55 Vastern Road, Reading

Ecology Rebuttal

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For: Berkeley Homes (Oxford and Chiltern) Ltd, Berkeley House, Farnham Lane, Farnham Royal, SL2 3RQ

CONTENTS

1 Introduction

1.1 This rebuttal is for the proof of evidence provided by Mr Sutton, RBC Ecologist, dated 29 September 2021.

2 Length of marginal vegetation

2.1 In relation to marginal vegetation that will be affected by the development, Mr Sutton states at paragraph 4.1.3 that *'It has established very well and is now the longest length of marginal vegetation on the banks of the river Thames at Christchurch Meadows and at Thames Promenade stretching 100m along the southern bank of the River Thames.'* This is incorrect and the true situation is stated in the SoCG which states at paragraph 7.86 *'There are two lengths of marginal vegetation (one adjacent to the appeal site and one east of Christchurch Bridge). Of these, the one east of Christchurch Bridge is the longest strip of marginal vegetation in the Christchurch Meadows open space'.*

2.2 In paragraph 4.1.4, Mr Sutton does however state that the marginal vegetation to the southeast is 45.8m and acknowledges that it will not be shaded by the proposals.

3 Significance of impact

3.1 It is important to distinguish between significance of the value of a habitat and the ecological significance of the impact to that habitat.

3.2 My SoC and PoE make it very clear that the ***impact*** would be of neighbourhood significance at most.

3.3 In terms of the ***ecological value*** of the River Thames I agree that it is of borough importance and that riparian habitats (including marginal vegetation) are part of the river system.

4 Increase in distance from nearest stepping stone of other marginal vegetation

4.1 In paragraph 4.1.15 2), Mr Sutton states: *'There is very little marginal vegetation on the Thames in Reading and the section next to the appeal site is the longest section for at least 2km'* and *'3) It is therefore an important stepping stone for wildlife using the River Thames'.*

4.2 The longest section is in fact the length to the east of Christchurch Bridge which is acknowledged in the SoCG paragraph 7.86 referred to above.

4.3 Other lengths of marginal vegetation which provide stepping stones are not 2km to the west or 500m to the east but as follows (as measured from the marginal vegetation adjacent to the site):

- marginal vegetation east of Christchurch Bridge - 34m to the east
- marginal vegetation NW of the Christchurch Bridge – 100m to the north west
- marginal vegetation at Hills Meadow Park - 335m to the east (see photographs in appendix P of my PoE
- marginal vegetation west of Thames Avenue 370m to the west

5 Heat from the buildings

5.1 Mr Sutton states in paragraph 5.2.2 that *'the buildings are likely to emit a significant amount of heat (as the sun warms them during the day) which would cancel out any reduction in heat due to shading'.*

5.2 Buildings will emit heat, but importantly they do not emit heat in the same way or indeed at the same time as the heat the river would receive direct from the sun. Buildings tend to absorb the heat in the day when the sun is at its strongest, and release it later into the evenings. One would expect shading from the buildings to assist in reducing the river temperatures because the heat emitted from the buildings would not generally be released at the same time as when the maximum shading benefit to the river would occur, so they would not be cancelling each other out.

5.3 On a sunny day, anyone standing in the shade of tall buildings will notice a drop in temperature between sunny and shaded areas.

6 The grassland strip

6.1 Mr Sutton raises the possible loss of the small, very narrow strip of wildflower grassland at paragraph 7.2. This wildflower grassland will not be lost and, even if it were lost, the development will create new wildflower grassland within the site which would more than compensate for any loss.

7 Reduction in sunlight hours

7.1 In 5.1.1 of Mr Sutton's PoE, he questions the number of available sunlight hours in a day. For clarity Table 1 below provides the total number of available sunlight hours per day as per the assessments run. It should be noted that in paragraph 3.3.8 of "Site and Layout Planning for Daylight and Sunlight, A guide to good practice (2nd edition) BRE" (see appendix 1) it states sun below a 10° angle does not count and as such is not included. This is because sun at this angle is likely to be blocked by obstructions beyond those included in the test environment. Therefore, contrary to Mr Sutton's PoE at paragraph 5.1.1, the marginal vegetation should not be assumed to enjoy up to 16.5 hours of sunlight in the present situation.

