

55 Vastern Road, Reading

Ecology Proof of Evidence

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For: Berkeley Homes (Oxford and Chiltern) Ltd, Berkeley House, Farnham Lane, Farnham
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1 Introduction

- 1.1 This proof of evidence has been prepared by Iain Corbyn on behalf of Berkeley Homes Ltd (Oxford and Chiltern) ('the Appellants') who have submitted an appeal under Section 78 of the Town and Country Planning Act 1990 (as amended), following the refusal by Reading Borough Council ('RBC') to grant full planning permission in respect of planning application reference 200188 ('the Planning Application') by notice dated 9th April 2021.

Qualifications, experience and involvement with this case

- 1.2 I, Iain Corbyn am the Managing Director of Ecoconsult Ltd. I have worked in nature conservation for 34 years. My work has included habitat management, creation and restoration; ecological survey and monitoring; protected species mitigation and licensing; ecological impact assessment; and appearing as an expert witness at public inquiries. I have worked as the Consultant Ecologist for Reading Borough Council (and am therefore familiar with Reading Borough) and Aylesbury Vale District Council. Before establishing Ecoconsult in 2003, I was the Conservation Manager at the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT). Aspects of my work at BBOWT included establishing Local Sites systems in Berkshire, Buckinghamshire and Oxfordshire (which are referred to in Policy EN12) and managing otter and water vole recovery projects which were in partnership with the Environment Agency (EA).

Scope of evidence

- 1.3 This proof of evidence builds upon the previously submitted statement of case (SoC), submissions provided to Reading Borough Council as part of the planning application and addresses part of the Council's reason for refusal 3 (RfR3). It will not repeat the SoC.
- 1.4 Policy changes in the July 2021 NPPF are not material in relation to ecology and therefore will not be covered in this proof of evidence.
- 1.5 This evidence will respond to the Council's SoC (insofar as this is not already evident from the previously submitted statement) and produce a summary of the overall evidence.

Statement of Truth

- 1.6 The evidence which I have prepared and provide for this appeal is true and has been prepared in accordance with the guidance of my professional institution and I confirm that the opinions expressed are my true and complete professional opinions. I confirm that my evidence complies with the requirements of the CIEEM Code of Professional Conduct.

2 The ecological benefits of the development as a whole

- 2.1 The development has been designed to optimise the ecological value of the development site and to complement the ecology of the River Thames.
- 2.2 Ecological enhancements have been included with green spaces incorporated throughout the development. This includes the 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. Bird and bat boxes will be included with details secured by condition.
- 2.3 Within 10m of the river, ecological enhancements include the establishment of flower-rich grassland using Emmorsgate EM5 Meadow Mixture for Loamy Soils wildflower/grass seed mix. This seed mix is appropriate for the creation of wildflower grassland for the soil conditions on the site. Once established, management will comprise of cutting the grassland in late July/August (removing cuttings from this area) and cutting the regrowth in autumn (again removing cuttings from this area). Emmorsgate EL1 flowering lawn mix will be sown in areas which need to be mown more regularly such as the new graded bank alongside the towpath where the existing wall will be removed. The finalised landscape planting framework plan and biodiversity enhancement scheme will be secured by condition.
- 2.4 The DEFRA 3.0 metric has been used to assess the change in biodiversity value of the site. There will be an increase of biodiversity value on-site of 118%.

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

- 3.1 The vegetation between the towpath and the river adjacent to the site comprises marginal and other bankside vegetation. It is important to clearly distinguish between the two. The Environment Agency's and Council Ecologist's objections relate to marginal vegetation. Appendix A shows a current habitat map of the vegetation between the towpath and the river and photographs are provided in appendix B.

