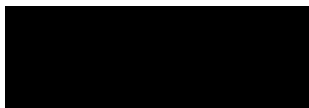

Project	Bicester Eco Town Phases 3 and 4
PRP Reference	AE4989C
Report Scope	Daylight calculation summary (Condition 2) Code for Sustainable Homes
Number of Units	228
Other	None

Issue 02

Date 21 June 2018

Author Marylis Ramos / Carolina Caneva

Signature



Summary

Daylight calculations have been undertaken on all property types within Phases 3 & 4 to determine the number of daylight credits that can be awarded under the Code for Sustainable Homes (November 2010). The summary of the results is shown in Table 1 below.

All the dwellings achieved minimum 2 credits under Code for Sustainable Homes, having either achieved a minimum 2% daylight factor for kitchens or 1.5% for the study and the living room, or having at least 80% of the working plane in each kitchen, living room and study receiving direct light from the sky (view of sky calculation).

A full list of all the 228 units is shown in Table 3, which shows what sample representative unit type was used for the assessment and whether that type achieved the 2 credit target.

In conclusion, all dwellings have been shown to gain 2 credits for Hea 1 (daylighting) under the Code for Sustainable Homes, fulfilling the requirements for the discharge of planning condition 8, which is detailed below:

"Prior to work commencing on each phase, as identified in condition 2, details of how each dwelling within that phase achieves good day lighting by achieving at least 2 points of the Code for Sustainable Homes level 5 for day lighting shall be submitted to and approved in writing by the LPA. The development shall thereafter be carried out in accordance with the approved details and such that each dwelling achieves good day lighting."

Table 1. Summary Results Daylight Calculations (Hea1) for each sample unit type

Summary of daylight factor - Bicester ECO Town AE4989 Ph. 3 & 4									
	Dwelling Type	Plot	Repeats	Tenure	View of Sky*	Kitchen	Living room	Home Office	Daylight credits
						2.00%	1.50%	1.50%	
					1 credit	1 credit	1 credit		
A	2B4P	7	40	Private		2.98%	2.98%	2.20%	2
B	2B4P	39	18	Affordable	yes	0.80%	2.42%	2.42%	2
C	2B4P with bay	78	4	Private	yes	1.24%	3.58%	2.01%	2
D	3B5P	38	31	Affordable	yes	1.10%	3.30%	1.59%	2
E	3B5P	6	46	Private	yes	1.10%	3.30%	1.67%	2
F	3B5P with bay	13	6	Private	yes	0.80%	4.30%	1.65%	2
G	4B6P	3	52	Private		2.37%	2.24%	1.51%	2
H	4B6P with garage	221	1	Private		2.37%	2.24%	1.51%	2
I	4B7P v1	66	9	Affordable	yes	0.69%	2.42%	1.52%	2
J	5B9P with garage v1	1	5	Private		2.47%	4.12%	4.49%	2
K	5B9P with garage v2	49	8	Private		2.62%	1.50%	4.49%	2
L	5B9P with garage	209	4	Private		2.94%	2.94%	2.69%	2
M	5B10P	30	4	Private		4.22%	2.64%	2.26%	2
		Total	228						
									1 credit
									0 credits

¹ Condition 8 - Notice of Decision Application No. 10/01780/HYBRID

Methodology

The assessment follows the criteria set by the Code for Sustainable Homes - Category 7: Health and Well-being as shown in the following Table 2.

Table 2. Code for Sustainable Homes Daylight summary criteria (Page 192)