Table 1: Available sunlight hours by date used in the sunlight assessment

Date used in sunlight assessment	Total number of available sunlight hours as per assessment (source eb7)
21st March	9.87
21st April	11.73
21st May	13.23
21st June	13.97
21st July	13.23
21st August	11.73
21st September	9.87

7.2 The daylight consultant has run simulations at 6 hours+ as it was decided that this was ample to demonstrate the level of direct sunlight and would allow for a good distinction between the sunlight contours below this level.

7.3 In his paragraph 5.1.6, Mr Sutton presents graphs from a paper by Dawson & Haslam paper showing the reduction of the biomass of *submerged* plants in relation to light levels at the stream surface.

7.4 'Submerged' plants (which grow below the water surface) are not the same as marginal plants which are 'emergent'. The graph showing the reduction of the biomass of *submerged* plants (which occur in the middle of the river) is not directly transferable to *emergent* plants (which occur on the river margins and are therefore more likely to receive shade).

7.5 The paper promotes the control of vigorous aquatic plants using shade. It highlights in the abstract *'The importance of the* ***optimal half-shade condition****, allowing some aquatic plant growth rather than excess growth found in open streams or the barren situation of forest streams, is emphasised.'*

7.6 Two statements in the paper highlight the importance of skylight.

On page 161:

'Recent work in quantifying the lateral distribution of light from day-courses across managed rivers has highlighted some of the complexities of predicting and establishing half-shaded conditions at the centre of the channel in natural rivers with existing terrestrial vegetation of varying height and orientation on or near the banks. <u>For example, even on a stream in the northern hemisphere running east-west, with full shading from the south, aquatic growth can still be appreciable because of the general sky light from the north.'</u>

The last sentence at bottom of page 163 states:

'The prediction of the half-shade condition for a river section can be derived by the sum of 1) the hourly and seasonal changes in the path of the sun and its intensity, and 2) the distribution of the diffuse or general sky light.'

8 Use of the Metric 3.0 for marginal vegetation

8.1 Mr Sutton has used the DEFRA 2 and 3 metrics.

8.2 Before dealing with the calculations, I think it is appropriate to put them in their proper context.

8.3 The Biodiversity Metric 3.0 USER GUIDE states that the metric should not override expert opinion. Paragraph 1.8 of the USER GUIDE (see appendix 2) states:

'The units generated by biodiversity metric 3.0, like all biodiversity unit calculations, come with a 'health warning'. The outputs of this metric are not absolute values but provide a proxy for the relative biodiversity worth of a site pre- and post-intervention. The quality and reliability of outputs will depend on the quality of the inputs. This user guide provides advice on how to use the biodiversity unit approach and where and when it is appropriate for use. The metric is not a substitute for expert ecological advice.'

8.4 Principle 6 of the USER GUIDE states:

'The metric is designed to inform decisions, not to override expert opinion. Management interventions should be guided by appropriate expert ecological advice and not just the biodiversity unit outputs of the metric. Ecological principles still need to be applied to ensure that what is being proposed is realistic and deliverable based on local conditions such as geology, hydrology, nutrient levels, etc. and the complexity of future management requirements.'

8.5 Based on his calculations for DEFRA metric 3 (the most up to date version) as set out at Appendix 10 to his evidence, Mr Sutton states (see his proof at 7.1.6) that the area of new reedbed (i.e. marginal vegetation) needed to compensate for the loss of the marginal vegetation in the immediate vicinity of the appeal site would be 0.14 ha. He goes on to state *'This equates to 280m not the 40m referred to by the appellant.'*

8.6 In my view Mr Sutton's assessment is wrong, for the reasons I set out below.

8.7 First, his assessment is fundamentally flawed because he assumes for the purpose of the assessment that the existing marginal vegetation will be reduced from good to poor condition. My own view is that there will be no significant impact on this

vegetation as a result of the proposed development, for the reasons set out in my main proof at section 5.

