

REBUTTAL PROOF OF EVIDENCE (ECOLOGY) ON BEHALF OF READING BOROUGH COUNCIL: 55 VASTERN ROAD, READING



Planning inspectorate case ref: APP/E0345/W/21/3276463

Reading Borough Council Ref: 200188

Report Date: 15 October 2021

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1 Background

- 1.1.1 This document is a rebuttal to the Ecology Proof of Evidence (PoE) provided on behalf of the appellant by Mr Iain Corbyn of EcoConsult (dated 28 September 2021).
- 1.1.2 I detail where I do not agree with the appellant's PoE and where I think agreement can be reached.

2 The ecological benefits of the development as a whole

- 2.1.1 I do not agree that "*the development has been designed to optimise the ecological value of the development site and to complement the ecology of the River Thames*" (para. 2.1). It will result in the shading of the Thames and its marginal vegetation and there is insufficient space between the buildings and the river to provide large canopy trees. Instead narrow form trees in the shadow of the buildings are proposed and such trees will be of very limited wildlife value.
- 2.1.2 The appellant has set out in 4.41 of their Planning PoE 3 scenarios which would reduce shading and the associated impact on the river Thames and it is the council's case that the development is of an excessive height and scale. Thus, it is clear that a different scheme could be devised, that would truly complement the ecology of the River Thames (i.e. a reduced scheme set back from the River Thames and with sufficient outside space to provide meaningful wildlife friendly landscaping).
- 2.1.3 Paragraph 2.2 refers to ecological enhancements: "*planting of native tree species (and their varieties) to suit the local conditions, sowing lawns with a flowering lawn seed mix and the creation of a green roof*". These could be provided within almost any development on this site and it certainly does not show that the "*development has been designed to optimise the ecological value of the development site*" (i.e. from the outset as the statement suggests) but simply that the landscaping in the limited open space will include some native and wildlife friendly species.
- 2.1.4 Para 2.3 refers to wildflower grassland being sown in part of the 10m buffer strip and later managed as long grass. Whilst this may be desirable it is unclear how sustainable this would be given the urban nature of this development. It may be that that over time residents will want to see this area managed as shorter cut grassland which would be neater and easier to maintain (the council often experiences conflicts between less frequently cut grass and residents or groups of residents).
- 2.1.5 The appellant states that the proposals will result in "*an increase of biodiversity value on-site of 118%*" as calculated using the DEFRA 3.0 metric. A metric and associated maps was not provided with the PoE so this statement was unsubstantiated. I have asked the appellant's ecologist for these. We have received a metric but, despite my request, not maps clearly showing the habitat areas (as per the UK Habitat Definition Categories) before and after development - as is required by the DEFRA 3 Metric.
- 2.1.6 The summary sheet from the Metric that I received from Iain Corbyn on 8th October 2021 is provided in Figure 1 below. His calculation shows that the habitat units on site pre-

development will be 0.36 and that post development they will be 0.78 equating to an increase in biodiversity units of 0.42.

- 2.1.7 It is clear that any development that introduces at least some soft landscaping will deliver a net gain in biodiversity units. Furthermore, it is almost certain that an alternative scheme (such as one of the 3 scenarios referred to in 2.1.2 above) would have more space for landscaping and trees and deliver a greater number of habitat units.

Figure 1 – Summary sheet from Ian Corbyn’s DEFRA 3 Metric

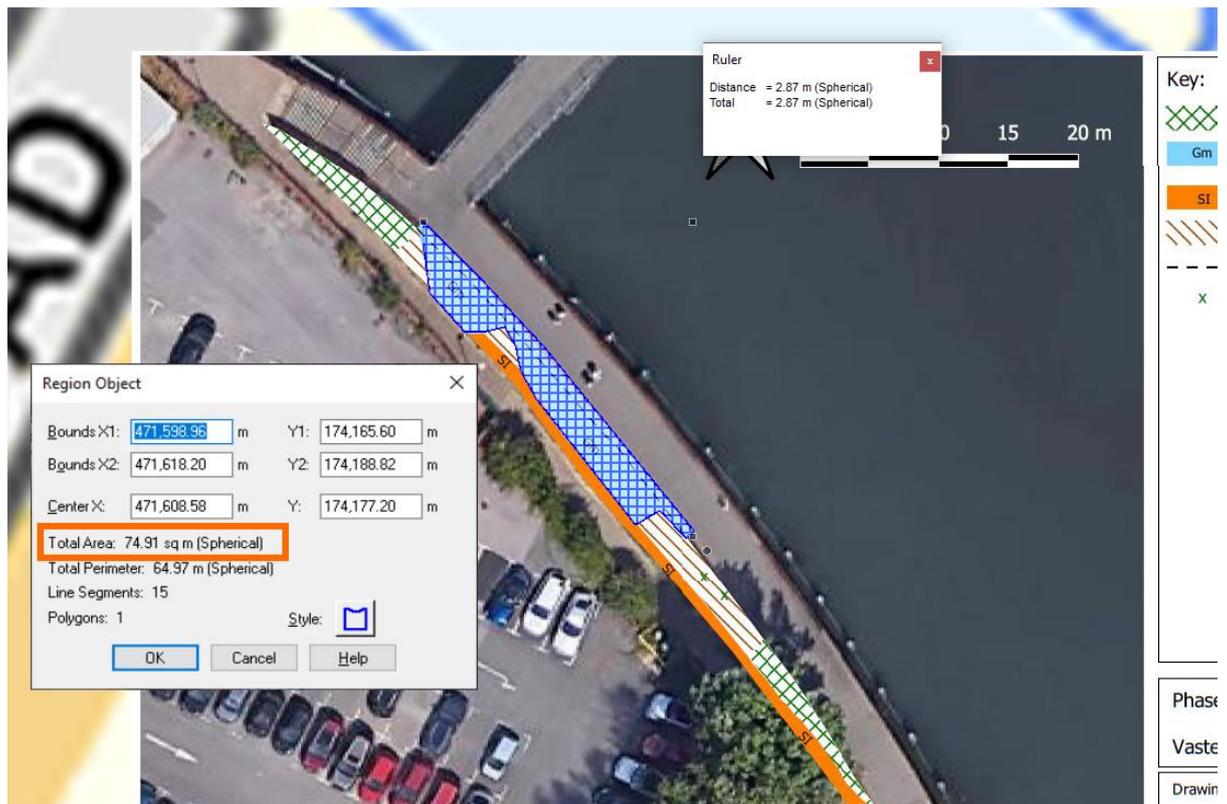
53-55 Vastern Road		Return to results menu
Headline Results		
On-site baseline	<i>Habitat units</i>	0.36
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
On-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.78
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
On-site net % change <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	118.07%
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%
Off-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change <small>(including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.42
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total on-site net % change plus off-site surplus <small>(including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	118.07%
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%
Trading rules Satisfied?	Yes	

- 2.1.8 An uplift in **on site** biodiversity units is however largely irrelevant in the planning balance. This is because any scheme would need to (and indeed would easily be able to) provide an increase in habitat units on site. Whereas the issue with this development (as opposed to an alternative scheme) is that it will damage the river Thames and its important (at a Borough level) marginal vegetation.

