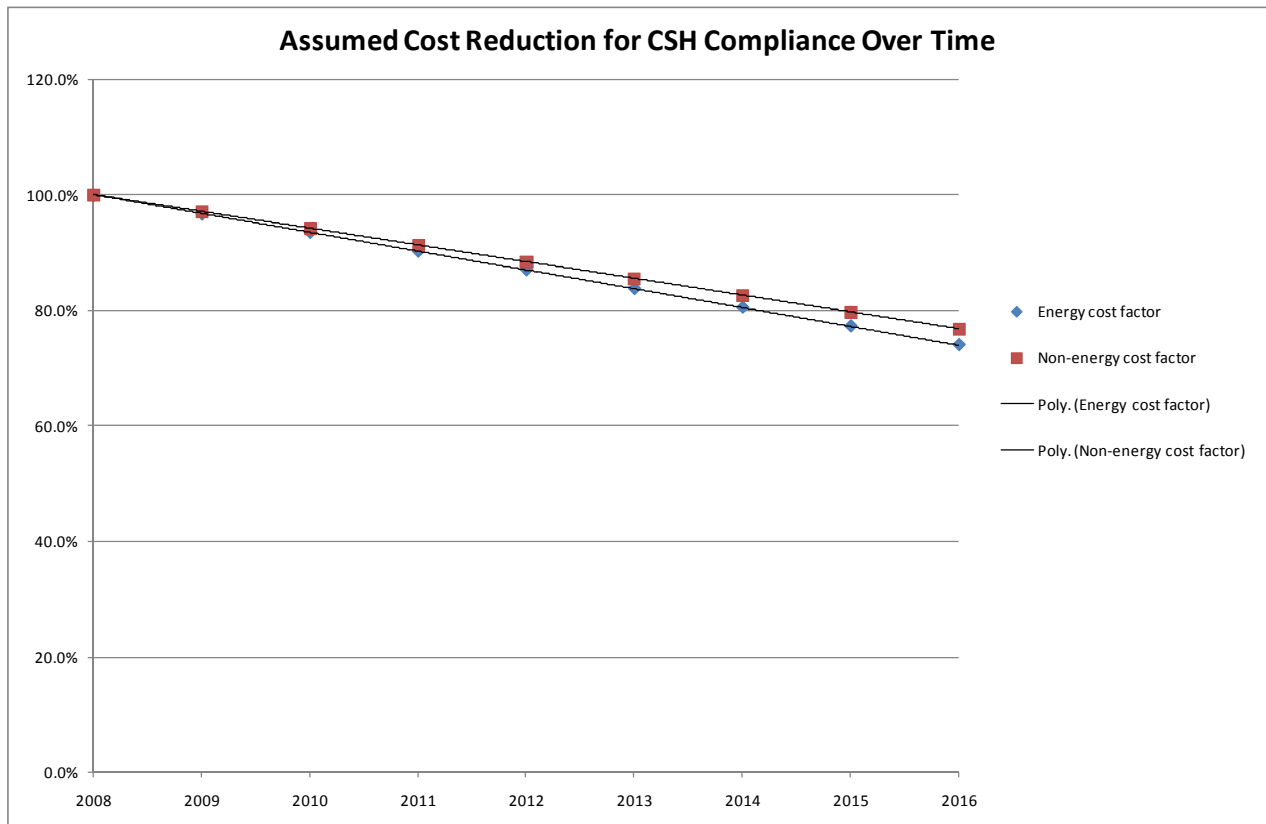
### b. Development Mixes / Scenarios\*

Development Types		Density (Dwell per ha)	Detached	Terraced	End terrace / Semi	Flat
1	Small Scale	30	45%	33%	22%	0%
2	City Infill	180	0%	0%	0%	100%
3	Market Town	50	25%	27%	21%	27%
4	Urban Regeneration	160	4%	2%	1%	93%

\*Derived from Cyril Sweett analysis of the cost of the Code for Sustainable Homes, 2008

### c. Code for Sustainable Homes Cost Uplift

Based on medium case in Tables 4.1, 4.2, 4.3 of Cost Analysis of the CSH, 2008, and projections for 2016 costs. The following curve illustrates the anticipated reduction in CSH compliance costs over time:



#### d. Construction Costs

	Construction cost £ / m <sup>2</sup>
Detached	£930
Semi	£1,067
Terraces	£1,067
Flats	£1,334

The cost of flat construction has been assumed to increase when more than 100 units are being constructed due to complications in design. The increased cost is assumed to be £1,545 per m<sup>2</sup>.

#### e. External Works and Services

The following assumptions have been made:

	% of construction cost element	Fixed cost element (£)

External works and services	<b>9.5%</b>	<b>20,000</b>
Utilities	5.4%	5,000

#### f. Fees

The following cost assumptions have been adopted for design development fees (e.g. architectural, utilities, mechanical design, electrical design, public health design, fire safety etc.)

Fees – 10% of construction and utilities cost, plus a fixed element of £50,000

#### g. Finance / Acquisition Costs

Finance costs	10%
Marketing costs	3%
Disposal costs	2%
Contractor's return	6%

These Finance / acquisition cost levels are all expressed as percentages of total construction costs including external works and services and fees.

#### h. Planning – related / Developer Contribution Costs

	<b>per dwelling basis</b>
Developer Contribution	£4,968
CSH Enhancements (excluding energy, e.g. water, materials, waste etc.)	£341
CSH Energy Enhancements	£2,530

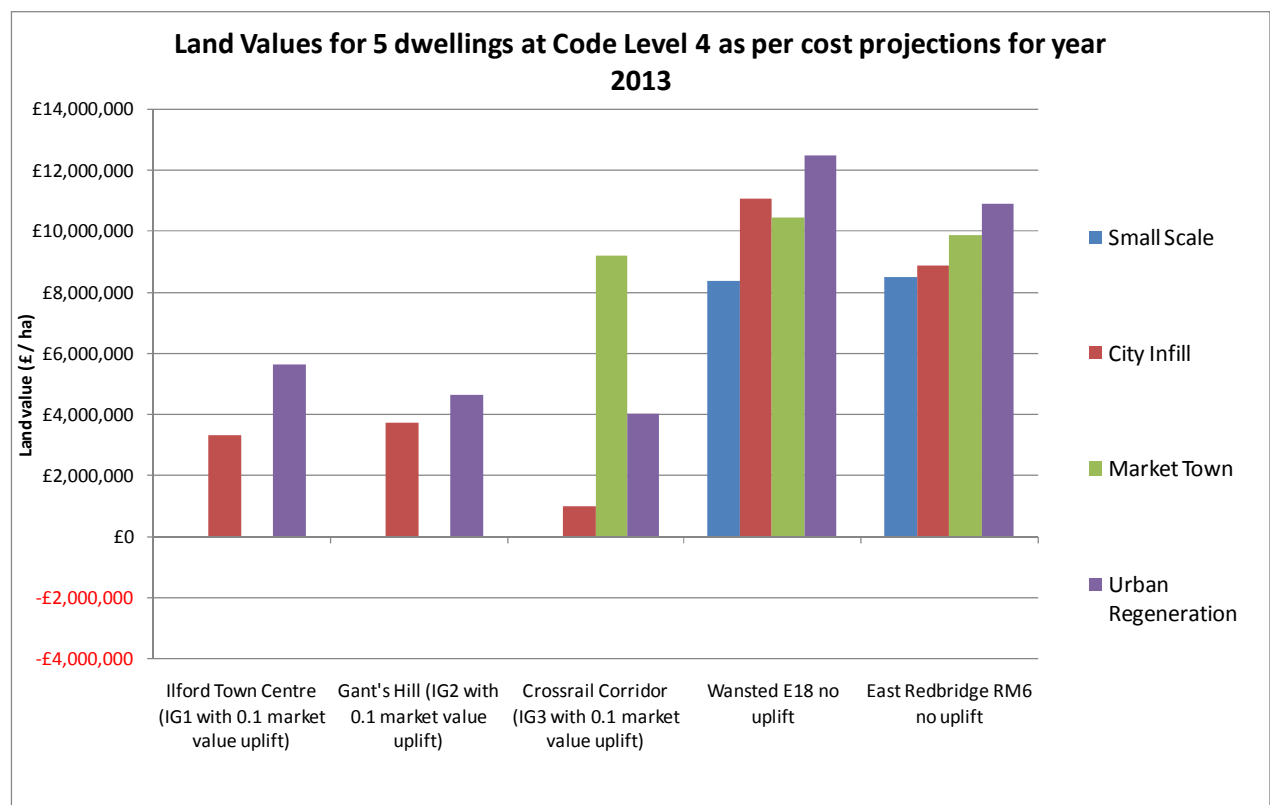
#### i. Developer Margin

A gross development profit of 15% has been assumed, on the total cost of development including fees, planning costs, finance / acquisition costs and external works and services.