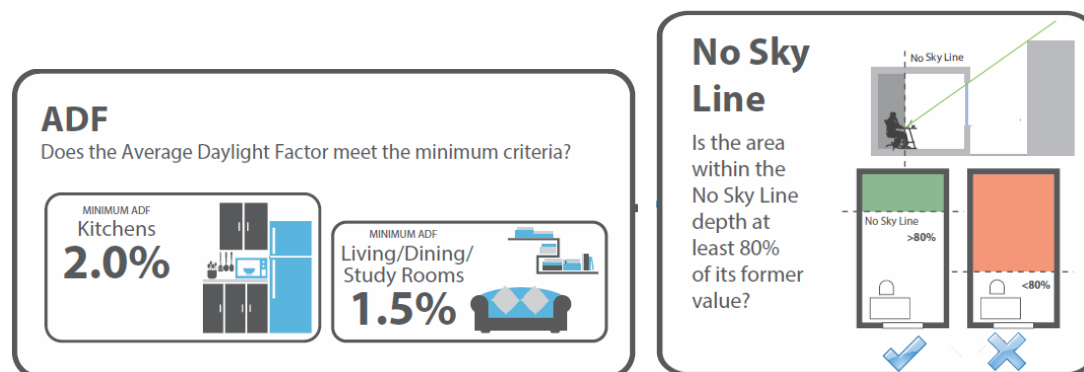
Assessment Criteria	
Criteria	Credits
Kitchens must achieve a minimum <i>Average Daylight Factor</i> of at least 2%	1
All living rooms, dining rooms and studies (including any room designated as a home office under Ene 9 – Home Office) must achieve a minimum <i>Average Daylight Factor</i> of at least 1.5%	1
80% of the <i>working plane</i> in each kitchen, living room, dining room and study (including any room designated as a home office under Ene 9 – Home Office) must receive direct light from the sky	1

Average Daylight Factor (ADF)

The ADF measures the overall daylight in a space, it is defined as the average illuminance on the working plane, divided by the illuminance on an unobstructed horizontal surface outdoors under CIE overcast sky conditions and is usually expressed as a percentage.

The calculated ADF is compared with the minimum values recommended in the Code for Sustainable Homes, in order to award one credit each. They are:

- 2% daylight factor for kitchens; or
- 1.5% for the study and the living room; or



View of Sky or No-Sky Line

The View of Sky or No Sky Line (NSL) is a method used to evaluate the distribution of daylight. The no sky line divides areas of the working plane (0.85 m for dwellings) which can and cannot see the sky. Areas beyond the no sky line are usually darker as they receive no direct light. One credit is awarded if:

- At least 80% of the working plane in each kitchen, living room and study receiving direct light from the sky (view of sky calculation).

Results

A full list of all the 228 plots is shown in Table 3 below. It shows what sample representative unit type was used for the assessment is highlighted with bold letters and whether that type achieved the 2 credit target.

Table 3. CfSH Daylight credits for each property in Phases 3 & 4

Plot Number	Sample plot No.	Occupancy	Tenure	No. of credits achieved			Total Number of credits (CfSH)	Condition discharged?
				View of Sky	Kitchen	Living Room/ Home Office		
1	n/a	5B9P with garage v1	Private		1	1	2	YES
2	1	5B9P with garage v1	Private		1	1	2	YES
3	n/a	4B6P	Private		1	1	2	YES
4	3	4B6P	Private		1	1	2	YES
5	3	4B6P	Private		1	1	2	YES
6	n/a	3B5P	Private	1		1	2	YES
7	n/a	2B4P	Private		1	1	2	YES
8	7	2B4P	Private		1	1	2	YES
9	6	3B5P	Private	1		1	2	YES
10	6	3B5P	Private	1		1	2	YES
11	7	2B4P	Private		1	1	2	YES
12	7	2B4P	Private		1	1	2	YES
13	n/a	3B5P with bay	Private	1		1	2	YES
14	3	4B6P	Private		1	1	2	YES
15	3	4B6P	Private		1	1	2	YES
16	3	4B6P	Private		1	1	2	YES
17	3	4B6P	Private		1	1	2	YES
18	3	4B6P	Private		1	1	2	YES
19	3	4B6P	Private		1	1	2	YES
20	13	3B5P with bay	Private	1		1	2	YES
21	7	2B4P	Private		1	1	2	YES
22	7	2B4P	Private		1	1	2	YES
23	7	2B4P	Private		1	1	2	YES
24	7	2B4P	Private		1	1	2	YES
25	13	3B5P with bay	Private	1		1	2	YES
26	3	4B6P	Private		1	1	2	YES
27	3	4B6P	Private		1	1	2	YES
28	3	4B6P	Private		1	1	2	YES
29	3	4B6P	Private		1	1	2	YES
30	n/a	5B10P	Private		1	1	2	YES
31	3	4B6P	Private		1	1	2	YES
32	3	4B6P	Private		1	1	2	YES
33	3	4B6P	Private		1	1	2	YES