Marginal vegetation

- 3.2 The Handbook for Phase 1 habitat survey¹ is as described on the JNCC website² as 'a standardised system for classifying and mapping wildlife habitats in all parts of Great Britain, including urban areas'. This is being superseded by the UK Habitat Classification system (UKHAB). However, the UKHAB has been designed to relate to the phase 1 habitat survey system.
- 3.3 The Phase 1 handbook describes marginal vegetation (code F2.1) as follows (see appendix C):

*'This category encompasses all narrow strips of emergent vegetation occurring on the (often steep) margins of lowland watercourses, where the water table is permanently high. Bands of tall vegetation wider than 5 m should be classified as swamp (FI). Marginal vegetation is typically open and contains plants such as **Glyceria species**, **Rorippa species**, **Apium nodiflorum**, **Berula erecta**, **Oenanthe species**, **Galium palustre**, **Nasturtium officinale**, **Myosotis species**, **Veronica species**, **Alisma species**, **Sparganium erectum**, **Carex riparia**, **Juncus effusus** and **Juncus inflexus**, also small stands of taller plants such as **Phragmites australis**, **Typha species** and **Phalaris arundinacea**'.*

Plants growing in the marginal vegetation adjacent to the site are in bold. The equivalent UKHAB description is f2d Aquatic marginal vegetation (see appendix F).

- 3.4 Emergent vegetation (which is referred to in the above definition of marginal vegetation) is defined in the Dictionary of Environment and Conservation³ as '*Aquatic*

¹ JNCC, (2010), Handbook for Phase 1 habitat survey – a technique for environmental audit, JNCC, Peterborough, ISBN 0 86139 636 7.

² <https://hub.jncc.gov.uk/assets/9578d07b-e018-4c66-9c1b-47110f14df2a>

³ Park, C. (2012), Dictionary of Environment and Conservation, Oxford University Press

plants that grow with their roots under water but their leaves and stems above the surface of the water.' A diagram produced by the EA to clarify where marginal and bankside habitats are generally located on a watercourse is provided in appendix D.

3.5 However, the Phase 1 handbook states under F1 Swamp (see appendix E):

'Swamps are generally in standing water for a large part of the year, but may occasionally be found on substrates that are seldom immersed, as in the later stages of the seral succession to marshy grassland.' and

'Strips of swamp vegetation narrower than 5m bordering watercourses should be classified as marginal vegetation (F2.1).'

3.6 Therefore, where swamp vegetation (which includes stands of reed sweet-grass *Glyceria maxima*) less than 5m wide occurs on substrates which are rarely immersed bordering watercourses, it is also classified as marginal vegetation. Therefore, the marginal vegetation adjacent to the site includes the aquatic marginal vegetation established in the coir rolls and the adjacent terrestrial area on the bank which is dominated by reed sweet-grass. This area on the bank is dominated⁴ by reed sweet grass, with locally frequent hedge bindweed *Calystegia sepium*, orange balsam *Impatiens capensis*, hemlock water-dropwort *Oenanthe crocata* and lesser pond sedge *Carex acutiformis*, occasional common nettle *Urtica dioica* and rare great willowherb *Epilobium hirsutum*, reed canary-grass *Phalaris arundinacea*. The marginal vegetation is shown in the area coloured blue on the phase 1 habitat map in appendix A. Marginal vegetation does not include other habitats in the bankside vegetation including semi-improved grassland, tall ruderal and scrub.

3.7 The Council's ecologist states in paragraph 7.1.2 of his SoC that the marginal vegetation is wider than 0.5m if one includes the adjacent strip of 'uncut grassland'. This is only the case for the area where reed sweet-grass is dominant on the bank, reed sweet-grass being one of the plants (i.e. a *Glyceria* species) referred to in the description at 3.3 above.

3.8 The Council's ecologist states in paragraph 4.1.3 of his SoC: *'At this location there is a long strip of marginal vegetation that was planted in the river when the new footbridge was built (application ref: 131234). It was planted using coir rolls and was protected from wildfowl with wire mesh. It has established well and is the longest*

⁴ The terms dominant, frequent and rare are values of the DAFOR scale of relative abundance in a given area where D=dominant; A=abundant; F=frequent; O=occasional and R=rare.

length of marginal vegetation on banks of the river Thames at Christchurch Meadows and at Thames Promenade stretching approximately 105m along the southern bank of the River Thames.'