3 Description of marginal and other bankside habitats adjacent to the site

- 3.1.1 I am happy to agree with Mr Corbyn’s assessment that the extent of the marginal vegetation (based on photos taken from the boat) is as shown on the habitat map given in Appendix A. I am also happy to agree with the definition of marginal vegetation as set out in the ecology PoE.
- 3.1.2 I have georeferenced the habitat map from Mr Corbyn’s appendix A using MapInfo Professional, a GIS package. I measure the total area of the marginal vegetation [shown in blue and labelled in the key as “Marginal vegetation (Glyceria maxima dominated)”] to be 75m². I have asked Mr Corbyn to agree to this and hope to set this out in a statement of common ground (SoCG). He has told me that he measures this area as 65.6m² with 15m² being the coir rolls and 50.6m² being the instream habitat and at 3pm on the 15/10/21 I received the GIS files which show this measurement.
- 3.1.3 I have pasted a screenshot below (Figure 2) from our GIS system showing the georeferenced map and the measured area. I refer to this area as Marginal Vegetation Area 1 (MVA1) for the remainder of this statement.

Figure 2 – measurement of MVA 1 using MapInfo professional



- 3.2 The length of marginal vegetation to the south east of the development site
- 3.2.1 We measured this as 45.8m. The appellant has measured this as 45m. I am happy to agree to the slightly shorter measurement of this as this is largely immaterial to the council’s case. This has been agreed with Mr Corbyn.

3.2.2 I refer to this area as Marginal Vegetation Area 2 (MVA2) for the remainder of this statement.

4 Importance of the marginal vegetation

4.1.1 There appears to be no difference of opinion between Mr Corbyn and I on the importance of the river Thames and MVA1 and MVA2. Paragraph 4.2 of his PoE refers to the EclA guidelines and the statement that “*the scale of significance of an effect may not be the same as the geographic context in which the feature is considered important*” and 4.3 of his PoE reads:

“Although the River Thames is of borough importance, any impact on the marginal vegetation adjacent to the site is of no more than neighbourhood significance. This is because the reduction in sunlight hours is unlikely to result in the loss of this habitat but may result in a slight loss of vigour and the loss of small areas of marginal vegetation already struggling to establish (e.g. photographs 4 and 6 in Appendix I).”

4.1.2 My understanding of Mr Corbyn’s argument is that he considers MVA1 to be of borough importance but because, he contends, the proposals will result in [only] “*a slight loss of vigour and the loss of small areas of marginal vegetation already struggling to establish*” (which I disagree with see section 5 below) that the significance of the effect is of only Neighbourhood importance.

4.1.3 I disagree with this and for the reasons set out below there will be at best a significant reduction in vigour (and more likely the failure of the vegetation). This will be an effect of Borough significance.

5 The impact of shading on marginal vegetation

5.1.1 Mr Corbyn contends that there will be a reduction in sunlight hours from 6+ to between 2 and 6 sunlight hours per day. Looking at his SoC Appendix C this appears to be incorrect (or at least optimistic) as only a very small part of the area between the path and the bridge (some of which appears to be open water) is shaded yellow [6+ hours] in June and an even smaller area is shaded yellow in May (see Figure 4).

5.1.2 My reading of the diagrams is that the number of sunlight hours will be reduced from 6+ (presumably near constant sun, i.e. up to 16.5 hours in mid-summer) to between 2 and 4 sunlight hours. This is a significant reduction in sunlight and a significant increase in shade (see section 5.3 below).

5.1.3 The entire length of MVA1 was planted with coir rolls when the footbridge was built. The areas at the northern end and southern ends of MVA1 have failed and we agree that (see section 3 above) that they are now scrub (at the northern end this may have been planted) and tall ruderal (see Figure 2). These areas, particularly the southern end, receive less sunlight than the central area and currently receive between 2 and 6 sunlight hours. This can be seen in Figure 3 below (taken from Appendix 3 of Mr Corbyn’s SoC).

- 5.1.4 Thus the planted marginal vegetation that receives more 6+ hours sunlight exposure has survived (and thrived) whereas the marginal vegetation that has received less than 6+ hours has died. Mr Corbyn's appendix H provides photos of MVA1 from the river.
- 5.1.5 Post development almost all MVA1 will receive less than 6 hours sunlight (see Figure 4). I therefore conclude that what is left of MVA1 will not survive the development; or at best have significantly reduced vigour.

Figure 3 – Current sunlight hours taken from Appendix 3 of Mr Corbyn's SoC showing the shading of the southern end (red boxes)