8.8 Mr Sutton's second error is in his assessment of the condition of the existing marginal vegetation. He assesses the condition of the marginal vegetation in the coir roll and on the bank as good.

8.9 In my opinion the condition of the marginal vegetation in the coir roll and on the bank should be classed as moderate only, as per the assessment in my SoC at paragraph 3.39. My reasoning is as follows.

8.10 Reedbed (the closest habitat to marginal vegetation) is assessed using the condition assessment for wetlands (see appendix 3).

8.11 For the majority (77%) of the marginal vegetation which is on the bank, criteria 2, 3, 4, 5 and 6 are passed (5 out of 6 criteria). As non-negotiable core criterion 1 has not been passed, this means that it can only be of moderate condition. Although there may be a loss of vigour, criteria 2, 3, 4, 5 and 6 continue to be passed post-development resulting in the same condition of moderate.

8.12 For the marginal vegetation in the coir roll, criteria 1, 2, 3, 4 and 6 are passed. Criterion 5 is not met because much of the coir roll has failed (with the substrate coir roll in this case being equivalent to bare ground). However, it is key characteristic and normal for marginal vegetation and the river next to it to receive light from the direction of the river. The marginal vegetation adjacent to the site receives negligible light from the direction of the river due to the heavy shade from the bridge and its ramps which greatly limits its ecological functionality and ecological value. This situation would only occur naturally if trees were growing completely over the river from the other bank. The bridge is also a considerable unnatural physical obstruction to wildlife using the marginal vegetation. Although these are not listed criteria, I consider these affect the condition of the marginal vegetation. Therefore, in my opinion, this cannot be considered to be in good condition and moderate is more appropriate. This is in line with Principle 6 of the metric user guidance referred to in 8.4 above.

8.13 Mr Sutton's third error is in his assumption that the proposed new marginal vegetation would be in moderate condition only. The existing marginal vegetation at the Option B location is in good condition and there is no reason why the additional

marginal vegetation to be planted here will not also be good. Examples of good marginal vegetation are shown in appendix P of my PoE.

8.14 Mr Sutton's fourth error is in his assessment of open river water being good. Bar London, the river at this location is one of the most impoverished sections of the River Thames. The river has hard concrete edges on both banks, lacks significant natural vegetation alongside the river, experiences high levels of boat traffic and moorings and is adversely affected by large numbers of wildfowl. A river in good condition would be much of the River Kennet SSSI. A river in moderate condition could include parts of the River Thames with more natural vegetation along its banks upstream of Reading. The change in biodiversity value from open river to marginal vegetation at this location is appreciable in biodiversity terms.

8.15 Overall, in my judgement there would be a substantial gain in biodiversity off-site, arising from the lack of significant effect on the existing marginal vegetation and the provision of new marginal vegetation at Option B. Even if there were an impact on the marginal vegetation in the coir rolls adjacent to the site (because it is already more shaded by the bridge and being below the bottom of a north-facing bank is shaded by vegetation including tall ruderal and even the marginal vegetation on the bank), there would still be a gain, as is apparent from Tables 2 and 3 below. Table 2 assumes that the marginal vegetation in the coir rolls goes from moderate to poor, and Table 3 assumes it is now good and goes to poor as a result of the development. The area I have used for the existing marginal vegetation (based on georeferenced GIS map) is 0.0015 ha.

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Table 2: Calculation of change of biodiversity of marginal vegetation

	Area/ ha - existing	Area/ ha - proposed	Condition	Biodiversity units - existing	Biodiversity units - proposed	Change in biodiversity units
Adjacent to the site						
Marginal vegetation within coir roll	0.0015	0.0015	moderate to poor	0.0207	0.0104	-0.0103
Option B						
Open river[1] lost	0.00342		poor	0.0079		-0.0079
New marginal vegetation		0.00342	good		0.0326	0.0326
Totals	0.00492	0.00492		0.0286	0.0430	0.0144
Net % change						50%

8.16 The area of the new marginal vegetation within the coir and brushwood rolls at option B is more than twice the area of the existing marginal vegetation in the coir roll adjacent to the site. The above table shows a net gain of 50%.