Plot Number	Sample plot No.	Occupancy	Tenure	No. of credits achieved			Total Number of credits (CfSH)	Condition discharged?
				View of Sky	Kitchen	Living Room/ Home Office		
34	1	5B9P with garage v1	Private		1	1	2	YES
35	1	5B9P with garage v1	Private		1	1	2	YES
36	3	4B6P	Private		1	1	2	YES
37	3	4B6P	Private		1	1	2	YES
38	n/a	3B5P	Affordable	1		1	2	YES
39	n/a	2B4P	Affordable		1	1	2	YES
40	39	2B4P	Affordable		1	1	2	YES
41	7	2B4P	Private		1	1	2	YES
42	7	2B4P	Private		1	1	2	YES
43	13	3B5P with bay	Private	1		1	2	YES
44	3	4B6P	Private		1	1	2	YES
45	3	4B6P	Private		1	1	2	YES
46	3	4B6P	Private		1	1	2	YES
47	3	4B6P	Private		1	1	2	YES
48	3	4B6P	Private		1	1	2	YES
49	n/a	5P9P with garage v2	Private		1	1	2	YES
50	49	5P9P with garage v2	Private		1	1	2	YES
51	3	4B6P	Private		1	1	2	YES
52	3	4B6P	Private		1	1	2	YES
53	3	4B6P	Private		1	1	2	YES
54	3	4B6P	Private		1	1	2	YES
55	6	3B5P	Private	1		1	2	YES
56	38	3B5P	Affordable	1		1	2	YES
57	38	3B5P	Affordable	1		1	2	YES
58	38	3B5P	Affordable	1		1	2	YES
59	38	3B5P	Affordable	1		1	2	YES
60	38	3B5P	Affordable	1		1	2	YES
61	39	2B4P	Affordable		1	1	2	YES
62	39	2B4P	Affordable		1	1	2	YES
63	7	2B4P	Private		1	1	2	YES
64	7	2B4P	Private		1	1	2	YES
65	6	3B5P	Private	1		1	2	YES
66	n/a	4B7P v1	Affordable	1		1	2	YES
67	39	2B4P	Affordable		1	1	2	YES
68	39	2B4P	Affordable		1	1	2	YES
69	38	3B5P	Affordable	1		1	2	YES
70	38	3B5P	Affordable	1		1	2	YES
71	38	3B5P	Affordable	1		1	2	YES
72	66	4B7P v1	Affordable	1		1	2	YES
73	66	4B7P v1	Affordable	1		1	2	YES
74	39	2B4P	Affordable		1	1	2	YES
75	38	3B5P	Affordable	1		1	2	YES