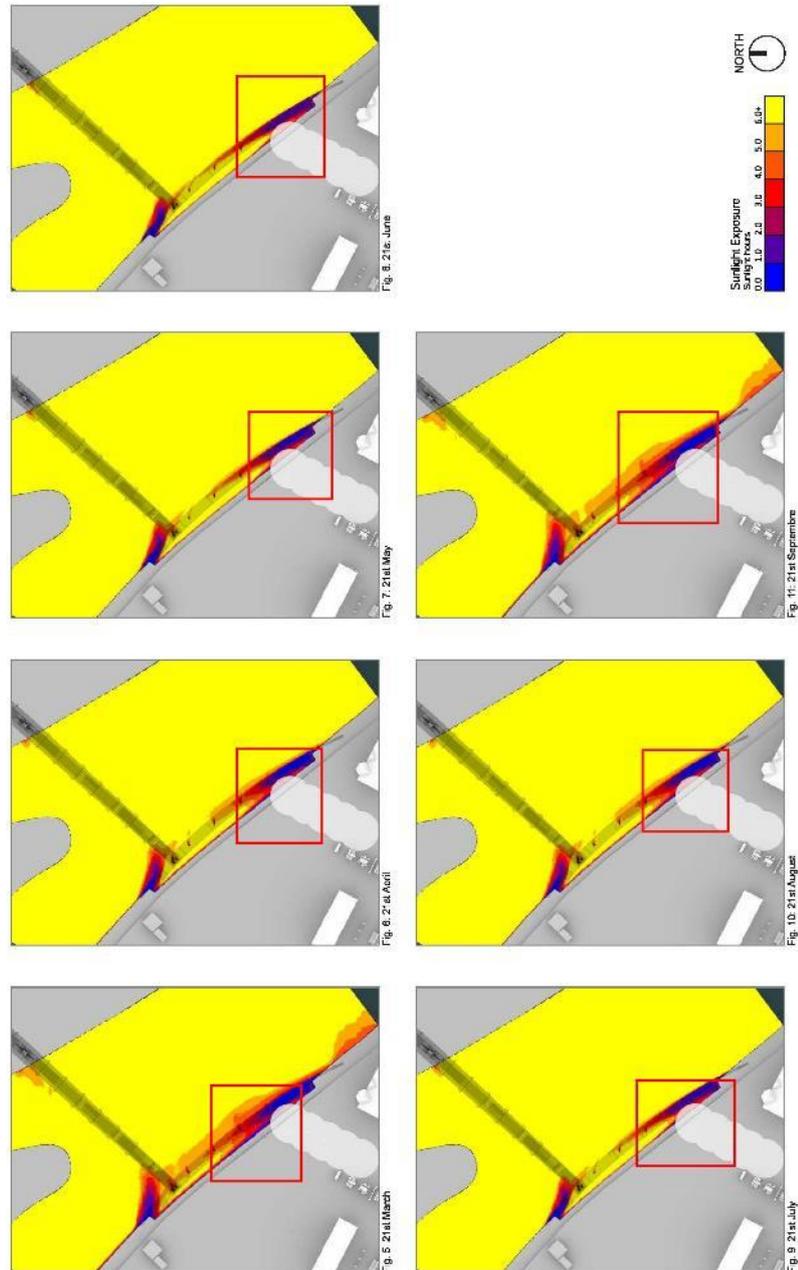
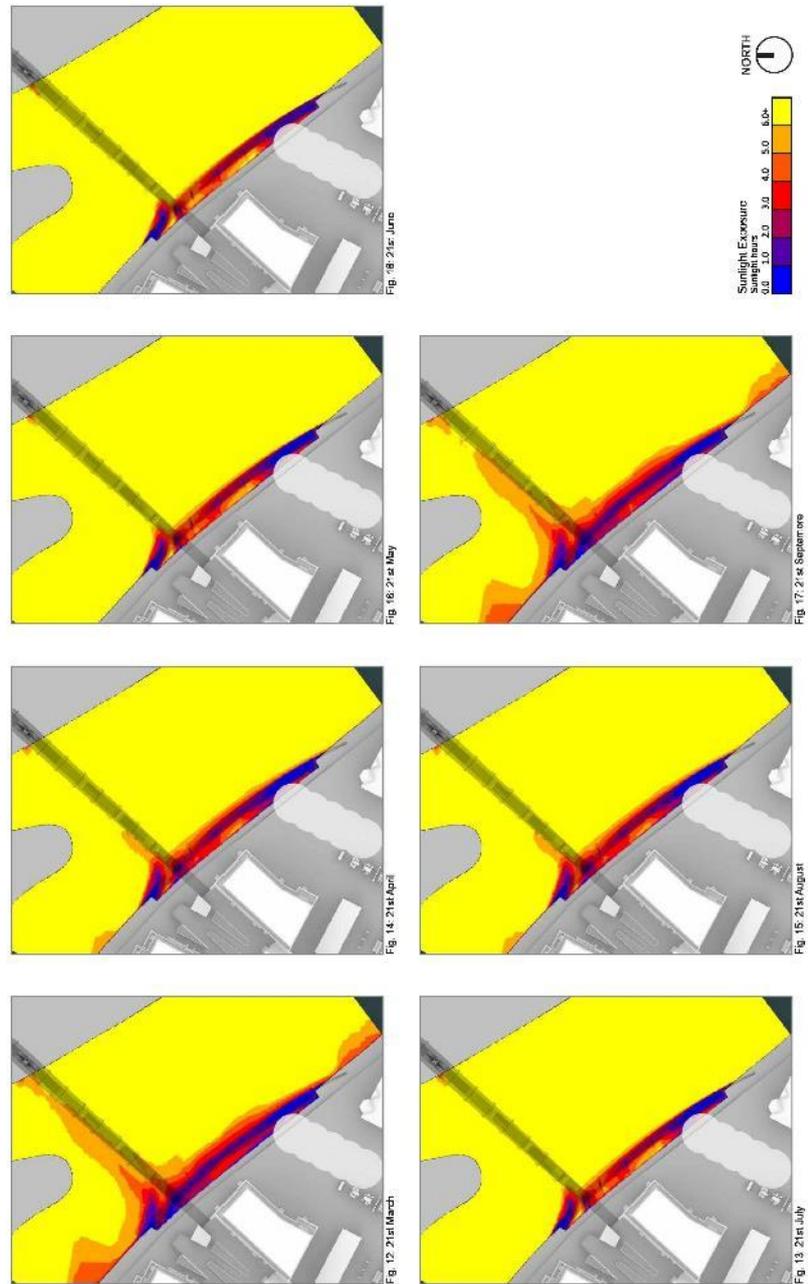


Figure 4 – Post development sunlight hours taken from Appendix 3 of Mr Corbyn’s SoC [the only yellow areas 6+ hour areas appear to be tiny areas in the river in May and June]

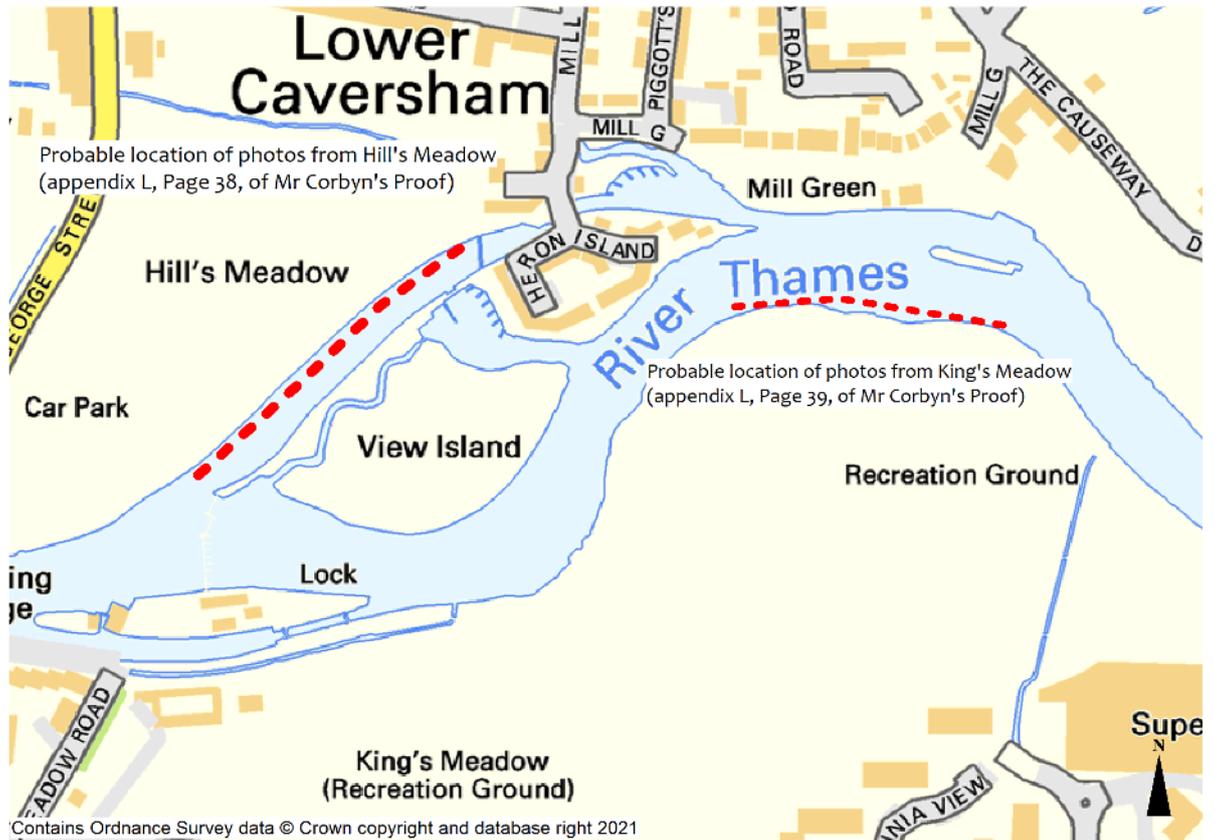


5.2 Photos provided by Mr Corbyn

5.2.1 Mr Corbyn refers to a series of photographs, given in his Appendix L (pages 38 & 39) purporting to show marginal vegetation (at other sites) growing in shade. No map is given showing where these were taken.