8.17 If it is assumed that the marginal vegetation in the coir rolls is currently in good condition, the results would be as in table 3 below:

[1] Categorised as 'ornamental lake or pond' as there is no category for 'river' in the metric 3 off-site habitat baseline categories. In using this category for the purpose of the metric calculation, I am following Mr Sutton's approach in his metric 3 calculation.

Table 3: Calculation of change of biodiversity of marginal vegetation assuming marginal vegetation in coir roll is in good condition

	Area/ ha - existing	Area/ ha - proposed	Condition	Biodiversity units - existing	Biodiversity units - proposed	Change in biodiversity units
Adjacent to the site						
Marginal vegetation within coir roll	0.0015	0.0015	good to poor	0.0311	0.0104	-0.0207
Option B						
Open river lost	0.00342		poor	0.0079		-0.0079
New marginal vegetation		0.00342	good		0.0326	0.0326
Totals	0.00492	0.00492		0.0390	0.0430	0.0040
Net % change						10%

8.18 Finally, any impact on the marginal vegetation adjacent to the site needs to be seen in the context of the change in biodiversity within the site, as set out in Table 4 below. If we were to assume a change in the condition of the marginal vegetation in the coir rolls adjacent to the site from moderate to poor (as per table 2 above) the overall biodiversity change would be as follows:

Table 4: The net change in biodiversity value on and off-site

	biodiversity units pre-development	biodiversity units post-development	Change in biodiversity units	% change
On site	0.36	0.78	0.42	118%*
Off-site	0.0286	0.043	0.0144	50%
Total	0.3886	0.823	0.4344	112%

*figures taken from headline results in appendix 4

8.19 The overall impact of the development would be a net gain of approximately 112%. Even in the scenario in table 3 above (change of the marginal vegetation in the coir rolls from good to poor) there would still be a substantial gain.

8.20 Overall, therefore, I do not see any reason why if the latest DEFRA metric is applied there is any reason to refuse permission for the proposed development on ecology grounds.

Appendix 1: Paragraph 3.3.8 of “Site and Layout Planning for Daylight and Sunlight, A guide to good practice (2nd edition) BRE"

Figure 30: Shadier areas can usefully be reserved for car parking

Figure 31: A
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3.3.8 Locations which can and cannot receive two or more hours of sunlight on 21 March may be found using the sun-on-ground indicator (Appendix G*). Sunlight at an altitude of 10° or less does not count, because it is likely to be blocked by low level planting anyway. In working out the total area to be considered, driveways and hard standing for cars should be left out. Around housing, front gardens which are relatively small and visible from public footpaths should be omitted; only the main back garden should be analysed. Each individual garden for each dwelling in a block should be considered separately.

3.3.9 The question of whether trees or fences should be included in the calculation depends upon the type of shade they produce. Normally trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees).

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Appendix 2: Biodiversity metric 3.0: USER GUIDE excerpts

and includes the consultation and feedback that was received on biodiversity metric 2.0.

1.5 Biodiversity metric 3.0 balances robustness with simplicity. It uses habitat as a proxy for wider biodiversity with different habitat types scored according to their relative biodiversity value. This value is then adjusted, depending on the condition and location of the habitat, to calculate '**biodiversity units**' for that specific project or development. Biodiversity metric 3.0 incorporates separate calculations for linear habitats that require a different method of measurement such as hedgerows and lines of trees, rivers and streams and urban trees.