## Appendix G: Viability Testing Results for 5 dwelling and 100 dwelling scenarios

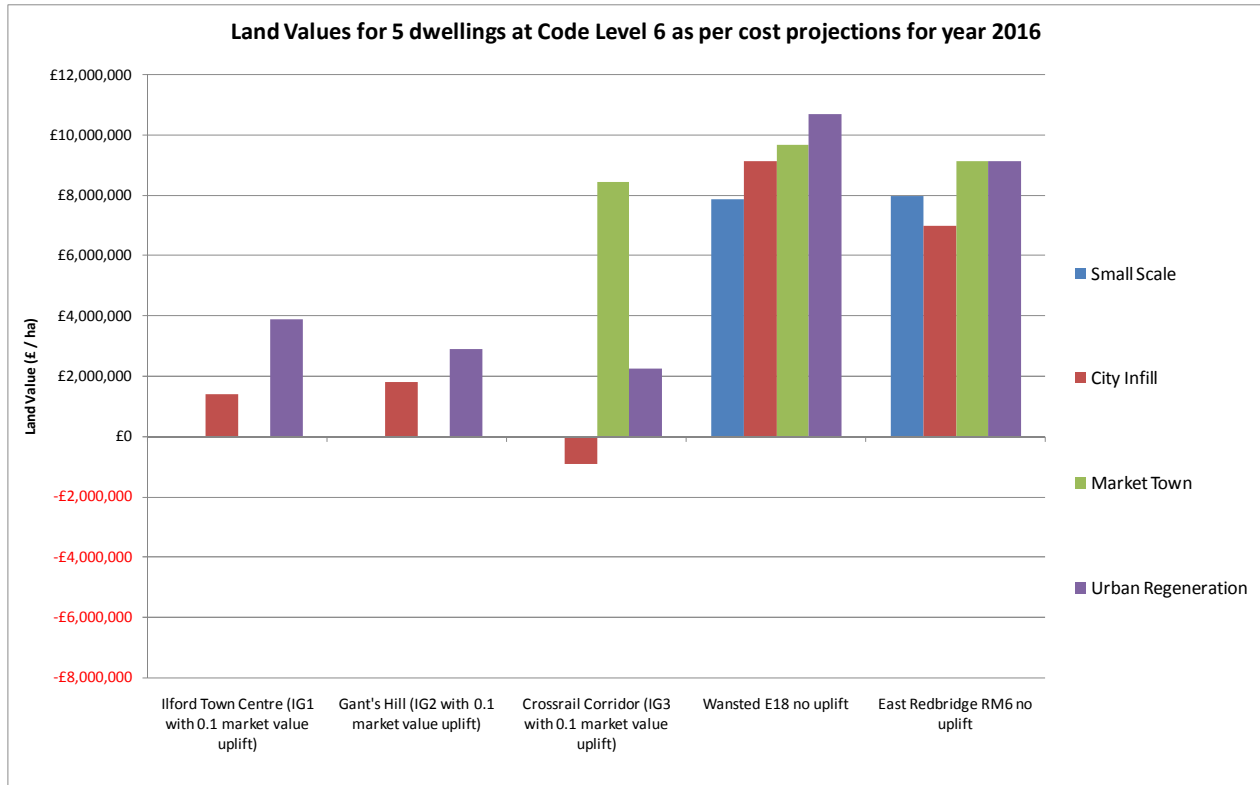
### 1.1 Development Viability – 5 Dwellings

#### 1.1.1 Policy Option 1 (Government Standards) – 5 Dwellings



**Figure 0-1: Land value as per cost projections for Code Level 4 in 2013 (Policy Option 1)**

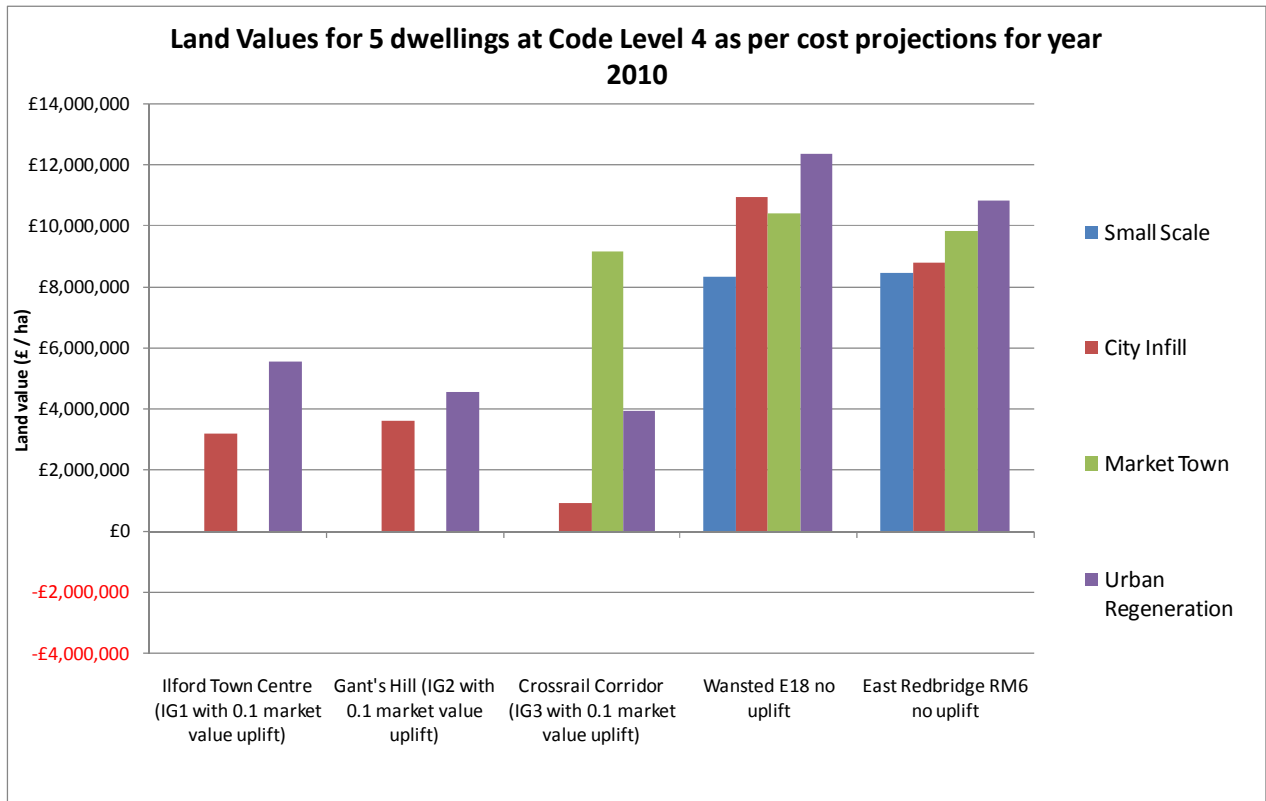
**Implementation of Code 6 in 2016 (Policy Option 1 – Government Standards) – 5 dwellings.**



**Figure 0-2: Land Values as per Government Standards (Policy Option 1) – Code 6 in 2016 - 5 dwellings**

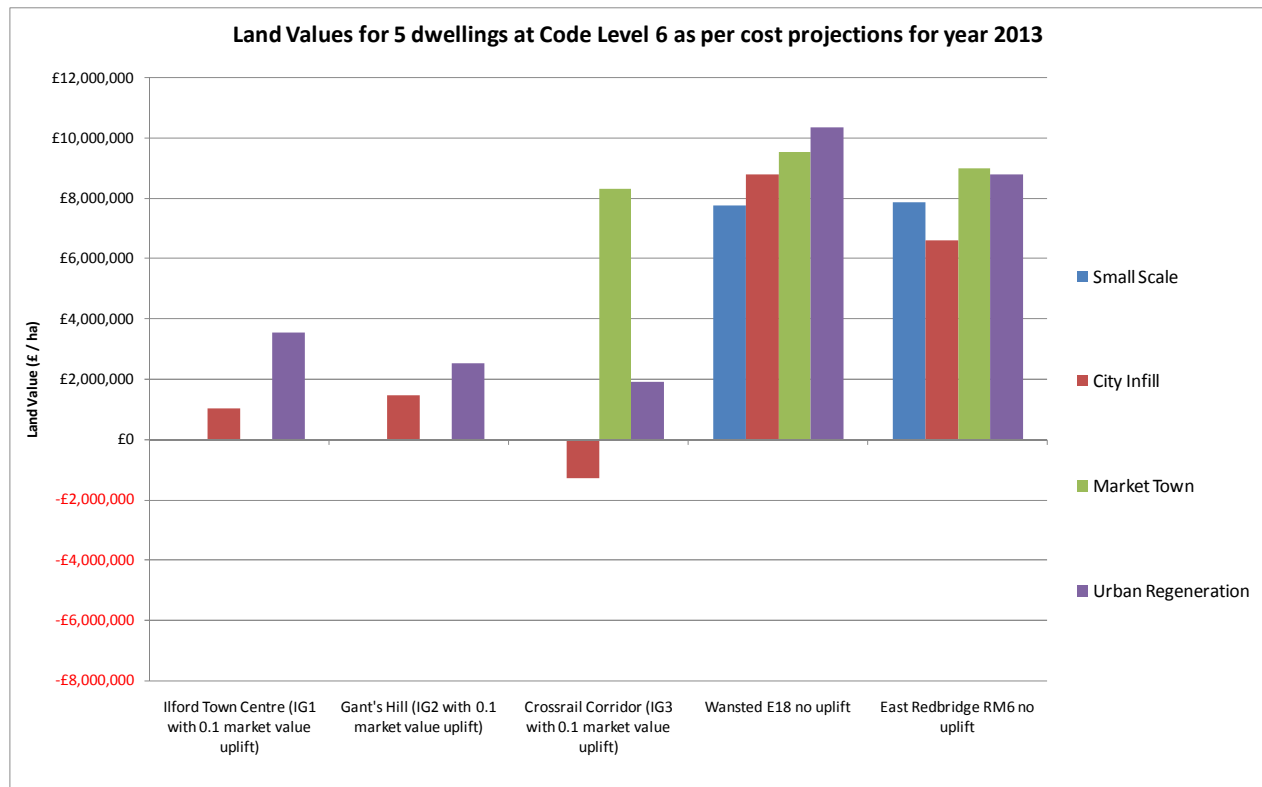
### 1.1.2 Policy Option 2 (Accelerated Implementation) – 5 Dwellings