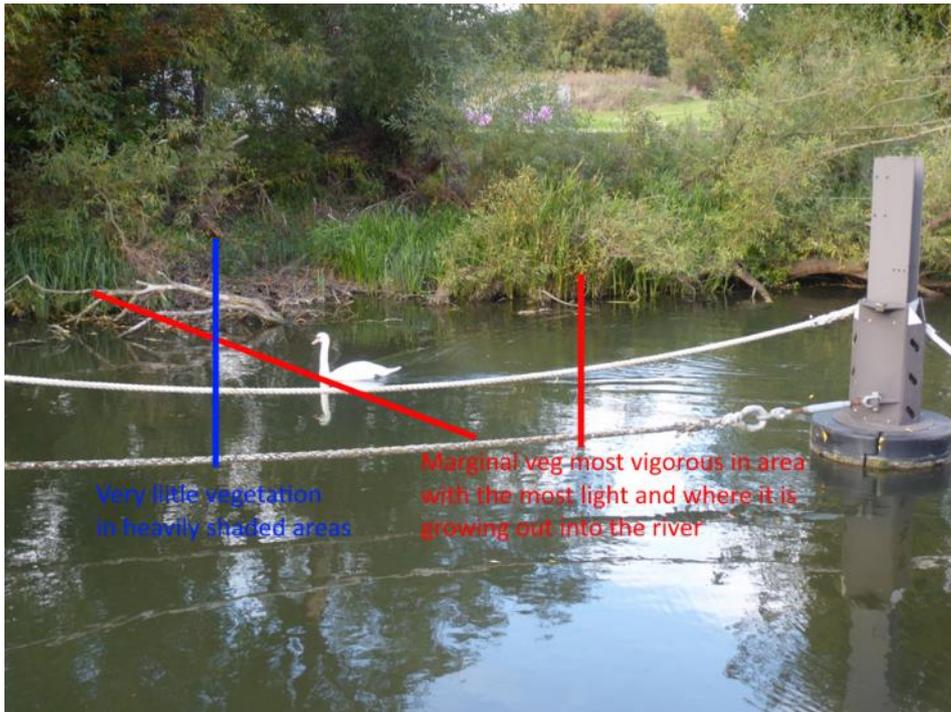
5.2.2 However, Hills Meadow is on the north side of the river and therefore largely unshaded by trees (as the sun will be to the south) and the photos of Kings Meadows show a few sparse patches of marginal vegetation north of the river. The location where these photographs were taken is provided in Figure 5 below.

Figure 5 – Probable locations of photos in Appendix L of Mr Corbyn’s PoE



5.2.3 My comments on these photos are as follows:

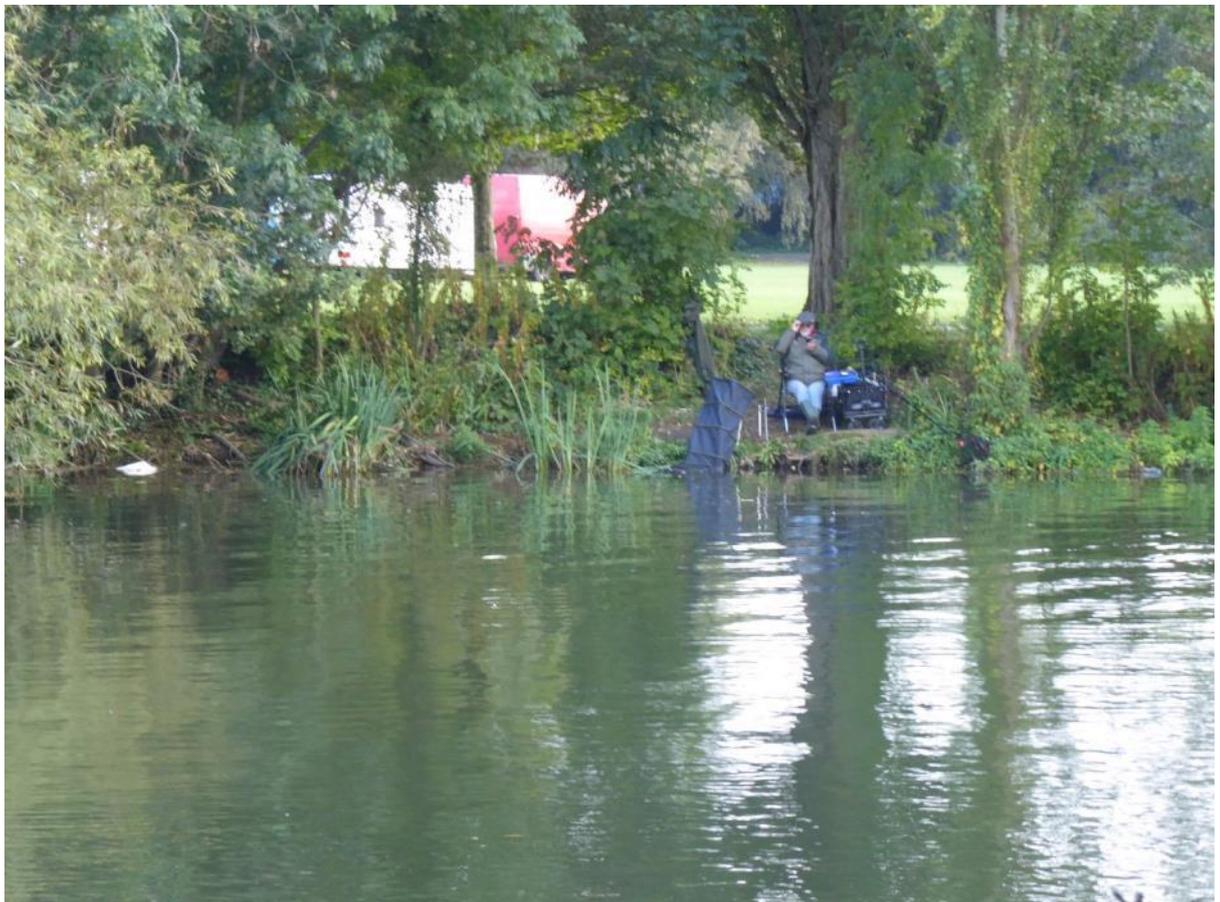
5.2.4 **Page 38** – These all appear to be to the northwest of the weir and the stream running along view island as the weir to the east can be seen in some of the photos. The photos have been taken from the bank looking into the river so that it appears that the vegetation is shrouded by the predominantly willow trees above. However, photos taken from the weir bridge to the east (showing the rope and steel post) show things differently and it can clearly be seen that almost all the marginal vegetation is in a part of the river that receives light from the south whilst there is very little vegetation under the heavily shaded tree canopy are – see below:



5.2.5 At Hills Meadow the most vigorous marginal vegetation is, as would be expected, in the areas that are not shaded. Where heavy shade is present, e.g. below the sycamore in the photo below - also at Hills Meadow, the marginal vegetation is absent:



- 5.2.6 **Page 39** – These are all on the northern bank and are taken from the river. They appear to show vegetation in the shade. However, the vegetation that is shown is sparse, being a few solitary stands (except the photo in the bottom left-hand corner of page 39) and tend to jut out into the river. Dappled sunlight can be seen on most of the plants despite the photo appearing to have been taken late in the day (there are long shadows in the photos). In the darker more shaded areas, there is very little if any vegetation and mainly bare banks.
- 5.2.7 The photo in the bottom left-hand corner shows a wide strip of vegetation on a straight section of the river - I could not find this area at King's Meadow. The water lilies indicate that this area receives high levels of light and the trees behind the strip of marginal vegetation appear to be set a long way back from the waters edge. Where there is a tree shading the water (on the left side of the photo), there is no marginal vegetation.
- 5.2.8 I have provided a photo below of the bank of King's meadow taken from View Island. It is clear that only sporadic patches of marginal vegetation exist and only where there is a break in the tree canopy or where the bank juts out into the river:



- 5.2.9 In summary I do not agree that the photos provided in Appendix L demonstrate that marginal plants thrive in shade. Instead they show that they do not. To demonstrate this, I have taken a photo on The Kennet and Avon canal west of Reading and east of the Cuning Man public house in Burghfield:



- 5.2.10 In this location the canal flows west to east (as the River Thames does at the appeal site). Adjacent to the towpath there is a tall impenetrable line of Leyland cypress trees that separate the towpath from the former metal recycling yard to the south. The trees are approximately 12m tall and are set back from the canal bank by 6m. Being evergreen these trees cast a shadow over the canal all year round (as the proposed new buildings at the appeal site would). Where the canal is shaded, i.e. north of the coniferous trees there is almost no marginal vegetation. Where there is no shading there is a wide bank of marginal vegetation.
- 5.2.11 The new development would cast a similar amount of shade and the effect of shading is likely to be the same. The photo below shows the area next to the Kennet viewed from the west.



5.2.12 And the one below from the east



5.3 Ellenberg values

5.3.1 Mr Corbyn (SoC section 5.3) refers to the Ellenberg indicator values and states that:

“The Ellenberg indicator values give these species a light value of 7 which is described as ‘Plant generally in well-lit places, but also occurring in partial shade’.”

5.3.2 Ellenberg lists UK plant species and relationships between species and their controlling environmental variables one of which is Light. The Light scale goes from 1 *“Plant in deep shade”* to 9 *“Plant in full light, found mostly in full sun”* (I have provided the paper that Mr Coryn refers as appendix 2 to this rebuttal proof)

5.3.3 His statement at 5.3 suggests that because the species found adjacent to the appeal site have an Ellenberg Light value of 7 they will not be affected when the number of sunlight hours reduces from full sun (i.e. up to 16.5 hours) to between 2 and 4.

5.3.4 I disagree with this and his own evidence demonstrates this for the reasons detailed above.

5.3.5 A plant with an Ellenberg Light Value of 7 is described as a *“Plant generally in well lit places, but also occurring in partial shade”*.

5.3.6 In mid-March, i.e. the start of the growing season there are 12 hours between sunrise and sunset. If MVA1 were to receive 2 sunlight hours this would mean that it would receive sunlight for just 17% of the day. At 4 hours this equates to 33% and at 6 hours (as Mr Corbyn contends that part of the site would - which I think is rather optimistic see above) it would receive 50% of the available light.

5.3.7 Table 1 below summarises these figures for mid-March, mid summer’s eve, and mid-September. This shows that post development MVA1 will be in shade for between 67% and 88% of the day or between 50% and 88% of the day if it receives between 2 and 6 hours as Mr Corbyn’s states (which I dispute see 5.1.1 above).

5.3.8 This is not a *“well lit”* place or even a place in *“partial shade”*. Instead it is a place that that could be described as being in shade (at 2 or 4 sunlight hours) or at possibly *“semi-shade”* (at 4 or 6 sunlight hours). This means that only plants with an Ellenberg Light value of 3¹ to 5² are likely to survive. As none of the species at MVA1 have such a value they will probably not survive.

5.3.9 The failure of this vegetation will be a significant effect of Borough importance.

¹ Described as a *“Shade plant, mostly less than 5% relative illumination, seldom more than 30% illumination when trees are in full leaf”*.

² Described as *“Semi-shade plant, rarely in full light, but generally with more than 10% relative illumination when trees are in leaf”*

Table 1 – Amount of time that marginal vegetation will be in shade

	Daylength (in hours) rounded to nearest 30 minutes	Number of sunlight hours on MVA1 post development	% of day that the marginal vegetation will be in sunlight Post development	% of day that the marginal vegetation will be in shade Post development
15-Mar	12	2	17%	83%
		4	33%	67%
		6	50%	50%
21-Jun	16.5	2	12%	88%
		4	24%	76%
		6	36%	64%
15-Sep	12.5	2	16%	84%
		4	32%	68%
		6	48%	52%

6 The impact of shade from large canopy trees

6.1.1 At 5.5 the ecology PoE reads:

“Also, if large canopy trees were used along the river frontage (as requested by the Council), the shade caused by these to the marginal vegetation in the summer months could be greater than that caused by the proposed buildings”

6.1.2 It is the council’s case that there is an insufficiently wide buffer between the new buildings and the river and that an alternative scheme could be devised that would provide a wider buffer. Indeed, the appellant has set out in 4.41 of their Planning PoE two scenarios which would set back the development from the river (one to reduce the height of the buildings). In the two scenarios there would be a buffer zone that would be wide enough to accommodate large canopy trees whilst still providing sufficient sunlight hours for the adjacent marginal vegetation. Such a buffer zone should truly be designed to enhance the wildlife value of the River Thames

6.1.3 Sarah Hanson deals with this issue in more detail in her Rebuttal Proof of Evidence in sections 3.8 to 3.11.

7 **Habitat compensation**

7.1.1 If it is found that the Mitigation Hierarchy has been followed then it will need to be established whether adequate offsite compensation can be provided. Policy EN12 states that the “Provision of off-site compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics”. The current Metric is the DEFRA 3.0 metric.

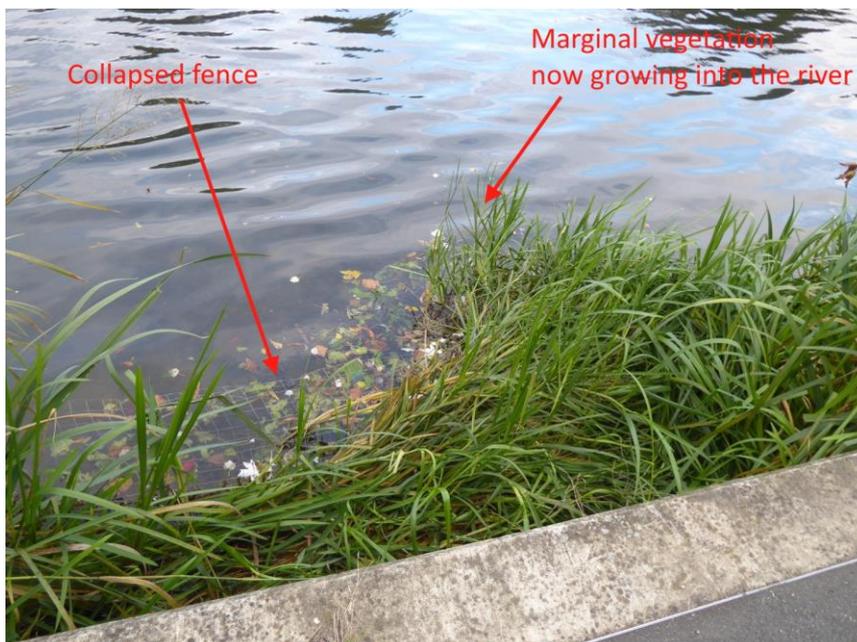
7.2 Proposed mitigation

7.2.1 Mr Corbyn case is that to mitigate the impacts of the development on MVA1, MVA2 can be widened by installing more coir rolls. He has conceded - although he does not implicitly state this - that Option A (Appendix J in his SoC) is unviable and it is now not included in his mitigation proposals.