- 3.9 The Landscape Planting Plan for the Christchurch Bridge (Drawing No. S150/TTP300.2) (see appendix G) shows the two strips of proposed coir rolls denoted as P3. The length of these (40.25m between the bridge ramps and 32.3m east of the bridge ramp) and the gap of 34.2m between them add up to 106.75m. However, the two lengths are not contiguous and are two separate lengths with a significant gap in between. The *current* measurements for the two lengths between the ramps and the length east of the ramp are in fact 30m and 45m respectively. The Council has agreed in the SoCG (paragraph 7.86) that the length of coir roll east of Christchurch Bridge is in fact the longest strip of marginal vegetation in the Christchurch Meadows open space.
- 3.10 The Council's ecologist states in paragraph 7.1.2 of his SoC that '*...The appellant's ecologist also claims that the length of marginal vegetation to be affected is 30m. However, my measurement is that this is 73m (See Figure 2). This appears to be because the appellant's ecologist refers to just the areas planted with coir rolls – see their Appendix A – (although I am not sure that this is correct as the entire length was planted with coir rolls, see Figure 1).*'
- 3.11 It is difficult to view and measure the planted coir rolls between the ramps adjacent to the site as they are obscured in places by tall ruderal and scrub vegetation. I have measured the length of coir rolls which still support marginal vegetation and this is 30m and not 73m. The 73m figure is the length between the ends of the ramps and is certainly not the length of the marginal vegetation. Out of a total length of c.47m of coir roll which is still discernible, 17m of this has failed and no longer supports marginal vegetation (note this is longer than the 15m recorded as failed in my SoC which omitted the 2m of failed coir roll at the west end) leaving the remaining 30m as described above. Appendix H contains photographs taken of the coir rolls from the river showing where the coir rolls start and end. Appendix I contains additional photographs of the coir rolls. Failure of these coir rolls is due to shade from the metal sides to the bridge ramps and, scrub and tall ruderal vegetation growing on the bank.
- 3.12 Regarding the coir rolls to the east of Christchurch Bridge, the original length as planted was c.53m of which 45m still supports marginal vegetation with 8m having failed at the eastern end. These lengths were measured from the towpath.

- 3.13 The Full Site Planting Schedule for the Christchurch Bridge (see appendix J) lists the species to be used in the pre-established coir rolls.

Bankside vegetation (excluding marginal vegetation)

- 3.14 73m is the length of 'bankside vegetation' between the ends of the bridge ramps.
- 3.15 The Full Site Planting Schedule for the Christchurch Bridge gives the treatment to be used for the bank which includes:
- Wildflower Turf (P4)
 - Native shrub planting (P5) and
 - Amenity Turf (300mm mowing strip)
- 3.16 The vegetation is undergoing natural succession from what was originally planted or sown. Excluding the stand of reed sweet-grass on the bankside which qualifies as marginal vegetation, the other habitats now include:
- tall ruderal including locally abundant nettle, hedge bindweed and great willowherb, occasional hemlock water dropwort and one plant of purple loosestrife *Lythrum salicaria*;
 - scrub including white poplar *Populus alba*, blackthorn *Prunus spinosa*, dog rose *Rosa canina* agg., common hawthorn *Crataegus monogyna*, holly *Ilex aquifolium*, and bramble *Rubus fruticosus* agg.; and
 - semi-improved neutral grassland – a very narrow strip alongside the towpath.
- 3.17 Grassland, tall ruderal and scrub are frequent habitats along the river banks between Caversham Bridge and Reading Bridge (see photographs in appendix K). The information boards at Christchurch Meadows mention wildflower meadows to the east of the park.
- 3.18 In suggesting that the length of marginal vegetation between the ramps is 73m and not 30m, the Council's ecologist is conflating marginal vegetation with the other bankside habitats (tall ruderal, scrub and grassland).

4 Significance of potential impact from reduced sunlight hours on the marginal vegetation

4.1 The River Thames is an important wildlife corridor in Reading of borough importance. Marginal vegetation and other riparian habitats are part of the river system.