**Acceleration of Standards to Code 4 in 2010 (Policy Option 2 – Accelerated Implementation) - 5 dwellings.**



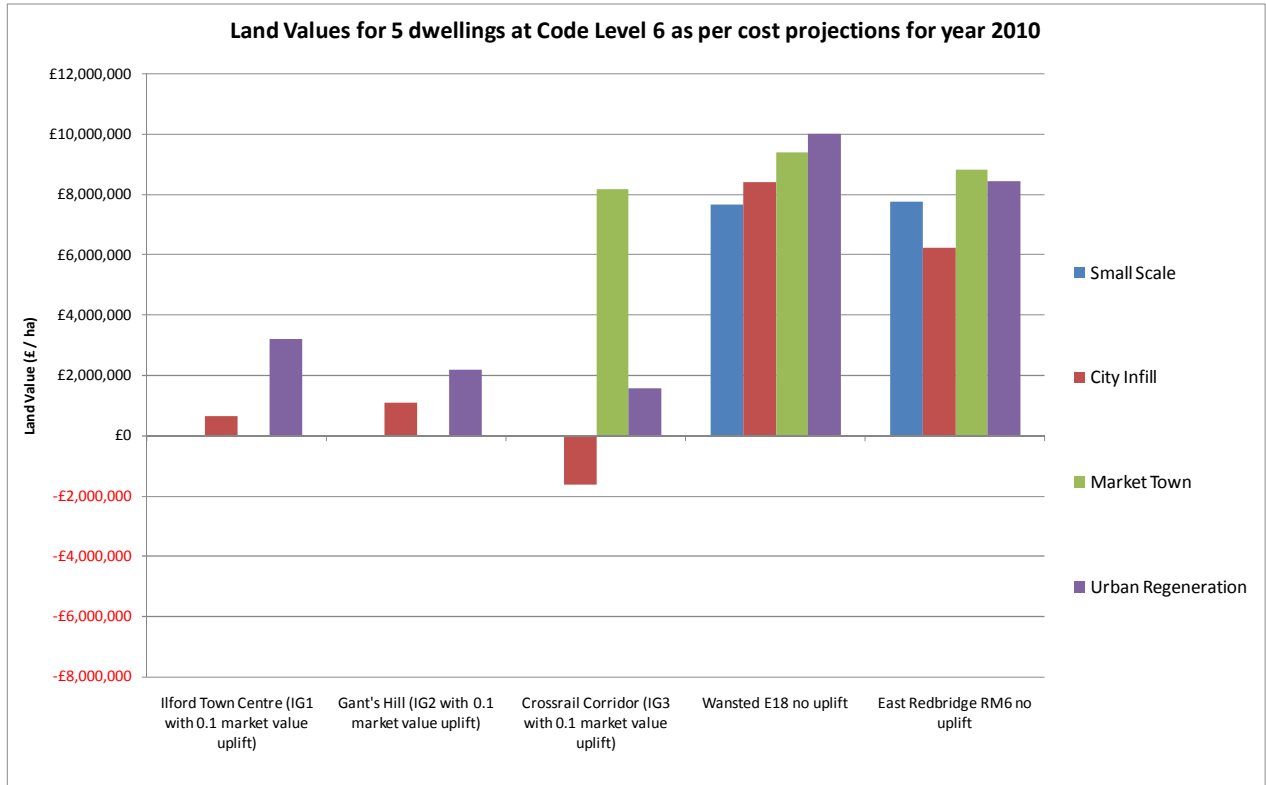
**Figure 0-3 Land value as per cost projections for Code Level 4 in 2010 (Option 2) – 5 dwellings**

### Acceleration of Standards to Cost 6 in 2013 (Policy Option 2)



**Figure 0-4 Land Values of Accelerated CSH Implementation (Code 6 in 2013) – 5 dwellings**

### 1.1.3 Policy Option 3 (Aspirational Standards) – 5 dwellings

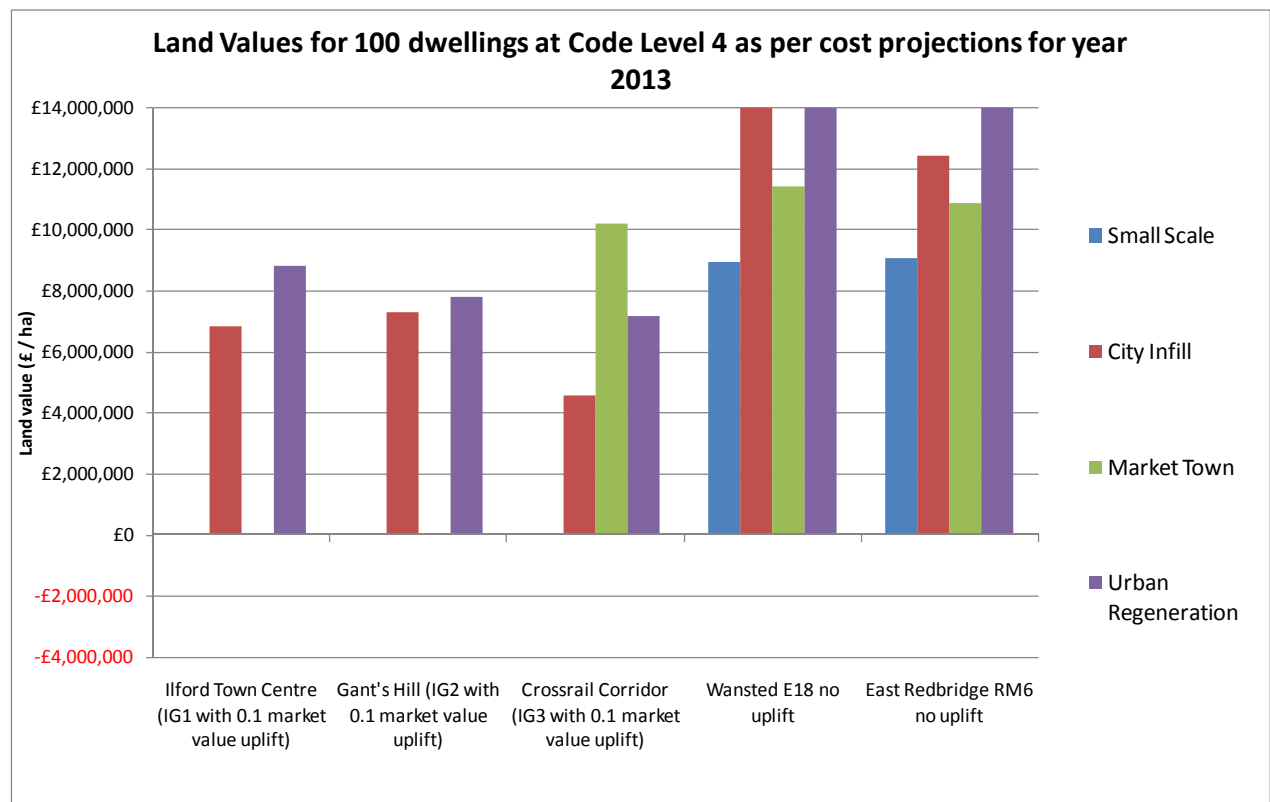


**Figure 0-5 Land Values of Aspirational CSH Implementation (Code 6 in 2010) - 5 dwellings**

## 1.2 Development Viability – 100 Dwellings

### 1.2.1 Policy Option 1 (Government Standards) – 100 Dwellings

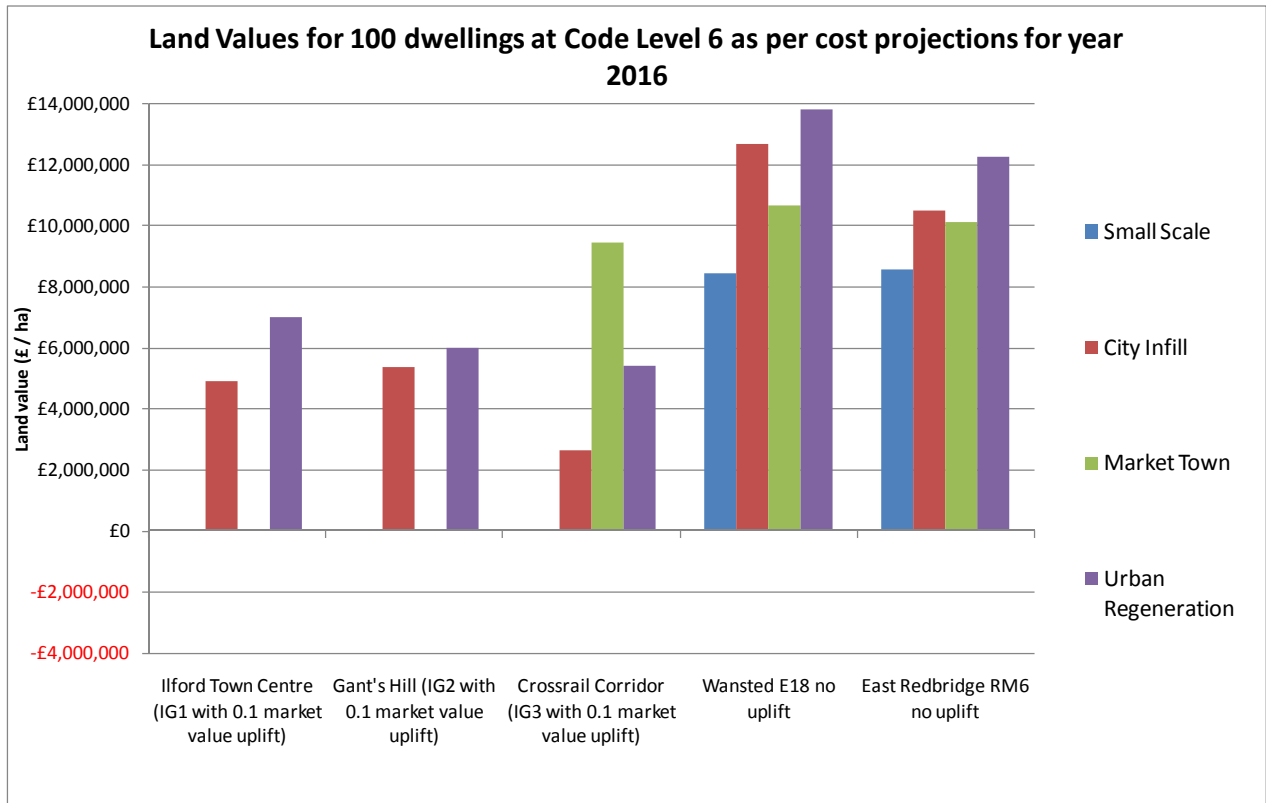
#### Implementation of Code 4 in 2013 (Policy Option 1 – Government Standards) – 100 dwellings



**Figure 0-6 Land value as per cost projections for Code Level 4 in 2013 (Policy Option 1) – 100 dwellings**

The graph illustrates that only the construction cost for flats increases above 100 units, and only one of the development types is all flats – therefore only this development type is affected.