Plot Number	Sample plot No.	Occupancy	Tenure	No. of credits achieved			Total Number of credits (CfSH)	Condition discharged?
				View of Sky	Kitchen	Living Room/ Home Office		
76	13	3B5P with bay	Private	1		1	2	YES
77	66	4B7P v1	Affordable	1		1	2	YES
78	n/a	2B4P with bay	Private		1	1	2	YES
79	6	3B5P	Private	1		1	2	YES
80	7	2B4P	Private		1	1	2	YES
81	6	3B5P	Private	1		1	2	YES
82	7	2B4P	Private		1	1	2	YES
83	3	4B6P	Private		1	1	2	YES
84	3	4B6P	Private		1	1	2	YES
85	6	3B5P	Private	1		1	2	YES
86	6	3B5P	Private	1		1	2	YES
87	7	2B4P	Private		1	1	2	YES
88	7	2B4P	Private		1	1	2	YES
89	6	3B5P	Private	1		1	2	YES
90	7	2B4P	Private		1	1	2	YES
91	6	3B5P	Private	1		1	2	YES
92	7	2B4P	Private		1	1	2	YES
93	7	2B4P	Private		1	1	2	YES
94	6	3B5P	Private	1		1	2	YES
95	7	2B4P	Private		1	1	2	YES
96	6	3B5P	Private	1		1	2	YES
97	7	2B4P	Private		1	1	2	YES
98	6	3B5P	Private	1		1	2	YES
99	7	2B4P	Private		1	1	2	YES
100	6	3B5P	Private	1		1	2	YES
101	6	3B5P	Private	1		1	2	YES
102	6	3B5P	Private	1		1	2	YES
103	6	3B5P	Private	1		1	2	YES
104	7	2B4P	Private		1	1	2	YES
105	6	3B5P	Private	1		1	2	YES
106	39	2B4P	Affordable		1	1	2	YES
107	38	3B5P	Affordable	1		1	2	YES
108	6	3B5P	Private	1		1	2	YES
109	6	3B5P	Private	1		1	2	YES
110	6	3B5P	Private	1		1	2	YES
111	7	2B4P	Private		1	1	2	YES
112	7	2B4P	Private		1	1	2	YES
113	6	3B5P	Private	1		1	2	YES
114	7	2B4P	Private		1	1	2	YES
115	6	3B5P	Private	1		1	2	YES
116	6	3B5P	Private	1		1	2	YES
117	6	3B5P	Private	1		1	2	YES

Plot Number	Sample plot No.	Occupancy	Tenure	No. of credits achieved			Total Number of credits (CfSH)	Condition discharged?
				View of Sky	Kitchen	Living Room/ Home Office		
118	7	2B4P	Private		1	1	2	YES
119	7	2B4P	Private		1	1	2	YES
120	13	3B5P with bay	Private	1		1	2	YES
121	6	3B5P	Private	1		1	2	YES
122	6	3B5P	Private	1		1	2	YES
123	78	2B4P with bay	Private		1	1	2	YES
124	38	3B5P	Affordable	1		1	2	YES
125	38	3B5P	Affordable	1		1	2	YES
126	38	3B5P	Affordable	1		1	2	YES
127	38	3B5P	Affordable	1		1	2	YES
128	39	2B4P	Affordable		1	1	2	YES
129	39	2B4P	Affordable		1	1	2	YES
130	39	2B4P	Affordable		1	1	2	YES
131	39	2B4P	Affordable		1	1	2	YES
132	38	3B5P	Affordable	1		1	2	YES
133	38	3B5P	Affordable	1		1	2	YES
134	38	3B5P	Affordable	1		1	2	YES
135	6	3B5P	Private	1		1	2	YES
136	6	3B5P	Private	1		1	2	YES
137	3	4B6P	Private		1	1	2	YES
138	3	4B6P	Private		1	1	2	YES
139	38	3B5P	Affordable	1		1	2	YES
140	38	3B5P	Affordable	1		1	2	YES
141	38	3B5P	Affordable	1		1	2	YES
142	38	3B5P	Affordable	1		1	2	YES
143	38	3B5P	Affordable	1		1	2	YES
144	38	3B5P	Affordable	1		1	2	YES
145	78	2B4P with bay	Private		1	1	2	YES
146	7	2B4P	Private		1	1	2	YES
147	7	2B4P	Private		1	1	2	YES
148	6	3B5P	Private	1		1	2	YES
149	7	2B4P	Private		1	1	2	YES
150	7	2B4P	Private		1	1	2	YES
151	6	3B5P	Private	1		1	2	YES
152	7	2B4P	Private		1	1	2	YES
153	66	4B7Pv1 mirror	Affordable	1		1	2	YES
154	66	4B7Pv1 mirror	Affordable	1		1	2	YES
155	66	4B7Pv1 mirror	Affordable	1		1	2	YES
156	39	2B4P	Affordable		1	1	2	YES
157	39	2B4P	Affordable		1	1	2	YES
158	38	3B5P	Affordable	1		1	2	YES
159	6	3B5P	Private	1		1	2	YES