4.2 The Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018 paragraph 5.27) states the following in relation to significant effects:

*‘Significant effects should be qualified with reference to an appropriate geographic scale. For example, a significant effect on a Site of Special Scientific Interest or Natural Heritage Area is likely to be of national significance. European case law is specific regarding significance in relation to European sites and Annexed habitats. **However, the scale of significance of an effect may not be the same as the geographic context in which the feature is considered important (Chapter 4).** For example, an effect on a species which is on a national list of species of principal importance for biodiversity may not have a significant effect on its national population. Examples of other relevant scales include regional and county. It should be noted that effects may be significant at the local scale, particularly in view of policies for no net loss of biodiversity’.*

4.3 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).

4.4 There is more likely to be an impact below the proposed North/South link to Christchurch Bridge due to the increased shade under this link.

5 The impact and habitat compensation

- 5.1 The Council ecologist's second sentence in paragraph 4.1.6 states in relation to marginal vegetation: *'It is rarely found in areas that are heavily shaded and thus it is very likely that the proposed development will have an adverse impact on this important and valuable habitat'*.
- 5.2 In response, firstly the marginal vegetation adjacent to the site will not be heavily shaded by the proposed development. It will generally receive between 2 and 6 sunlight hours per day alongside diffuse skylight from above for the whole day during daylight hours. This is ample to support marginal vegetation. Marginal vegetation develops along natural lengths of river where there is a break in the tree canopy and the number of sunlight hours is often very limited but there is access to diffuse skylight.
- 5.3 Species associated with the marginal vegetation adjacent to the site can be found in areas which are in shade, partial shade or dappled shade. Examples of these can be found along the riverside of Hills Meadow Park and Kings Meadow Park both to the east of Reading Bridge (see photographs in appendix L). The Ellenberg indicator values⁵ give these species a light value of 7 which is described as *'Plant generally in well-lit places, but also occurring in partial shade'*.
- 5.4 Similarly (although the Council has not objected in relation to shading of other bankside vegetation), grassland, tall ruderal and scrub will all thrive with 2-6 hours sunlight hours per day alongside diffuse sunlight from above for the rest of the day. Grassland, tall ruderal and scrub grow in a level of shade as can be seen on the north (shaded) sides of trees at Hills Meadow Park east of Reading Bridge (see photographs in appendix M).
- 5.5 Although the proposed buildings will add additional shade to the marginal vegetation, some of this would occur as a result of the proposed trees and North/South link to Christchurch Bridge. 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.

⁵ Hill, M.O.; Mountford, J.O.; Roy, D.B.; Bunce, R.G.H.. 1999 *Ellenberg's indicator values for British plants. ECOFACT Volume 2 Technical Annex*. Huntingdon, Institute of Terrestrial Ecology, 46pp. (ECOFACT, 2a).

5.6 Overall, whilst I agree that there may be a slight reduction in plant vigour and a loss of small areas of marginal habitat already struggling to establish, the majority will not be lost and sunlight and diffuse skylight will be sufficient to sustain the existing marginal vegetation adjacent to site.

5.7 I now turn to the habitat compensation options put forward in my SoC.

Option A

5.8 Option A (which is shown in appendix J of my SoC) is a section of river edge which has been eroded on the northern bank to the west of Christchurch Bridge. In appendix 3 of the Council ecologist's SoC, Dr Jenkins states that this length had been planted with coir rolls when the Christchurch Bridge was built although it does not appear on the Christchurch Bridge Landscape Strategy Plan (shown in appendix 2, figure 1 of the Council ecologist's SoC). The Council ecologist's appendix 1, photo 3 in his SoC shows part of the bank close to my suggested Option A with the title '*Remains of a coir roll that was installed within the last 10 years*'.

5.9 It is stated by Dr Jenkins in Appendix 3 of the Council ecologist's SoC that '*While we understand that the method proposed is standard practice, we note that it was unsuccessful at establishing new marginal vegetation when tried at Christchurch Meadows six years ago.*'

5.10 We do not know the exact reasons for failure of any coir rolls installed at Option A and whether this could have been prevented by maintenance (e.g. the wildfowl fences).