7.2.2 At 5.11 he states that: *“Option B perhaps offers the best solution to provide appropriate habitat compensation for any impact to the marginal vegetation adjacent to the site.”*

7.2.3 He then describes how he would increase the width of the marginal habitat at (MVA2) by installing an additional 40m of planted coir roll. He concluded that this would establish because the river is shallow (0.3m) at this location. I agree that the coir rolls would establish however I do not agree that they would adequately compensate for the loss / significant deterioration of MVA1.

7.2.4 Furthermore, it is not clear that they would necessarily provide any new habitat. This is because, particularly in shallow water (as we now know the river is – see 5.16 of Mr Corbyn’s proof) marginal vegetation quickly colonises new areas as the vegetation dies and forms a substrate in which new vegetation will root. This can already be seen at MVA2 where the vegetation now extends into the river where the fence has collapsed (see photo below):



7.2.5 Thus it is likely that that the vegetation will start to colonise this shallow part of the river in any case regardless of whether it is planted with coir rolls. The DEFRA 3 user guide defines Additionality as

“The need for a compensation measure to provide a new contribution to conservation, additional to any existing values, i.e. the conservation outcomes it delivers would not have occurred without it”

7.2.6 And in my view the proposed mitigation behind MVA2 does not comply with this principle

7.3 A biodiversity Metric for the scheme

- 7.3.1 Mr Corbyn has not provided a metric that demonstrates that the loss / deterioration of Marginal vegetation at MVA1 can be compensated for by the provision of 40m of new coir roll at MVA2.
- 7.3.2 I have tried to agree baseline (pre-intervention) figures but with Mr Corbyn but have not managed to do so.
- 7.3.3 I have set out below my calculations of the area of the river Thames that would need to be converted to marginal vegetation in order to ensure that there was no off-site net loss in biodiversity units.

7.4 The DEFRA 3 metric

- 7.4.1 The DEFRA 3 metric spreadsheet is an excel calculator that assigns values to habitats before a change (the baseline assessment) and assumed habitat values after the change.

PRE-intervention Habitat Unit Values

- 7.4.2 The baseline or PRE-intervention Habitat Unit (HU) Value is a factor of:
- The area of the habitat parcel
 - The distinctiveness of the Habitat Type [Very Low; Low; Medium; High; Very High]
 - The habitat condition assessed using the Condition assessment sheets (in Excel format provided at appendix 4) - [Poor; Fairly Poor; Moderate; Fairly Good; Good]
 - The strategic significance [High, within area formally identified in local strategy; Moderate - location ecologically desirable but not in local strategy; Low - area/compensation not in local strategy/ no local strategy]

POST-intervention HU values

- 7.4.3 The POST-intervention HU value is a factor of:
- The area of the habitat parcel
 - The distinctiveness of the Habitat Type (as defined in the UK Habitat Classification) ranging [Very Low; Low; Medium; High; Very High]
 - The target habitat condition at a defined number of years [Poor; Fairly Poor; Moderate; Fairly Good; Good]
 - The strategic significance [High, within area formally identified in local strategy; Moderate - location ecologically desirable but not in local strategy; Low - area/compensation not in local strategy/ no local strategy]
 - The time to target condition
 - The difficulty of creation of that habitat
 - The spatial risk category (a multiplier to discourage creation of habitats far from the site of biodiversity loss)

High distinctiveness habitats

- 7.4.4 For the reasons set out in 3.39 of Mr Corbyn's SoC MVA1 and MVA2 are classified as the UK Habitat Classification – Wetland Reedbeds (code f2e).
- 7.4.5 This is a High Distinctiveness habitat. Section 4.44 of the DEFRA 3 User Guide (appendix 7 of my PoE) - reads:

“Some particularly biodiverse (i.e. High Distinctiveness) habitats require ‘like for like’ compensation if lost, and trading down in distinctiveness should always be avoided (see 2.21, Rule 3);”

- 7.4.6 It would not be possible to create reedbed [marginal vegetation] within the application site. Thus in accordance the metric new reedbed (marginal vegetation) will need to be created off site.
- 7.4.7 As such – and regardless of the quantity of habitat units created within the development site (which in any case has not been evidenced - see Section 2 above) - because the proposals will result in the loss of High Distinctiveness HU an equivalent number of the same type of High Distinctiveness HU would need to be delivered.
- 7.4.8 In other words, to comply with policy EN12 and the DEFRA 3 Metric, an equal amount of Reedbed [marginal vegetation] HU to that which will be lost would need to be created regardless of any increase in on site HU.

7.5 MVA1 value PRE-intervention

7.5.1 To compensate for the impact of the proposed development on MVA1 we need to calculate its PRE-intervention value. This is as follows:

The area of the habitat

7.5.2 The area is still to be agreed but is somewhere between 65.6 and 75m² of marginal habitat (see 3.1.2). In the absence of an agreed figure I have used 70m² for this calculation. At 3pm on 15/10/21 I received Mr Corbyn's GIS file which shows a habitat area of 65.6m² the polygons do not align well with aerial photography data, see screenshot below, and my 70m² figure is a reasonable figure to use (in any case it would make very little difference to the overall assessment if I were to use either the upper or lower figure)



The distinctiveness of the Habitat Type

7.5.3 For the reasons set out in 3.39 of Mr Corbyn's SoC MVA1 and MVA2 are classified as the UK Habitat Classification - Wetland Reedbeds (code f2e). This is a High Distinctiveness habitat.

The habitat condition

7.5.4 The DEFRA 3.0 Technical supplement (appendix 6 of my SoC) confirms that the condition sheet for assessing reedbeds is Wetland. The sheet "23 wetlands" in the DEFRA 3 Habitat Assessment Sheet spreadsheet (appendix 4 to this rebuttal proof) lists out the condition assessment criteria. There are 6 Core Criteria as follows:

"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 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 than 5%.

6 There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species make up less than 5% of ground cover. “

7.5.5 There is also an Additional Criteria for 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.

7.5.6 MVA1 passes all 6 of the Core Criteria but, because it is marginal vegetation and not reedbed, it does not pass Additional Criteria 7c and in my view should not be assessed against this criteria.

7.5.7 MVA1 is a thick strip of marginal vegetation that has established well and has started to colonise the banks. It passes all 6 Criteria that are applicable to it and can therefore be assigned a value of “Good”.

7.5.8 Additional Criteria 7c does not apply (see 7.5.6 above) but even if it did it would only change the value of MVA1 “moderate”.