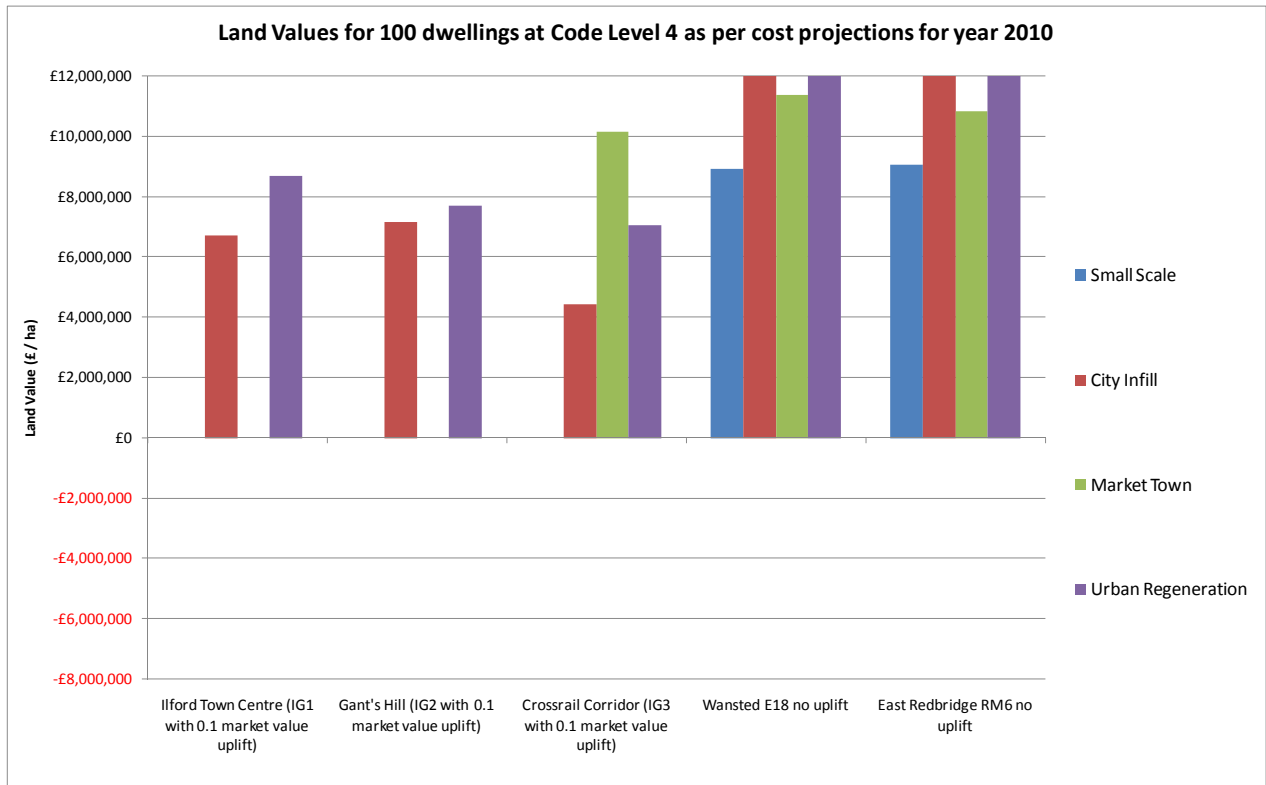
**Implementation of Code 6 in 2016 (Policy Option 1 – Government Standards) – 100 dwellings.**



**Figure 0-7 Land Values as per Government Standards (Policy Option 1) – Code 6 in 2016 - 100 dwellings**

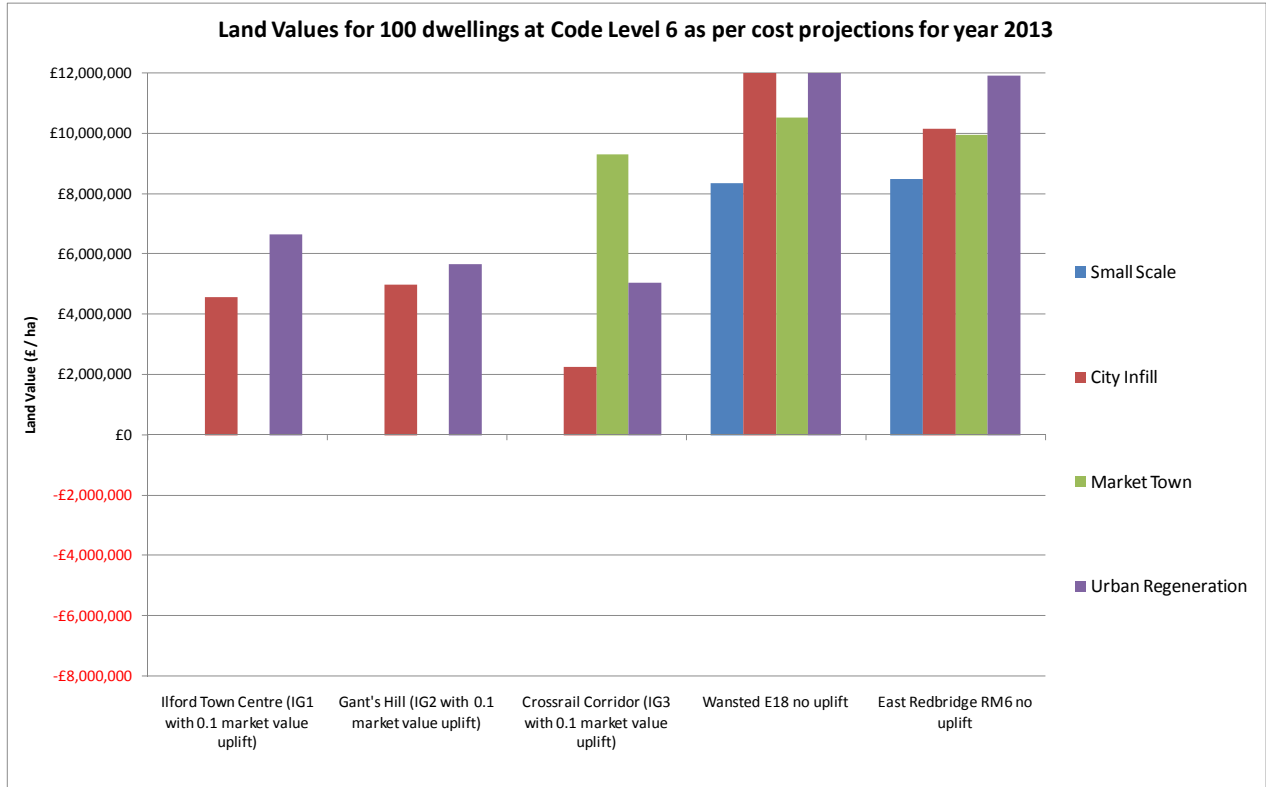
## 1.2.2 Policy Option 2 (Accelerated Implementation) – 100 Dwellings

### Acceleration of Standards to Code 4 in 2010 (Policy Option 2 – Accelerated Implementation) - 100 dwellings.



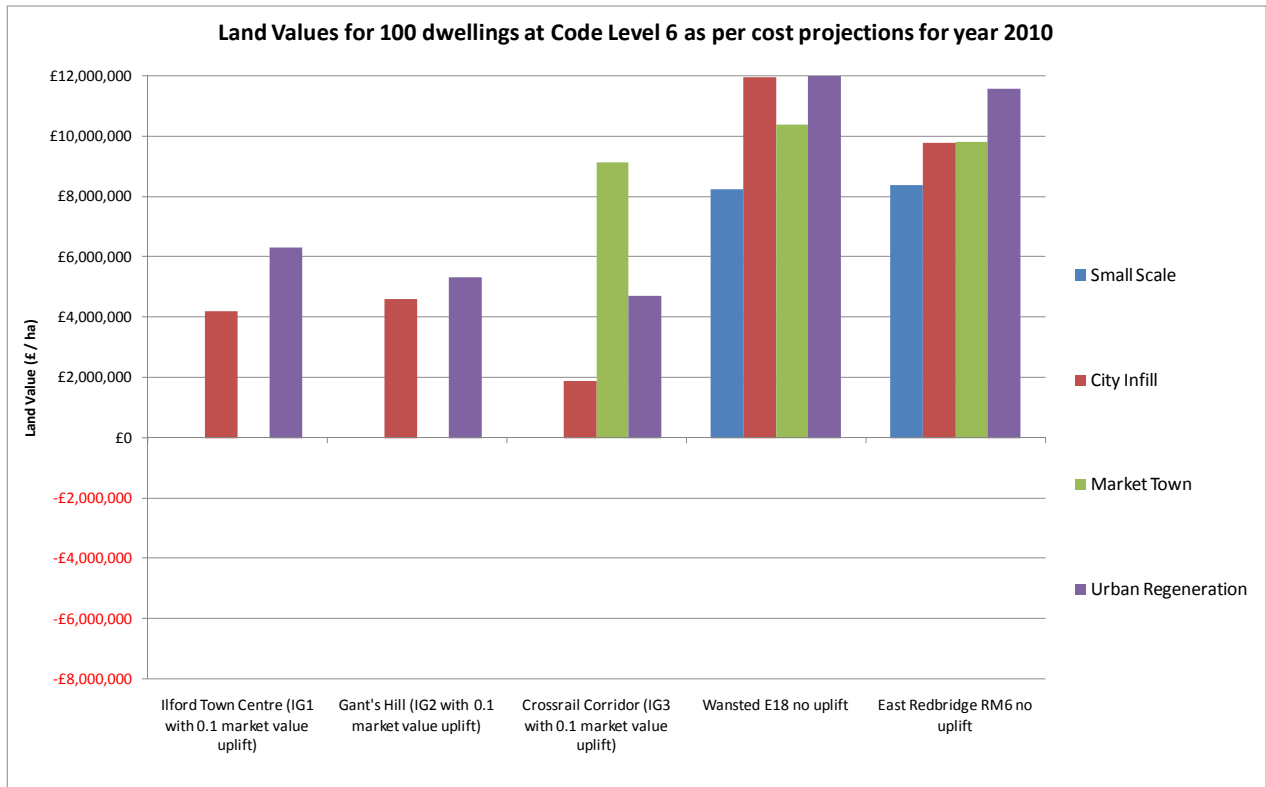
**Figure 0-8 Land value as per cost projections for Code Level 4 in 2010 (Option 2) – 100 dwellings**