5.11 However as Option A or it seems any length along the northern bank between Caversham Bridge and Reading Bridge do not seem to be acceptable by RBC because it is considered that they would compromise leisure activities, Option B perhaps offers the best solution to provide appropriate habitat compensation for any impact to the marginal vegetation adjacent to the site.

Option B

5.12 Option B is shown in appendix J of my SoC. Option B would increase the width and the area of the planted coir rolls (marginal vegetation) along the existing length to the east of the Christchurch Bridge (i.e. the strip of existing marginal vegetation to which I refer at 3.12 above). Also, as referred to in 3.12 above, 8m at the eastern end of existing coir rolls at this location has been lost (most likely due to boats) and this will

be reinstated. Brushwood bundles can be placed alongside the new coir roll to act as a buffer to boat wash whilst also providing a larger 0.9m margin for marginal vegetation to colonise. The wildfowl fence is down and below the river level in places (see photographs in appendix N). This fence will be removed and a new fence installed in front of the additional coir/brushwood rolls. Details are provided in appendix O.

5.13 Increasing the width of coir rolls in Option B offers more sustainable long-term benefits for biodiversity compared with the existing single coir roll. Option B also offers much better existing conditions for marginal vegetation than the existing area between the bridge ramps as it is more open and the river depth is shallow. A wider strip of marginal vegetation will also be more resilient from boat wash, etc.

5.14 Proposed species to be included in the coir rolls are:

Lesser pond sedge *Carex acutiformis*
Yellow flag *Iris pseudacorus*
Reed sweet-grass *Glyceria maxima*
Reed canary grass *Phalaris arundinacea*
Bulrush *Schoenoplectus lacustris*
Water mint *Mentha aquatica*
Purple loosestrife *Lythrum salicaria*

5.15 I wish to comment on the Council ecologist's point in paragraph 7.1.6 of his SoC which states: '*Option B may deliver a wider strip of vegetation however it is not clear how deep the river is in this location and whether an additional 40m of coir roll would establish. Also, presumably this would require EA consent as it would be reducing the width of the river channel. No details of this have been provided*'.

5.16 Salix has confirmed that the river depth is 0.3m and that the additional coir rolls would establish well (see email in appendix O).

5.17 The EA has been contacted about Option B but at time of writing they have not expressed a view. However, Mr Jenkin at Stantec (who is an expert in flood risk and river management) has provided a technical note (see appendix Q) from which it is clear that there are no reasonable grounds for objection by the EA.

5.18 In Appendix 3 of the Council ecologist's SoC, Dr Jenkins has suggested that the location at Option B is too shaded. This area currently supports healthy marginal vegetation and the proposed development will not materially reduce the amount of sunlight it receives. This is clearly demonstrated if one compares existing and proposed scenarios provided in the Updated Sunlight Assessments (Ref:

3591_R06_SA01), eb7, 31 August 2020 in appendix C of my SoC. In every month that has been assessed, there is no loss of sunlight exposure.

- 5.19 More detail is given in the Daylight and Sunlight additional review response (Transient Overshadowing ref: 3591_R06_TS01), eb7, 10 July 2020 (document reference 6.64) which shows that the marginal vegetation east of the Christchurch Bridge starts to be shaded by the existing apartments to the east of the site and the line of poplar trees from about noon to 2pm between March and September as detailed in Table 1 below.

Table 1: Approximate times when marginal vegetation east of Christchurch Bridge starts to become shaded by existing buildings and the line of poplar trees.