The strategic significance

7.5.9 The River Thames is a priority habitat as defined in the NPPF and identified in the Local Plan as a key component of Reading’s Green Network. It therefore has High (within an area formally identified in local strategy) strategic significance

The pre-development HU score for MVA1

7.5.10 The pre-development HU equals 0.14 if MVA1 is assessed as being in “good” condition:

Ref	Habitats and areas				Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline Total habitat units
	Broad habitat	Habitat type	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		
1	Wetland	Reedbeds	Wetland-Reedbeds	0.007	High	6	Good	3	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	0.14

7.5.11 Or 0.10 HU if MVA1 is assessed as being in “moderate” condition

Ref	Habitats and areas				Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline Total habitat units
	Broad habitat	Habitat type	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		
1	Wetland	Reedbeds	Wetland-Reedbeds	0.007	High	6	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	0.10

7.6 MVA1 value POST-intervention

7.6.1 For the reasons set out above in section 5 above POST intervention (i.e. after development) MVA1 will either have died or be significantly reduced in vigour and extent. If one assumes that there is no vegetation left (which it is reasonable to do) then there will be zero Reedbed HU at MVA1 post development and instead this will be a river (“Reservoir” habitat type – see section 7.8 below) in moderate condition. This equates to 0.04 HU none of which are Reedbed HU:

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition	Strategic significance	Temporal multiplier			Difficulty	Habitat units delivered
			Distinctiveness	Condition			Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years		
Lakes	Reservoirs	0.007	Medium	Moderate		Within area formally identified in local strategy	Check details - Is there evidence habitat creation started and the threshold for Poor condition reached?	3	Medium	0.04	

7.6.2 If one assumes that there is no vegetation left and as above there will be zero Reedbed HU at MVA1 post development and instead this will be a river (“Ornamental pond or lake” habitat type – see section 7.8 below) in moderate condition. This equates to 0.01 HU none of which are Reedbed HU

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition	Strategic significance	Temporal multiplier			Difficulty	Habitat units delivered
			Distinctiveness	Condition			Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years		
Lakes	Ornamental lake or pond	0.007	Low	Moderate		Within area formally identified in local strategy	Check details - Is there evidence habitat creation started and the threshold for Poor condition reached?	1	High	0.01	

7.6.3 If one assumes that what is MVA1 will be in poor condition (but as detailed in Section 5 above the evidence does not show this but rather there will be none left) then the number of HU post development would be 0.05 (it is not possible to down grade a habitat condition in the metric so the A-1 Habitat Baseline worksheet is used to calculate this).

Ref	Habitats and areas				Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad habitat	Habitat type	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		
1	Wetland	Reedbeds	Wetland-Reedbeds	0.007	High	6	Poor	1	Within area formally identified in local strategy	High strategic significance	1.15	Same habitat required	0.05

7.7 Loss of HU at MVA1 as a result of the development

7.7.1 The calculated loss of HU at MVA1 due to the development will be between

0.05 [0.10 (MVA1 “moderate” condition PRE intervention) minus 0.05 (Marginal veg in poor condition POST intervention)]

and

0.13 [0.14 (MVA1 “good” condition PRE intervention) minus 0.01 (ornamental Pond / Lake in “moderate” condition POST intervention)]

7.7.2 The loss of Reedbed HU will be between 0.05 [0.10 (MVA1 “moderate” condition PRE intervention) minus 0.05 (Marginal veg in poor condition POST intervention)] and 0.14 [assumed that all marginal vegetation will be lost]

7.7.3 A reasonable estimate of the loss in HU is 0.11

[0.14 (MVA1 “good” condition PRE intervention)] minus 0.04 [(ornamental reservoir in “moderate” condition POST intervention)]

with the figures rounded ($0.1449 - 0.0387 = 0.1062$ or 0.11) to the nearest 0.01 units as they are done in the metric. The “Headline Results” sheet for this is shown below:

On-site baseline	<i>Habitat units</i>	0.14
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	0.04
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
On-site net % change (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	-73.24%
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%
Off-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	-0.11
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	-73.24%
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%

7.8 The offsite (River Thames) HU PRE-development

- 7.8.1 To establish how many much planting needs to occur to offset the loss of between 0.05 and 0.13 HU we need to establish the gain in HU a given quantity of coir roll planting will provide.

The area of the habitat parcel

- 7.8.2 The coir rolls provided by Salix are either 0.2 or 0.3m in diameter. Within a few years they could be expected to grow and create a 50cm wide strip of vegetation (as they did at MVA1 and MVA2). As such the 40m of installed coir roll proposed by the appellant will result in 20m² of new marginal vegetation.

The distinctiveness of the Habitat Type

- 7.8.3 The coir rolls will be planted in open water in the River Thames, a distinctive habitat in Reading.
- 7.8.4 There is no area habitat type for rivers in the DEFRA 3 Metric but the nearest habitat classifications are either: “Lakes - Artificial lake or pond” (UK Hab Code 362³) or “Lakes - Reservoirs” (UK Hab Code 108).
- 7.8.5 The definition of an “Artificial lake or pond” is: “Enclosed artificial standing water bodies containing non-saline water with (semi)natural aquatic communities and artificial/managed banks.”. The River Thames fits this description less than Reservoir. Artificial lake or pond has a “Low” distinctiveness category.
- 7.8.6 The UK Habitat Classification Definition for “Reservoirs” is “An artificial water body created by a dam, for public water supply or irrigation purposes”. The River Thames, which is used for both public water supply and irrigation purposes, best fits this definition. Reservoirs have a “Medium” distinctiveness category
- 7.8.7 The River Thames is a highly distinctive and better fits the description of “reservoirs” than “artificial lake or pond”. It is understood that Mr Corbyn disagrees and thinks the river Thames is best classified as an Artificial lake or pond.

The habitat condition

- 7.8.8 The condition assessment sheet for Reservoirs is “13. Lake” (appendix 4). The instructions refer to the Water Framework Directive (WFD) and The Freshwater Biological Association ‘Habitat Naturalness Assessment’. The latter is not applicable to a river.
- 7.8.9 Under the WFD The River Thames from Wallingford to Caversham (EA reference: GB106039030331) is a Heavily Modified Water Body (HMWB) and was classified “as at Moderate Ecological Potential in 2016, failing for invertebrates and phosphate” (refer to the Reading BAP for details – given as an appendix to the planning officer’s statement of case). There has been no re-assessment since. It has therefore been classified as being in “moderate” condition for this assessment.

³ The UK Habitat Classification definitions are provided as appendix 2.

7.8.10 As set out in the Reading BAP “Ecological Potential” is the terminology used to classify HMWBs’ ecological condition whilst “Ecological Status” is the terminology used to classify non HMWBs’ ecological condition. Thus, the WFD condition assessment of all HMWBs (such as the River Thames) is referred to in terms of Ecological Potential rather than Ecological Status (i.e. because the WFD condition assessment terminology for HMWB is “Ecological Potential” a HMWB with “Moderate Ecological Potential” is in Moderate Condition).

The strategic significance

7.8.11 As detailed in 7.4.9 above the River Thames has High strategic significance

The PRE-Intervention HU score for the River Thames

7.8.12 If the River Thames is classified as the habitat “Artificial Pond or Lake” in “Moderate” condition 20m² equates to 0.01 HU:

Habitats and areas			Habitat distinctiveness		Habitat condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline Total habitat units
Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		
Lakes	Ornamental lakes or pond	0.002	Low	2	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same distinctiveness or better habitat required	0.01

7.8.13 If the River Thames is classified as a “Reservoir” in “Moderate” condition 20m² equates to 0.02 HU:

Habitats and areas			Habitat distinctiveness		Habitat condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline Total habitat units
Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		
Lakes	Reservoirs	0.002	Medium	4	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Same broad habitat or a higher distinctiveness habitat required	0.02

7.9 The offset site (river Thames north of MVA2) increase in HU units POST-intervention

7.9.1 The offsite HU post development will be as follows

The area of the habitat parcel

7.9.2 20m² as detailed above

The post intervention habitat condition

7.9.3 Because MVA2 is in good condition it is fair to assume that newly planted marginal vegetation will also obtain Good condition

The time to target condition

7.9.4 This is automatically set by the metric to 12 years. However, we know that the marginal vegetation in this area established and thrived within 5 years of being planted so we can reduce this to 5 years in the metric

The difficulty of creation

7.9.5 This is automatically set by the metric to Medium

Spatial risk category / multiplier

7.9.6 This is set to 1 (the highest) as the offset site is adjacent to the MCA1

The POST-Intervention HU score for the offset site (20m²)

7.9.7 The post intervention HU score for 20m² of reedbed is 0.02

Proposed habitat	Area ha	Distinctiveness	Condition	Strategic significance		Temporal risk multiplier		Difficulty	Spatial risk multiplier		Habitat units delivered
				Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation		Spatial risk category		
Reedbeds	0.002	High	Good	Within area formally identified in local strategy	Check density - is there evidence habitat creation started and the threshold for 'Good condition reached'?	5	Medium	Compensation inside LPA or NCA, or deemed to be sufficiently local to site of biodiversity loss	0.02		

7.9.8 The uplift in HU POST Intervention for 20m² of new marginal vegetation is either Zero (if the River Thames is classified as a reservoir) [this actually just above zero but shown as zero on the metric due to rounding to two decimal places – see below]

or

0.01 (if the River Thames is classified as an Ornamental Lake or Pond).