Plot Number	Sample plot No.	Occupancy	Tenure	No. of credits achieved			Total Number of credits (CfSH)	Condition discharged?
				View of Sky	Kitchen	Living Room/ Home Office		
160	7	2B4P	Private		1	1	2	YES
161	7	2B4P	Private		1	1	2	YES
162	6	3B5P	Private	1		1	2	YES
163	6	3B5P	Private	1		1	2	YES
164	7	2B4P	Private		1	1	2	YES
165	3	4B6P	Private		1	1	2	YES
166	3	4B6P	Private		1	1	2	YES
167	3	4B6P	Private		1	1	2	YES
168	39	2B4P	Affordable		1	1	2	YES
169	39	2B4P	Affordable		1	1	2	YES
170	39	2B4P	Affordable		1	1	2	YES
171	39	2B4P	Affordable		1	1	2	YES
172	6	3B5P (mirror)	Private	1		1	2	YES
173	7	2B4P	Private		1	1	2	YES
174	6	3B5P (mirror)	Private	1		1	2	YES
175	6	3B5P	Private	1		1	2	YES
176	6	3B5P	Private	1		1	2	YES
177	7	2B4P	Private		1	1	2	YES
178	6	3B5P	Private	1		1	2	YES
179	6	3B5P	Private	1		1	2	YES
180	7	2B4P	Private		1	1	2	YES
181	38	3B5P	Affordable	1		1	2	YES
182	38	3B5P	Affordable	1		1	2	YES
183	38	3B5P	Affordable	1		1	2	YES
184	3	4B6P	Private		1	1	2	YES
185	3	4B6P	Private		1	1	2	YES
186	3	4B6P	Private		1	1	2	YES
187	3	4B6P	Private		1	1	2	YES
188	6	3B5P	Private	1		1	2	YES
189	6	3B5P	Private	1		1	2	YES
190	66	4B7P v1	Affordable	1		1	2	YES
191	66	4B7P v1	Affordable	1		1	2	YES
192	38	3B5P (mirror)	Affordable	1		1	2	YES
193	38	3B5P	Affordable	1		1	2	YES
194	38	3B5P	Affordable	1		1	2	YES
195	30	5B10P	Private		1	1	2	YES
196	3	4B6P	Private		1	1	2	YES
197	3	4B6P	Private		1	1	2	YES
198	3	4B6P	Private		1	1	2	YES
199	3	4B6P	Private		1	1	2	YES
200	78	2B4P with bay	Private		1	1	2	YES
201	6	3B5P	Private	1		1	2	YES

Plot Number	Sample plot No.	Occupancy	Tenure	No. of credits achieved			Total Number of credits (CfSH)	Condition discharged?
				View of Sky	Kitchen	Living Room/ Home Office		
202	6	3B5P	Private	1		1	2	YES
203	7	2B4P	Private		1	1	2	YES
204	6	3B5P	Private	1		1	2	YES
205	3	4B6P	Private		1	1	2	YES
206	3	4B6P	Private		1	1	2	YES
207	3	4B6P	Private		1	1	2	YES
208	49	5P9P with garage v2	Private		1	1	2	YES
209	n/a	5B9P with garage	Private		1	1	2	YES
210	209	5B9P with garage	Private		1	1	2	YES
211	1	5B9P with garage v1	Private		1	1	2	YES
212	3	4B6P	Private		1	1	2	YES
213	3	4B6P	Private		1	1	2	YES
214	49	5P9P with garage v2	Private		1	1	2	YES
215	3	4B6P	Private		1	1	2	YES
216	3	4B6P	Private		1	1	2	YES
217	49	5P9P with garage v2	Private		1	1	2	YES
218	209	5B9P with garage	Private		1	1	2	YES
219	49	5P9P with garage v2	Private		1	1	2	YES
220	49	5P9P with garage v2	Private		1	1	2	YES
221	3	4B6P with garage	Private		1	1	2	YES
222	3	4B6P	Private		1	1	2	YES
223	3	4B6P	Private		1	1	2	YES
224	3	4B6P	Private		1	1	2	YES
225	49	5P9P with garage v2	Private		1	1	2	YES
226	30	5B10P	Private		1	1	2	YES
227	30	5B10P	Private		1	1	2	YES
228	209	5B9P with garage	Private		1	1	2	YES