Date	Approximate time when marginal vegetation east of the bridge becomes shaded at present	Respective images in eb7 report
21st March	12:00	Page 6 – top centre image
21st April	13:00	Page 11 – top left image
21st May	14:00	Page 15 – top right image
21st June	14:00	Page 20 – top right image
21st July	14:00	Page 25 – top right image
21st August	13:00	Page 30 – top left image
21st September	12:00	Page 33 – top right image

- 5.20 By the time the buildings of the proposed development would start to shade this marginal vegetation late in the day after 5pm (when the sunlight intensity is less), the vegetation is already largely shaded by the existing apartments and poplar trees. Therefore, the proposed development will not significantly increase levels of shade to this length of marginal vegetation, bar the small amount of light that would have passed through the tree canopy to the western part of Option B. Poplar trees are deciduous (letting more light through in winter) but we are concerned about light levels in the growing season.
- 5.21 The existing marginal vegetation at Option B is vigorous and has established well. The proposed development will not materially increase levels of shade to this length of marginal vegetation and there is no reason why additional planted coir rolls added to the existing one will not be equally vigorous.

EA request in their Option 2 for shade tolerant plants to be added to the footbridge planting area to allow for succession to a shadier environment

- 5.22 In terms of shade tolerant plants, a number of marginal plant species grow locally in shaded conditions at Hills Meadow Park and Kings Meadow Park. These include: greater pond sedge, lesser pond sedge, reed sweet-grass, yellow flag iris, hemlock water dropwort and gipsywort. Reed sweet-grass, yellow flag iris and hemlock water dropwort are still present in the coir rolls adjacent to the site. Lesser pond sedge is present on the bank. These and/or other marginal plant species requested by the EA or RBC can be planted in the existing coir rolls or bankside.

6 Conclusions

- 6.1 The planting on the site will ensure that there is a net gain in biodiversity.
- 6.2 So far as the marginal vegetation adjacent to the site is concerned, it is not 105m in length, is not continuous and, if added together, the two remaining lengths are much shorter. The length of marginal vegetation adjacent to the site (whether within the coir rolls or on the bankside) is 30m.
- 6.3 In my opinion, any impact on the marginal vegetation which would be a slight reduction in plant vigour and loss of small areas of marginal habitat already struggling to establish is no more than neighbourhood significance.
- 6.4 The proposed connection as part of the North-South link and the trees proposed to be planted between the development and the riverbank will in themselves shade the marginal vegetation.
- 6.5 To provide appropriate compensation for any impact to the marginal vegetation, we have proposed 2 options. Dr Jenkins considers that any option on the north bank would compromise leisure activities. If this is the case, this leaves Option B.
- 6.6 Option B offers an opportunity to widen the existing narrow strip of marginal vegetation to make it more ecologically valuable and robust. The riverbed is shallow and ideally suited to establishing coir rolls. The Stantec note appended to this PoE shows there will be no impact on navigability and any impact on flood conveyance is very unlikely and insignificant compared to the overall area available.
- 6.7 Therefore, Option B is an appropriate area where new marginal vegetation can be provided as habitat compensation to the east of the bridge which will provide much improved habitat compared to that which currently exists.
- 6.8 The application of the mitigation hierarchy is addressed by Ms Cohen in the Planning PoE. However, in this case, if consideration is given to whether the development should be reduced in order to avoid any possible impact, it should be borne in mind that any impact is itself limited and such impact can readily be compensated for.

7 Summary

7.1 The proposed development is adjacent to the River Thames and the Christchurch Meadows open space (which lies between Caversham Bridge and Reading Bridge). The river has been heavily engineered in this part of Reading and has hard concrete edges on both banks. There is dense urban development along the southern bank. The riverbanks are important for boat mooring. Christchurch Meadows is a well-used park. Wildfowl are present in large numbers particularly along the northern bank. Semi-natural vegetation along the river corridor includes lengths of scrub, tall ruderal habitat, rough grassland (much of which is grazed by wildfowl especially along the northern bank) and lengths of recently created marginal vegetation established using planted coir rolls on both northern and southern banks. The River Thames is an important wildlife corridor through Reading and is of Borough significance. It qualifies as a Habitat of Principal Importance because it supports UKBAP species including Soprano pipistrelle bat *Pipistrellus pygmaeus* and otter *Lutra lutra*.