1.6 Biodiversity metric 3.0 can be used to measure both on-site and off-site biodiversity changes for a project or development and can be used to measure the change in biodiversity achieved by different land management interventions. The metric also accounts for some of the risks associated whenever new habitat is created or existing habitat is enhanced. The metric calculates the change in biodiversity resulting from a project or development by subtracting the number of **pre-intervention** or 'baseline' biodiversity units (i.e. those originally existing on-site and off-site) from the number of **post-intervention** units (i.e. those projected to be provided after the development or change in land management). **It is important to note that achieving gains in biodiversity from the calculation does not necessarily mean a development meets any wider requirements of planning policy or law relating to nature conservation or biodiversity**.

1.7 Biodiversity metric 3.0 only accounts for **direct impacts** on habitats within the footprint of a development or project. It has been developed to be a simple assessment tool and only considers direct impacts on biodiversity through impacts on habitats Although Natural England acknowledges the importance of considering **indirect impacts** these have not been included in the metric.

1.8 The units generated by biodiversity metric 3.0, like all biodiversity unit calculations, come with a 'health warning'. The outputs of this metric are not absolute values but provide a proxy for the relative biodiversity worth of a site pre- and post-intervention. The quality and reliability of outputs will depend on the quality of the inputs. This user guide provides advice on how to use the biodiversity unit approach and where and when it is appropriate for use. **The metric is not a substitute for expert ecological advice. The metric does not override or undermine any existing planning policy or legislation, including the mitigation hierarchy (see section 1.10 below), which should always be considered as the metric is applied.**

1.9 Biodiversity metric 3.0 does not include **species** explicitly. Instead, it uses habitat types as a proxy for the biodiversity 'value' of the species communities that make up those different habitats. The metric does not change existing levels of species protection and does not replace the processes linked to species protection regimes.

1.10 To simplify and streamline the calculation process, biodiversity metric 3.0 comes with a free calculation tool[8] to calculate biodiversity units. A short user guide[9] for the calculation tool is also available.

[8] Biodiversity Metric 3.0 - Auditing and accounting for biodiversity: Calculation tool

[9] Biodiversity Metric 3.0 - Auditing and accounting for biodiversity: Calculation tool – short user guide

be given to the habitats being lost in favour of higher-scoring habitats, and whether the retention of less distinctive but well-established habitats may sometimes be a better option for local biodiversity. Habitat created to compensate for loss of natural or semi-natural habitat should be of the same broad habitat type (e.g. new woodland to replace lost woodland) unless there is a good ecological reason to do otherwise (e.g. to restore a heathland habitat that was converted to woodland for timber in the past[15]).

- Principle 6: **The metric is designed to inform decisions, not to override expert opinion**. Management interventions should be guided by appropriate expert ecological advice and not just the biodiversity unit outputs of the metric. Ecological principles still need to be applied to ensure that what is being proposed is realistic and deliverable based on local conditions such as geology, hydrology, nutrient levels, etc. and the complexity of future management requirements.
- Principle 7: **Compensation habitats should seek, where practical, to be local to the impact.** They should aim to replicate the characteristics of the habitats that have been lost, taking account of the structure and species composition that give habitats their local distinctiveness. Where possible compensation habitats should contribute towards nature recovery in England by creating 'more, bigger, better and joined up' areas for biodiversity[16].
- Principle 8: **The metric does not enforce a mandatory minimum 1:1 habitat size ratio for losses and compensation but consideration should be given to maintaining habitat extent and habitat parcels of sufficient size for ecological function.** A difference can occur because of a difference in quality between the habitat impacted and the compensation provided. For example, if a habitat of low distinctiveness is impacted and is compensated for by the creation of habitat of higher distinctiveness or better condition, the area needed to compensate for losses can potentially be less than the area impacted. However, consideration should be given to whether reducing the area or length of habitat provided as compensation is an appropriate outcome.

[15] In which case the Open Habitats Policy would need to be followed to ensure suitability of the proposed change.