**Acceleration of Standards to Cost 6 in 2013 (Policy Option 2)**



**Figure 0-9 Land Values of Accelerated CSH Implementation (Code 6 in 2013) – 100 dwellings**

### 1.2.3 Policy Option 3 (Aspirational Standards) – 100 dwellings



**Figure 0-10 Land Values of Aspirational CSH Implementation (Code 6 in 2010) - 100 dwellings**

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## **APPENDIX H: Guidance document for Developers on the Code for Sustainable Homes**



## Code for Sustainable Homes - Design Guide for Developers

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### *Redbridge Borough*

**Design guide for Developers:** Low Cost/Low effort credits for the Code for Sustainable Homes (CSH) Assessment process in Redbridge Borough



**Prepared By:** Priti Nigam  
**Approved By:** Karl Walker  
**Date:** April 2010

Scott Wilson  
6-8 Greencoat Place  
London  
SW1P 1PL

Tel: 020 7798 5000  
Fax: 020 7798 5001  
[www.scottwilson.com](http://www.scottwilson.com)

## INTRODUCTION

This report classifies the credits obtainable under the Code for Sustainable Homes (CSH) Assessment into low cost/medium cost/higher cost items, assisting developers to prioritise actions while carrying out the CSH Assessment. Guidance is also provided on the credits which are required in order to obtain a Code Level 3, Code Level 4, Level 5 and a Level 6 rating.

The credits specified in this report are achievable at low effort/low cost based on the assumption that provision will be made to include the credit requirements at the design stage. For example, achieving the credit for insulants with a low global warming potential is fairly easy if these insulants are specified at the design stage. Similarly, if sustainable procurement (by ensuring suppliers are ISO14001 certified) is specified at the design stage, a higher number of credits can be achieved. Though the items classified as low cost/medium cost/effort only account for around 50% of the total score, it should be kept in mind that a number of credits have been classified as 'uncertain', because they are site dependent. For example, a number of credits under the Ecology section have been classified as 'uncertain/higher cost', though some of these credits are not usually high cost items.

CSH provides a credible and transparent label of environmental performance for homes and offers important marketing opportunities for developers since their customers – landlords and occupiers – benefit from reduced running costs, more efficient building services and a healthy and safe place to live. There are also benefits to be gained in public relations from the CSH label, by improving relations with those from neighbouring developments.

The CSH methodology supersedes EcoHomes, and is independent, based on many years of construction and environmental research carried out by the Building Research Establishment (BRE) together with input and experience of the construction and property industries, government and public regulators.

The main aims of this document are to provide developers with an action list for the CSH assessment process and an indication of the level of effort and comparative costs of achieving various credits during the assessment process.

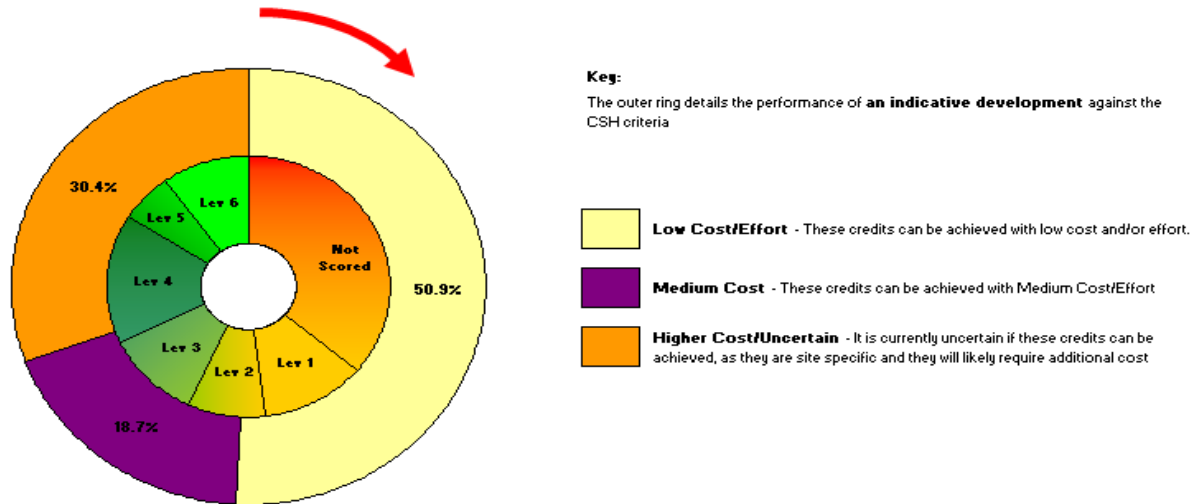
Scott Wilson have devised a simple system to assist design teams in prioritising their decisions in developing the design towards the required CSH rating. Under this system, all credits are classified using a simple A B C system according to the ease with which they could be achieved by the development as follows:

- A = Features that could be incorporated in the development with low effort and/or cost;
- B = Features that could be incorporated in the development with medium effort and/or cost; and
- C = Features that are currently uncertain or could be incorporated in the development at a higher cost.

This indicative assessment is based on the assessors knowledge of the assessment scheme and also prior project experience based on feedback from members of design teams relating to the costs associated with design alterations or submissions of appropriate evidence.

Figure 1 below summarises the current CSH performance for the indicative development:

**Figure 1: Indicative Code For Sustainable Homes Score**



## CODE FOR SUSTAINABLE HOMES ASSESSMENT RESULTS

The following section details the indicative costing of credits based on CSH criteria, with the number of points likely to be achieved in each code range in columns A, B and C.

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
<b>Category 1: Energy and Carbon Dioxide Emissions</b>														
Ene 1	Dwelling Emission Rate	<p>Credits are awarded based on the percentage improvement in the Dwelling Emission Rate (DER) over the Target Emission Rate (TER), as defined by 2006 Building Regulations. Credits are awarded as follows:</p> <p><b>1 credit:</b> ≥ 10% improvement  <b>2 credits:</b> ≥ 14% improvement  <b>3 credits:</b> ≥ 18% improvement  <b>4 credits:</b> ≥ 22% improvement  <b>5 credits:</b> ≥ 25% improvement  <b>6 credits:</b> ≥ 31% improvement  <b>7 credits:</b> ≥ 37% improvement  <b>8 credits:</b> ≥ 44% improvement  <b>9 credits:</b> ≥ 52% improvement  <b>10 credits:</b> ≥ 60% improvement  <b>11 credits:</b> ≥ 69% improvement  <b>12 credits:</b> ≥ 79% improvement  <b>13 credits:</b> ≥ 89% improvement  <b>14 credits:</b> ≥ 100% improvement  <b>15 credits:</b> 'True Zero Carbon'</p>	15	18.8%	Y	Not Scored	5	4	6	The minimum requirement for Code Level 3 which is mandatory from 2010, is a 25% improvement in DER over TER, which is equivalent to 5 credits.	5	8	14	15
Ene 2	Building Fabric	<p>Credits are awarded based on the Heat Loss Parameter as follows:</p> <p><b>1 credit:</b> HLP ≤ 1.3  <b>2 credits:</b> HLP ≤ 1.1</p>	2	2.5%	N		1	1		Specifying building fabric with a heat loss parameter of 1.3 or lower is likely to be a medium cost/higher cost measure.	1	2	2	2

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Ene 3	Internal Lighting	<p>Credits are awarded for the provision of fixed dedicated energy efficient internal light fittings as follows:</p> <p><b>1 credit:</b> where <math>\geq 40\%</math> of fixed internal fittings are dedicated and energy efficient</p> <p><b>2 credits:</b> where <math>\geq 75\%</math> of fixed internal fittings are dedicated and energy efficient</p>	2	2.5%	N		2			Since non energy efficient light bulbs have been phased out in the UK, achieving these credits should be in line with best practice procedures. However, the requirement to specify lighting at 40 lumens per circuit watt or less must be taken into consideration at the design stage.	2	2	2	2
Ene 4	Drying Space	<p><b>1 credit</b> is awarded where space is provided for drying clothes, with posts and footings or fixings capable of holding:</p> <p>4m+ of drying line for 1–2 bed dwellings; or 6m+ of drying line for 3+ bed dwellings</p> <p>This space (internal or external) should be secure.</p>	1	1.3%	N		1			Providing drying space should be a relatively low cost measure as space can also be provided within the bathrooms via foldable lines. However, care must be taken to provide adequate ventilation in line with the CSH requirements.	1	1	1	1
Ene 5	Energy Labelled White Goods	<p><b>1 credit</b> is awarded where fridges, freezers and fridge / freezers have an A+ rating under the EU Energy Efficiency Labelling Scheme; <b>and/or</b></p> <p><b>1 credit</b> is awarded where washing machines and dishwashers have an A rating and washer dryers or tumble dryers have a B rating.</p> <p><b>OR:</b></p> <p><b>1 credit</b> is awarded where no white goods are provided, but information on the EU Energy Efficiency Labelling Scheme of efficient white goods is provided to each dwelling.</p>	2	2.5%	N		1	1		One credit is classified as low cost for providing information on the EU energy efficiency labelling scheme for efficient white goods to each dwelling.	2	2	2	2