Proposed on-site biodiversity enhancements

7.2 The landscaping scheme has been designed with regard to the biodiversity of the River Thames corridor to create the best possible biodiversity enhancements which add to the biodiversity value of the river. The Landscape Planting Framework Plan 448.LA.102 F (document reference 6.126) details these enhancements. Biodiversity will be enhanced throughout the site and in particular on the land between the towpath and the buildings. Enhancements will include native wildflower meadow, native shrubs and native trees (and their varieties) and will together provide a high quality biodiversity enhancement scheme. The DEFRA 3.0 metric has been used to assess the change in biodiversity value of the site. There will be an increase of biodiversity value on-site of 118%.

Marginal vegetation adjacent to the site and nearby on the Thames

7.3 There is little marginal vegetation between Caversham Bridge and Reading Bridge with the exception of lengths of planted coir roll, most of which were installed when the Christchurch Bridge was constructed in 2015. There are now 4 remaining lengths: a 30m length adjacent to the site between the footbridge ramps, a 45m length to the east of the footbridge, an area immediately to the northwest of the Christchurch Bridge and a length west of Thames Avenue. It is understood from the Council ecologist's SoC that another length was also installed in the area which I suggested as Option A for habitat compensation but this has been completely lost. On the northern bank, the area immediately northwest of Christchurch Bridge has

been damaged by wildfowl (partly resulting from a gap in the fence at its southern end which allows wildfowl to access from the river). On the southern bank, with the exception of the length west of Thames Avenue, the two other remaining lengths adjacent to and to the east of the site have been damaged and are now all smaller in extent. The length to the east of the footbridge has been damaged by boats and the length adjacent to the site has been reduced in extent due to heavy shade from the footbridge ramps.

- 7.4 Photographs have been taken of the riverbank between the bridge ramps from the river to show the extent of the coir rolls which still support marginal vegetation (see appendix H). Some marginal plants have colonised the bank - in particular reed sweet-grass which dominates an area on the bank above the surviving coir rolls and this qualifies as marginal vegetation.
- 7.5 To the east of Reading Bridge lies Hills Meadow Park which supports less disturbed vegetation along the riverside of the unnavigable stretch of river between the park and, De Bohun Island (or Lock Island) and View Island. Two substantial areas of marginal vegetation are located along this bank (see photographs in appendix P).
- 7.6 The Environment Agency and Reading Borough Council have objected due to the potential impact that the increased shading the development could have on the length of marginal vegetation established using coir rolls adjacent to the site between the ramps of the Christchurch Bridge. The Council's ecologist has stated in his SoC that coir rolls were established along the whole 73m of the Christchurch Bridge between the ends of the bridge ramps and this is shown on his Figure 2. Our recent survey has established that the remaining marginal vegetation now measures 30m. 17m of failed coir roll is still discernible. This failure is because too little light reaches the coir rolls where the ramps descend to meet the towpath at either end. The growth of scrub and tall ruderal vegetation is also reducing the amount of light reaching the coir rolls.

Vegetation between the marginal vegetation and towpath

- 7.7 The Council's ecologist has suggested (paragraph 7.1.2 of his SoC) that the adjacent strip of uncut grassland could be included within marginal vegetation. This is true for the stand of reed sweet-grass. However for clarity, marginal vegetation does not include the other habitats on the bank which are semi-improved grassland, tall ruderal and scrub.

- 7.8 Wildflower grassland was established on the bank between the coir rolls and the towpath. Some of these species are still present in the remaining narrow strip of semi-improved grassland. However, most of this area has now developed into marginal vegetation (i.e. reed sweet-grass), scrub and tall ruderal habitats.
- 7.9 Scrub and tall ruderal habitats are common and widespread habitats that are frequent between Caversham Bridge and Reading Bridge and beyond.