[16] Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra (2010)

Appendix 3: Condition assessment criteria for wetland

Taken from The biodiversity metric 3.0: auditing and accounting for biodiversity, Condition assessment sheets

Condition Assessment Criteria	
CORE CRITERIA - Applicable to **all wetland habitat types**:	
1	The water table is at or near the surface throughout the year, this could be open water or saturation of soil at the surface. There is no artificial drainage, unless specifically to maintain water levels as specified above. **NB - this criterion is non-negotiable for achieving good condition.**
2	The appearance and composition of the vegetation closely matches characteristics of the specific wetland habitat type (see definitions and links above). Indicator species for the specific wetland habitat type[1] are very clearly and easily visible.
3	The water supplies (groundwater, surfacewater and/or rainwater) to the wetland are of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.
4	Cover of scrub and scattered trees less than 10%.
5	Cover of bare ground less that 5%.
6	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species[1] make up less than 5% of ground cover.
ADDITIONAL CRITERION - only applicable to **Fen and Purple moor grass and rush pasture** habitat type:	
7a	No more than 25% of the fen area has a continuous cover of litter (i.e. dead vegetation) preventing regeneration.
ADDITIONAL CRITERION - only applicable to **Bog** habitat type:	
7b	Sphagnum and cottongrasses are at least frequent. Cover of ericaceous dwarf-shrubs[2] is less than 75%.
ADDITIONAL CRITERION - only applicable to **Reedbed** habitat type:	
7c	The reedbed has a diverse structure with between 60 and 80% reeds. Other areas may include open water (at least 10%), species-rich fen and/or wet woodland.
ADDITIONAL CRITERION - only applicable to **Floodplain wetland mosaic (CFGM)** habitat type:	
7d	All ditches recorded within the habitat achieve Good condition as assessed using the Ditch condition sheet.

Condition Assessment Result	Condition Assessment Score
If 6 criteria assessed:	
• Passes 5 or 6 of 6 core criteria, INCLUDING non-negotiable core criterion 1	Good (3)
• Passes 3 or 4 of 6 core criteria; OR • Passes 5 of 6 core criteria EXCLUDING non-negotiable core criterion 1	Moderate (2)
• Passes 0, 1 or 2 of 6 core criteria	Poor (1)
If 7 criteria assessed:	
• Passes 5 or 6 of 6 core criteria, INCLUDING non-negotiable core criterion 1; AND • Passes additional criterion 7a, 7b, 7c OR 7d where applicable	Good (3)
• Passes 4 or 5 of 7 criteria; OR • Passes 6 of 7 criteria EXCLUDING either non-negotiable core criterion 1 or additional criterion 7a, 7b, 7c OR 7d	Moderate (2)
• Passes 0, 1, 2 or 3 of 7 criteria	Poor (1)
Notes	
Footnote 1 - For fens, specify what fen type is present - alkaline, neutral, acidic/eutrophic, mesotrophic, oligotrophic. **Footnote 2** - Species considered undesirable for this habitat type include: creeping thistle *Cirsium arvense* , spear thistle *Cirsium vulgare,* common nettle *Urtica dioica* , docks *Rumex* spp., cherry laurel *Prunus laurocerasus* , common ragwort *Jacobaea vulgaris* . **Footnote 3** - Ericaceous dwarf shrubs include: crowberry *Empetrum nigrum* , cowberry *Vaccinium vitis-idaea* , bog bilberry *Vaccinium uliginosum* , cranberry *Vaccinium oxycoccos* , heather *Calluna vulgaris* , cross-leaved heath *Erica tetralix* , bog-rosemary *Andromeda polifolia* , bog myrtle *Myrica gale.*	

Appendix 4: On site net biodiversity change using metric 3

53-55 Vastern Road

Headline Results

Return to results menu

On-site baseline	*Habitat units*	0.36
	Hedgerow units	0.00
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.78
	Hedgerow units	0.00
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	118.07%
	Hedgerow units	0.00%
	River units	0.00%
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	0.42
	Hedgerow units	0.00
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	118.07%
	Hedgerow units	0.00%
	River units	0.00%
Trading rules Satisfied?	Yes	