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Ene 6	External Lighting	<p><b>1 credit</b> is awarded where all external space lighting, including lighting in common areas, is provided by dedicated energy efficient fittings, taking into account the needs of people who have visual impairments; <b>and/or</b></p> <p><b>1 credit</b> is awarded where all security light fittings are designed for energy efficiency and are adequately controlled such that:</p> <ul style="list-style-type: none"> <li>- all burglar security lights have a maximum wattage of 150W, movement detecting control devices (PIR) and daylight cut-off sensors; and</li> <li>- all other security lighting has dedicated energy efficient fittings and is fitted with daylight cut-off sensors.</li> </ul> <p>NB - If no security lighting is provided, the security lighting credit can be awarded by default provided all the conditions of the first issue covering space lighting have been met. Dual lamp luminaires with both space and security lamps can also be awarded both credits provided they meet the above criteria for energy efficiency.</p>	2	2.5%	N		2			Since non energy efficient light bulbs have been phased out in the UK, achieving these credits should be in line with best practice procedures. However, the requirement to specify lighting at 40 lumens per circuit watt or less must be taken into consideration at the design stage.	2	2	2	2
Ene 7	Zero or Low Carbon (ZLC) Energy technologies	<p>Credits are awarded where energy is supplied from local renewable or low carbon energy sources funded under the Low Carbon Building Programme (or similar), or is designed and installed in a manner endorsed by a feasibility study prepared by an independent energy specialist.</p> <p><b>1 credit</b> is awarded where there is a 10% reduction in carbon emissions as a result of this method of supply.</p> <p><b>2 credits</b> are awarded where there is a 15% reduction in carbon emissions as a result of this method of supply</p>	2	2.5%	N				2	These credits are site dependent	2	2	2	2

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Ene 8	Cycle Storage	<p>Credits are awarded where safe, secure, convenient and weatherproof cycle storage is provided, either individually or communally, for the following number of cycles:</p> <p><b>1 credit:</b> 1 cycle for each two studio / 1 bedroom dwellings; 1 cycle for each 2/3 bedroom dwelling; and 2 cycles for each dwelling of 4 bedrooms or above.</p> <p><b>2 credits:</b> 1 cycle for each studio / 1 bedroom dwelling; 2 cycles for each 2/3 bedroom dwelling; and 4 cycles for each dwelling of 4 or more bedrooms.</p>	2	2.5%	N		1	1		These credits are site dependent	1	1	1	1
Ene 9	Home Office	<p><b>1 credit</b> is awarded where sufficient space and services are provided to allow the occupants to set up a home office in a suitable quiet room.</p>	1	1.3%	N		1			This credit requires annotated drawings of the units to be provided. Care must be taken to comply with the CSH requirements for numbers of sockets and telephone/internet connection at the design stage.	1	1	1	1
<b>Category 2: Water</b>														
Wat 1	Internal Potable Water Use	<p>Credits are awarded as follows, based on the predicted average household water consumption per person per day (calculated by the assessor based on sanitary ware specifications):</p> <p><b>1 credit:</b> ≤ 120 litres/person/day  <b>2 credits:</b> ≤ 110 litres/person/day  <b>3 credits:</b> ≤ 105 litres/person/day  <b>4 credits:</b> ≤ 90 litres/person/day  <b>5 credits:</b> ≤ 80 litres/person/day</p>	5	7.5%	Y	Not Scored	1	2	2	The mandatory level for this credit must be satisfied depending on the Code Level that is to be achieved. It is anticipated that 1 credit will be relatively low cost.	3	3	5	5

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Wat 2	External Potable Water Use	<p><b>1 credit</b> is awarded where a correctly specified system to collect rainwater for external/internal irrigation use has been provided to a dwelling with a garden, patio or communal garden space (examples of such systems include rainwater butts and central rainwater collection systems).</p> <p>NB - This credit can be awarded by default where no individual or communal garden spaces are specified or if only balconies are provided.</p>	1	1.5%	N		1			A water butt or equivalent can be installed at low cost. However, rigorous storage capacity requirements must be kept in mind at the design stage.	1	1	1	1
<b>Category 3: Materials</b>														
Mat 1	Environmental Impact of Materials	<p>It is a <b>mandatory requirement</b> that at least three of the key elements listed achieve a Green Guide rating of A+ to D.</p> <p>Credits are awarded based on the <i>Green Guide 2007</i> rating of the following building elements:</p> <ul style="list-style-type: none"> <li>- Roof</li> <li>- External Walls</li> <li>- Internal Walls (including separating walls)</li> <li>- Upper and ground floors (including separating floors)</li> <li>- Windows</li> </ul> <p>The number of credits allocated is calculated by the assessor using the <i>CSH Materials Calculator</i>.</p>	15	4.5%	Y	N	3	2	10	These credits are easy to achieve if requirements are specified at the design stage. It is anticipated that 3 credits will be achieved at low cost	3	6	10	13

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Mat 2	Responsible Sourcing of Materials - Basic Building Elements	<p>Credits are awarded where materials used in the following key building elements are responsibly sourced:</p> <ul style="list-style-type: none"> <li>- Frame</li> <li>- Ground floor</li> <li>- Upper floors (including separating floors)</li> <li>- Roof</li> <li>- External walls</li> <li>- Internal walls (including separating walls)</li> <li>- Foundation / substructure</li> <li>- Staircase</li> </ul> <p>The number of credits allocated is calculated by the assessor using the <i>CSH Materials Calculator</i>.</p>	6	1.8%	N		2	1	3	These credits are easy to achieve if the requirement to procure materials from suppliers with ISO14001 certificates is specified at the design stage	2	2	2	5
Mat 3	Responsible Sourcing of Materials - Finishing Elements	<p>Credits are awarded where materials used in the following finishing elements are responsibly sourced:</p> <ul style="list-style-type: none"> <li>- Stairs</li> <li>- Windows</li> <li>- External and internal doors</li> <li>- Skirting</li> <li>- Panelling</li> <li>- Furniture</li> <li>- Fascias</li> <li>- Any other significant use</li> </ul> <p>The number of credits allocated is calculated by the assessor using the <i>CSH Materials Calculator</i>.</p>	3	0.9%	N		1	1	1	These credits are easy to achieve if the requirement to procure materials from suppliers with ISO14001 certificates is specified at the design stage	0	1	2	2

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
<b>Category 4: Surface Water Runoff</b>														
Sur 1	Reduction of Surface Water Runoff From Site	<p>Credits are awarded where rainwater holding facilities / sustainable drainage systems (SuDS) are used to provide attenuation of water run-off to either natural watercourses or surface water drainage systems, with the following peak time attenuation levels:</p> <ul style="list-style-type: none"> <li>- 50% in low flood risk areas</li> <li>- 75% in medium flood risk areas</li> <li>- 100% in high flood risk areas</li> </ul> <p><b>1 credit</b> is awarded for providing this level of attenuation from hard surfaces, and <b>1 credit</b> is awarded for providing this level of attenuation from roofs.</p> <p>NB - It is a <b>mandatory requirement</b> that peak run-off rates and annual volumes of run-off post development will be no greater than the previous conditions for the site.</p>	2	1.1%	Y	N	2			These credits are mandatory	2	2	2	2

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Sur 2	Flood Risk	<p><b>2 credits</b> are awarded where the assessed dwelling is located in an area with low annual probability of flooding.</p> <p><b>1 credit</b> is awarded where the dwelling is located in an area of medium / high annual probability of flooding, where:</p> <ul style="list-style-type: none"> <li>- the ground level of the dwelling, access routes to the ground level and the site are at least 600mm above the design flood level of the flood zone in which the development is located.</li> </ul> <p>NB - A single credit can be awarded where the development has been permitted even though the ground levels of the topography / infrastructure immediately adjacent to the site fall below the 600mm threshold, provided there are no other practical solutions for the site above this level and safe access can still be provided by raising both the access and the lowest occupied rooms to at least 600mm above the notional flood level.</p> <p>A single credit can also be awarded where maintained flood defences are in place, or where non-structural measures are used to control risk to the development (e.g. flood storage potential either within the development or upstream).</p>	2	1.1%	N				2	These credits are site dependent	0	0	0	0

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6	
<b>Category 5: Waste</b>															
Was 1	Household Waste Storage and Recycling Facilities	<p>It is a <b>mandatory requirement</b> that the space provided for waste storage is sized to hold the larger of the two of the following:</p> <ul style="list-style-type: none"> <li>- All external containers provided under the relevant local authority refuse collection / recycling schemes; or</li> <li>- The minimum capacity of waste storage as calculated from <i>BS 5906</i></li> </ul> <p><b>2 credits</b> are awarded where there is no external storage for recyclable waste and no Local Authority Collection Scheme, provided three internal storage bins are provided:</p> <ul style="list-style-type: none"> <li>- with a minimum total capacity of 60 litres;</li> <li>- where no individual bin is smaller than 15 litres; and</li> <li>- located in an adequate internal space.</li> </ul> <p><b>4 credits</b> are awarded where either of the following is provided:</p> <ul style="list-style-type: none"> <li>- three internal storage bins with a minimum total capacity of 30 litres, where no individual bin is smaller than 7 litres; or</li> <li>- a single 30 litre bin linked with a Local Authority service that collects at least 3 types of recyclable material in a single bin.</li> </ul> <p>AND either of the following is provided:</p> <ul style="list-style-type: none"> <li>- adequate external storage space for bins plus a Local Authority scheme that collects at least three types of recyclable waste;</li> <li>- for individual dwellings, adequate external storage space for three external bins with a total capacity of at least 180 litres, where no individual bin is smaller than 40 litres, located within 10m of an external door; or</li> <li>- for blocks of flats, a private recycling scheme to maintain the bins and collect recyclable waste on a regular basis.</li> </ul>	4	3.7%	Y	N	4				Providing storage space for bins and procuring adequately sized bins is a relatively low cost item	4	4	4	4