7.9.9 The Headline Results sheet is given below:

On-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	Habitat units	0.00%
	Hedgerow units	0.00%
	River units	0.00%
Off-site baseline	Habitat units	0.01
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.02
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	0.01
	Hedgerow units	0.00
	River units	0.00

The POST-Intervention planting required to achieve 0.13 habitat units (classifying the Thames as a Reservoir)

7.9.10 Figures in the model are rounded to take account of small habitat areas and the uncertainty in creating new habitat. The actual number of HU PRE-intervention is 0.0184 and Post Intervention 0.232 (a difference of 0.0048 [rounded to 4 decimal places] HU per 20m2 of river converted to Marginal Vegetation)

7.9.11 To create 0.13 HU 542 square metres of Marginal Habitat would need to be planted

D-1 Off Site Habitat Baseline												
Condense / Show Columns			Condense / Show Rows									
Main Menu			Instructions									
Baseline ref	Habitats and areas			Habitat distinctiveness		Habitat condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline Total habitat units
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		
1	Lakes	Reservoirs	0.0542	Medium	4	Moderate	2	Within area formally identified in local strategy	High strategic significance	1.15	Some Broad habitat or a High distinctiveness habitat required	0.50

D-2 Off Site Habitat Creation												
Condense / Show Columns			Condense / Show Rows									
Main Menu			Instructions									
Broad Habitat	Proposed habitat	Area ha	Distinctiveness	Condition	Strategic significance		Temporal risk multiplier		Difficulty	Spatial risk multiplier		Habitat units delivered
					Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation		Spatial risk category		
Wetland	Reedbeds	0.0542	High	Good	Within area formally identified in local strategy	Check details: Is there evidence habitat creation started and the threshold for flow condition reached?	5	Medium	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss		0.53	

Headline Results		Return to results menu	
On-site baseline	<i>Habitat units</i>	0.00	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
On-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.00	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
On-site net % change <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.00%	
	<i>Hedgerow units</i>	0.00%	
	<i>River units</i>	0.00%	
Off-site baseline	<i>Habitat units</i>	0.50	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
Off-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.63	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
Total net unit change <small>(including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.13	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	

7.10 Summary of calculations

7.10.1 A summary of the upper and lower figures calculated above is provided below:

- **MVA1 HU PRE-intervention**
= 0.10 to 0.14
- **MVA1 HU POST-intervention**
= 0.01 to 0.05
- **HU lost at MVA1 due to development**
= 0.04 [0.1 – 0.05] to 0.13 [0.14 -0.01]
- **The offsite (River Thames) HU PRE-intervention (20m² of open water)**
= 0.01 to 0.02
- **The offset site (River Thames) HU POST-intervention (for 20m² of open water converted to Marginal Habitat)**
= 0 to 0.01
- **The area of marginal habitat needed to create 0.04 HU (i.e. the lower limit of RHU loss) - using the generous figure (in the appellant's favour) of 0.01 RHU per 20m² of new marginal planting**
= 80m² (0.04/ 0.01 x 20)
- **The area of marginal habitat needed to create 0.13 HU (i.e. the upper limit of HU loss) using the generous figure (in the appellant's favour) of 0.01 HU per 20m² of new marginal planting**
= 260m² (0.13/0.01 x 20)
- **The POST-Intervention planting required to achieve 0.13 HU (classifying the Thames as a Reservoir)**
= 542m² (0.13 / 0.0048 x 20)

7.10.2 It is very clear that the proposed 20m² of new marginal planting (even if it will truly result in additional new habitat see 7.24 above) will not offset the loss / damage to the marginal planting at MVA1 (adjacent to the appeal site).

7.10.3 The appellant has proposed 20m² of new marginal vegetation (a 40m length of coir roll). This is in no way sufficient to offset the loss of marginal vegetation caused by the proposals. The calculations set out above show that between 80m² [160m of new coir roll] and 540m² [1080m² of new coir roll] would need to be planted to compensate the loss. There is no space where such extensive planting could occur. A wide raft (i.e. multiple coir rolls) of new marginal planting at MVA2 would restrict boat access and as set out in my proof and acknowledged by the appellant it could not be provided on the southern bank.

7.10.4 The proposals will therefore result in the loss of Reedbed Habitat Units contrary to policy EN12 and the DEFRA 3 Metric.

8 **Summary**

- 8.1.1 Mr Corbyn and I are in agreement about the extent of the marginal vegetation although there is a minor difference in its measurement (65m² according to Mr Corbyn's side and 75m² according to me). We also agree that the marginal vegetation adjacent to the site is of borough importance. He concludes however that the effect of the development on it will not be significant but this rebuttal proof (using Mr Corbyn's own evidence) clearly demonstrates how it will be.
- 8.1.2 Despite what is claimed by Mr Corbyn the proposals have not been designed to optimise the ecological value of the site nor to complement the ecology of the River Thames. Instead, the development will shade the Thames and harm its marginal vegetation leaving an inadequate buffer between the river and the buildings.
- 8.1.3 Reference to on site biodiversity gain has not been substantiated and even if it were to have been, given that the site is almost entirely hardstanding, it is hard to see how almost any scheme would not deliver a net gain in biodiversity units.
- 8.1.4 The proposals would result in the marginal vegetation adjacent to the appeal site being in shade for between 67% and 88% of the day. This would not be a "well lit" place or even a place in "partial shade". Instead it is a place that that could be described as being in "shade" or possibly "semi-shade" and under such conditions the marginal vegetation will not survive.
- 8.1.5 Mr Corbyn's photos do not demonstrate that the marginal vegetation will survive, instead along with the daylight model provided in his SoC, they demonstrate that the proposals will harm it and will likely cause it to fail.
- 8.1.6 The proposed mitigation equating to 40m of new coir roll planting in an area that might anyway naturally colonise with marginal planting will not compensate for the harm to the marginal vegetation that will be caused. The DEFRA 3 metric shows that a significantly larger area (80 to 540m²) would need to be provided and there is simply not the space to provide this either directly adjacent to the site or at Christchurch Meadow to the north.

9 **List of appendices**

- 1 – Ellenberg indicator values paper referred to in appellant's PoE
- 2 – UK Habitat Classification Habitat Definitions Version 1.0
- 3 – JNCC Phase 1 Handbook
- 4 - Biodiversity Metric 3.0 habitat condition assessment sheets with instructions