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Was 2	Construction Site Waste Management	<p>For developments costing £200,000 or more, it is a <b>mandatory requirement</b> that a <i>Site Waste Management Plan</i> is produced and implemented. This will require the monitoring of waste generated on site and the setting of targets to promote resource efficiency in accordance with the relevant guidance. Specific targets are not required.</p> <p><b>1 credit</b> is awarded where the <i>Site Waste Management Plan</i> includes procedures and commitments for minimising waste generated on site in accordance with the relevant guidance; and</p> <p><b>1 credits</b> awarded where the <i>Site Waste Management Plan</i> includes procedures and commitments to sort, reuse and recycle construction waste, either on site or through a licensed external contractor.</p>	2	1.8%	Y	N	1	1		Producing a SWMP is part of best practice procedures. 1 additional credit involving sorting, reuse and recycling construction waste can be achieved at medium cost.	2	2	2	2
Was 3	Composting	<p><b>1 credit</b> is awarded where:</p> <ul style="list-style-type: none"> <li>- individual home composting facilities are provided;</li> <li>- a communal or community composting service is provided (within 50m of the external door), either run by the Local Authority or with a management plan in place; or</li> <li>- a local authority kitchen waste collection scheme is in place.</li> </ul> <p>NB - All facilities must be in a dedicated position and accessible to disabled people.</p>	1	0.9%	N		1			Provision of composting facilities is a low cost/effort item	0	0	1	1

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
<b>Category 6: Pollution</b>														
Pol 1	Global Warming Potential (GWP) of Insulants	<p><b>1 credit</b> is awarded where all insulating materials in the following building elements have a GWP of less than 5:</p> <ul style="list-style-type: none"> <li>- Roofs (including loft access);</li> <li>- Walls, internal and external, including lintels and acoustic insulation;</li> <li>- Floors (including ground and upper floors);</li> <li>- Hot water cylinder, pipe insulation and other thermal stores;</li> <li>- Cold water storage tanks where provided; and</li> <li>- External doors</li> </ul>	1	0.7%	N		1			Insulants specified at the design stage should have a GWP of less than 5. A number of insulants including Kooltherm and Kingspan offer a range of insulants with a low GWP and ozone depletion potential.	1	1	1	1
Pol 2	NOx Emissions	<p>Credits are awarded based on the NOx emissions arising from the operation of space heating and hot water systems for each dwelling type. Credits are awarded as follows:</p> <p><b>1 credit:</b> ≤ 100 mg/kWh  <b>2 credits:</b> ≤ 70 mg/kWh  <b>3 credits:</b> ≤ 40 mg/kWh</p>	3	2.1%	N				3	This credit may be site dependant based on flue height.	0	1	2	2



**INDICATIVE ASSESSMENT RESULTS**

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
<b>Category 7: Health and Wellbeing</b>														
Hea 1	Daylighting	<p><b>1 credit</b> is awarded where kitchens achieve a daylight factor of at least 2%; and</p> <p><b>1 credit</b> is awarded where all living rooms, dining rooms and studies (including any room designated as a home office under <i>ENE 9</i>) achieve a daylight factor of at least 1.5%; and</p> <p><b>1 credit</b> is awarded where 80% of the working plane in kitchens, living rooms, dining rooms and studies including any room designated as a home office under <i>ENE 9</i>) has a view of the sky.</p>	3	3.5%	N				3	This credit is site dependant	0	0	0	1

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Hea 2	Sound Insulation	<p>Credits are awarded where there is a commitment to carry out a programme of pre-completion testing based on the programme of testing described in <i>Approved Document E</i> for every group or sub-group of houses or flats, and to achieve the following levels:</p> <p><b>1 credit:</b> airborne sound insulation values at least 3dB higher, and impact sound insulation values at least 3dB lower, than the performance standards set out in <i>Approved Document E</i></p> <p><b>3 credits:</b> airborne sound insulation values at least 5dB higher, and impact sound insulation values at least 5dB lower, than the performance standards set out in <i>Approved Document E</i></p> <p><b>4 credits:</b> airborne sound insulation values at least 8dB higher, and impact sound insulation values at least 8dB lower, than the performance standards set out in <i>Approved Document E</i></p> <p>NB - Alternatively, a commitment can be given to use constructions for all relevant building elements that have been assessed and approved by <i>Robust Details Limited</i> and found to achieve the above performance standards.</p> <p>Detached dwellings are awarded 4 credits by default, and attached dwellings where separating walls or floors only occur between non habitable rooms are awarded 3 credits by default.</p>	4	4.7%	N		2	2		This credit requires a high level of sound proofing and a number of sound tests in addition to those required under Building Regulations. Therefore these credits may be higher cost/medium cost to achieve.	2	2	4	4
Hea 3	Private Space	<p><b>1 credit</b> is awarded where outdoor space (private or semi-private) is provided that:</p> <ul style="list-style-type: none"> <li>- is of a minimum size that allows all occupants to sit outside;</li> <li>- allows easy access by all occupants, including wheelchair users; and</li> <li>- is accessible only to occupants of designated dwellings</li> </ul>	1	1.2%	N				1	This credit is site dependant	0	1	1	1

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Hea 4	Lifetime Homes	<b>4 credits</b> are awarded where all the principles of Lifetime Homes have been complied with.	4	4.7%	N		4			Although the requirements for Lifetime Homes are extensive, they are not high cost items. Certain issues such as adequate space for a wheelchair within rooms and bathrooms may not be complied with in certain homes and the requirements for these credits would have to be incorporated at design stage, failing which these credits would not be achieved.	4	4	4	4
<b>Category 8: Management</b>														
Man 1	Home User Guide	<b>2 credits</b> are awarded where a stand-alone <i>Home User Guide</i> is provided, covering all of the requirements of <i>Checklist Man 1 Part 1</i> , and where the guide is available in alternative accessible formats; or <b>3 credits</b> are awarded where the guide also covers information relating to the site and its surroundings, compiled using <i>Checklist Man 1 Part 2</i>	3	3.3%	N		3			This credit is a low cost item	3	3	3	3

## INDICATIVE ASSESSMENT RESULTS

Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Man 2	Considerate Constructors Scheme	<p><b>1 credit</b> is awarded where there is a regular audit under a nationally recognised independent certification scheme such as certification under the <i>Considerate Constructors Scheme</i>; or</p> <p><b>2 credits</b> are awarded where the commitment is to go significantly beyond best practice including a regular audit under a nationally recognised independent certification scheme such as the <i>Considerate Constructors Scheme</i> and to achieve a <i>CCS</i> score of above 32, or equivalent.</p>	2	2.2%	N		1	1		Achieving 1 credit under the CCS is likely to be low cost/low effort. However achieving a score of 32 or above could involve a small additional cost/effort.	2	2	2	2
Man 3	Construction Site Impacts	<p>Credits are awarded where there is a commitment and strategy to operate site management procedures as follows:</p> <p>a. Monitor, report and set targets for CO2 production or energy use arising from site activities;</p> <p>b. Monitor and report CO2 emissions or energy use arising from commercial transport to and from site;</p> <p>c. Monitor, report and set targets for water consumption from site activities;</p> <p>d. Adopt best practice policies in respect of air (dust) pollution arising from site activities;</p> <p>e. Adopt best practice policies in respect of water (ground and surface) pollution occurring on the site;</p> <p>f. 80% of site timber is reclaimed, reused or responsibly sourced</p> <p><b>1 credit</b> is awarded where 2 or more of the above items are covered; or</p> <p><b>2 credits</b> are awarded where 4 or more of the above items are covered.</p>	2	2.2%	N		2			Achieving best practice in terms of air (dust) pollution and water pollution is a low cost item. Monitoring water consumption from site activities and using responsibly sourced timber could involve an additional effort, but is unlikely to add to costs.	2	2	2	2

## INDICATIVE ASSESSMENT RESULTS

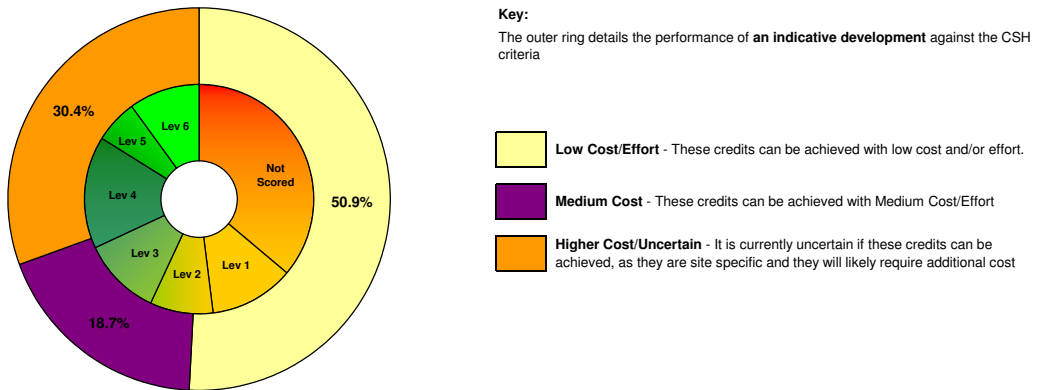
Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Man 4	Security	<b>2 credits</b> are awarded where an <i>Architectural Liaison Officer</i> or <i>Crime Prevention Officer</i> from the local police force is consulted at the design stage, and their recommendations are incorporated into the design of the dwelling.	2	2.2%	N		2			This credit is a low cost item, as long as the ALO is consulted at the design stage	2	2	2	2
<b>Category 9: Ecology</b>														
Eco 1	Ecological Value of Site	<b>1 credit</b> is awarded where the development site is confirmed as land of inherently low ecological value either: - by meeting the criteria for low ecological value as listed in <i>Checklist Eco 1</i> ; or - by confirmation from a suitably qualified ecologist.  OR  - where an independent ecological report of the site states that the construction zone is of low or insignificant ecological value, and any land of ecological value outside the construction zone, but within the development site, will remain undisturbed by the construction works.	1	1.3%	N		1			This credit is site dependent, however in line with the Council's aspiration for all development to be on brownfield land, this credit is considered to be achievable	0	1	1	1
Eco 2	Ecological Enhancement	<b>1 credit</b> is awarded where a suitably qualified ecologist has been appointed to recommend appropriate ecological features that will positively enhance the ecology of the site, and where the developer adopts all key recommendations and at least 30% of additional recommendations.	1	1.3%	N		1			This credit is site dependent, however in line with the Council's aspiration for all development to be on brownfield land, this credit is considered to be achievable	1	1	1	1

## INDICATIVE ASSESSMENT RESULTS

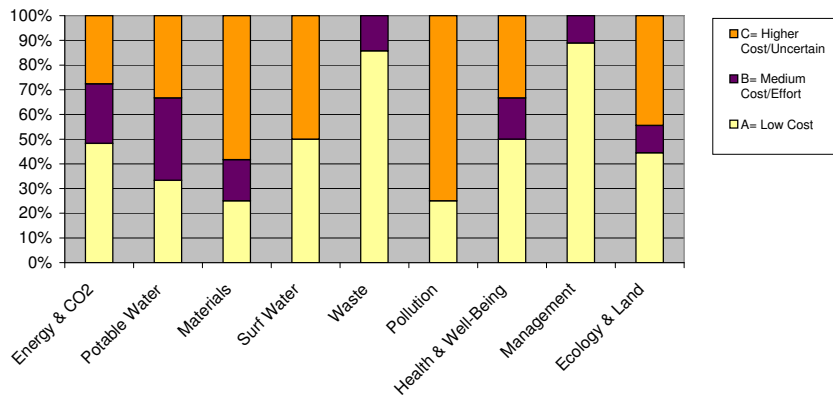
Credit Ref.	Credit Title	Assessment Criteria	Credits Available	% Worth	Mandatory Element?	Mandatory Level Achieved	Low Cost / Effort (A)	Medium Cost (B)	Higher Cost/ Uncertain (C)	Justification	Credits required for Code Level 3	Credits required for Code Level 4	Credits required for Code Level 5	Credits required for Code Level 6
Eco 3	Protection of Ecological Features	<p><b>1 credit</b> is awarded where all existing features of ecological value on the development site potentially effected by the works are maintained and adequately protected during site clearance, preparation and construction works.</p> <p>NB - The credit can be awarded by default where the site has been classified as having low ecological value in accordance with <i>Eco 1 - Ecological Value of the Site</i>.</p>	1	1.3%	N		1			This credit is site dependent, however in line with the Council's aspiration for all development to be on brownfield land, this credit is considered to be achievable	1	1	1	1
Eco 4	Change in Ecological Value of Site	<p>Credits are awarded where the resulting change in ecological value, calculated by the assessor using the <i>Change in Ecological Value Calculator</i>, is as follows:</p> <p><b>1 credit:</b> Minor negative change (between -9 and -3)  <b>2 credits:</b> Neutral (between -3 and +3)  <b>3 credits:</b> Minor enhancement (between +3 and +9)  <b>4 credits:</b> Major enhancement (greater than +9)</p>	4	5.3%	N		1	1	2	This credit is site dependent, however in line with the Council's aspiration for all development to be on brownfield land, this credit is considered to be achievable	0	2	2	2
Eco 5	Building Footprint	<p>For houses, <b>1 credit</b> is awarded where the Net Internal Floor Area: Net Internal Ground Floor Area ratio is greater than 2.5:1. <b>2 credits</b> are awarded where the ratio is greater than 3:1.</p> <p>For flats, <b>1 credit</b> is awarded where the Net Internal Floor Area: Net Internal Ground Floor Area ratio is greater than 3:1.  <b>2 credits</b> are awarded where the ratio is greater than 4:1.</p> <p>For a combination of houses and flats, the ratio must be greater than the weighted average of the ratios given above to achieve the credits.</p>	2	2.7%	N				2	This credit is site dependent	0	0	2	2

Credits in Blue = Mandatory elements for CSH;

**Figure : Summary of the CSH performance for an indicative development:**



**Figure 2: Graph showing breakdown of performance of each Code for Sustainable Homes' category**



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## Appendices

### Appendix 1: Code for Sustainable Homes Methodology

The Code for Sustainable Homes is an environmental assessment system for new housing in England which:

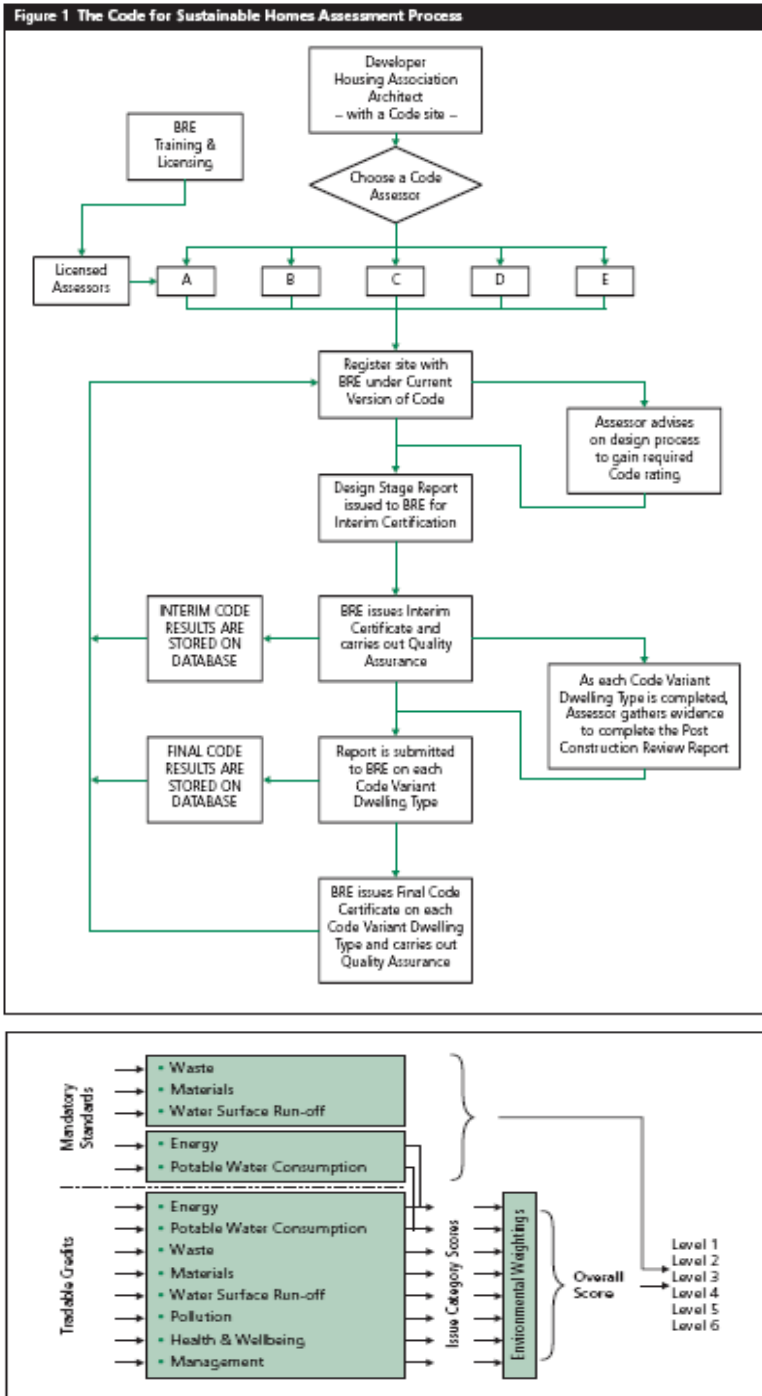
- Presents a range of environmental standards, which have been researched as being reasonable and achievable
- Assesses the environmental performance using objective criteria and verification methods
- Provides a formal certificate showing performance

The 'Code for Sustainable Homes: A Step-change in sustainable home building practice' (Department for Communities and Local Government 2006) defined a set of sustainable design principles for new housing covering performance in nine key areas, known as 'Categories' listed below:

- Energy and CO2 Emissions
- Water
- Materials
- Surface Water Run-off
- Waste
- Pollution
- Health and Wellbeing
- Management
- Ecology

The Assessment system assigns to each Issue a simple number of CREDITS (One, two, three). The Credits allocated for each Issue are then summed to give a total number of credits per Category.

Each category is allocated a total maximum score in terms of Percentage POINTS. The weighting system is designed to reflect the importance of that environmental category in the view of a cross-section of stakeholders, and the methodology for arriving at these weightings. As a result, the value of weightings in different sections is not the same. Assessment of any particular development is carried out against these environmental criteria and credits are awarded, from which Points are calculated.



The Code has six levels as follows:

- Code Level 1 - above regulatory standards and a similar standard to BRE's Ecohomes PASS level and the EST's Good Practice Standard for energy efficiency
- Code Level 2 - a similar standard to BRE's EcoHomes GOOD level
- Code Level 3 - a broadly similar standard to BRE's EcoHomes VERY GOOD level and the EST's Best Practice Standard for energy efficiency
- Code Level 4 - Broadly set at current exemplary performance
- Code Level 5 - Based on exemplary performance with high standards of energy and water efficiency
- Code Level 6 - aspirational standard based on zero carbon emissions for the dwelling and high performance across all environmental categories