Impact of shade on marginal vegetation

- 7.10 Marginal vegetation grows where direct sunlight and/or diffuse skylight⁶ are able to penetrate from above and sometimes the sides. Along a wooded river, this may be where a tree has fallen which allows light to part of the river margin. There may not be many hours of direct sunlight (if any) reaching that marginal vegetation due to surrounding trees.
- 7.11 Where trees shade marginal vegetation, species of marginal vegetation will persist. This can be seen in many places along the river edges of Hills Meadow Park and Kings Meadow Park where marginal plant species including greater and lesser pond sedges, reed sweet-grass, hemlock water dropwort, yellow flag iris and gipsywort are growing under riverside trees (as shown in appendix L).
- 7.12 The remaining length of marginal and bankside habitats between the Christchurch Bridge ramps do not receive diffuse skylight from the north due to the bridge ramps but will generally continue to receive 2-6 sunlight hours and diffuse skylight at other times. The buildings are set back from the riverbank allowing diffuse skylight to reach the vegetation in addition to direct sunlight. The marginal vegetation would not be materially impacted.
- 7.13 The proposed North/South link between the site and Christchurch Bridge will in itself reduce direct sunlight and diffuse daylight. The proposed trees will also increase shade to the marginal vegetation. Furthermore, if large canopy trees were to be 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 Diffuse skylight is sunlight which has been scattered/reflected by molecules or larger particles in the atmosphere or from surfaces.

Proposed compensation for loss of vigour and loss of small areas of marginal habitat already struggling to establish

7.14 The EA has stated in their letter of 16th October 2020 (see Appendix F of my SoC) that the reduction in light levels *'is likely to reduce the vigour of this planting and may result in the loss of some species'*. The EA give two clear options to overcome their objection. Option 1, change to the proposed development, is covered by Ms Cohen in the planning PoE. Option 2 states:

'Option 2 would be to see additional marginal planting installed as a combination of mitigation and ecological enhancement in recognition of the impact of shading. We would also like to see shade tolerant plants added to the footbridge planting area to allow for succession to a shadier environment'.

7.15 Two options were proposed in Appendix J of my SoC for the installation of new coir rolls.

7.16 According to the Council ecologist's SoC, Option A on the north bank was the location of a previous coir roll installation which failed. In Appendix 3 of his SoC, the Parks Department considers that any planting along Christchurch Meadows (i.e. the whole northern bank between Caversham Bridge and Reading Bridge) would compromise leisure activities.

7.17 In relation to Option B, the Council's ecologist has stated in paragraph 7.1.6 of his SoC that *'Option B may deliver a wider strip of vegetation...'* He has asked 1. how deep the river is in this location, 2. whether an additional 40m of coir roll would establish and 3. whether this would require EA consent as it would be reducing the width of the river channel.

7.18 Questions 1 and 2 have been addressed by Salix in appendix O. The river is 0.3m depth and being shallow, coir rolls would establish well.

7.19 Stantec have provided a technical note (see appendix Q) which considers potential impacts to the capacity of the river, on navigation and concerns over water depths. It concludes that there would be no impact on navigability and that any significant impact on flood conveyance is very unlikely. The Technical Note includes a section of the riverbed at Option B which shows that it is shallow dropping from c.0.2m to c.0.3m at this location.

- 7.20 In Appendix 3 of the Council ecologist's SoC, Dr Jenkins suggests that the location at Option B is too shaded. This is not the case as explained previously in this PoE. This area currently supports healthy marginal vegetation and the proposed development will not materially reduce the amount of sunlight it receives.
- 7.21 In Appendix 3 of the Council ecologist's SoC, Dr Jenkins states *'In addition, mitigation needs to conform to the principle of additionality. Simply enhancing existing marginal vegetation is insufficient...'* However, the marginal vegetation at Option B will be more than doubled in area (if not trebled if brushwood rolls are also added into which marginal plants can colonise) and this conforms with the principle of additionality.
- 7.22 The creation of new marginal vegetation by adding new coir and brushwood rolls to the existing coir roll in Option B is deliverable and would more than compensate for any impact to the remaining 30m length of marginal vegetation adjacent to the site.
- 7.23 Overall, the proposed development will secure positive ecological benefits within the site as well as enhancing the marginal vegetation off-site.

8 References

Environment Agency, Practical watercourse maintenance for riparian owners.
http://letcombebrook.org.uk/wp-content/uploads/2020/05/Thames-Area-Practical-guidance-on-river-maintenance_FINAL-1.pdf

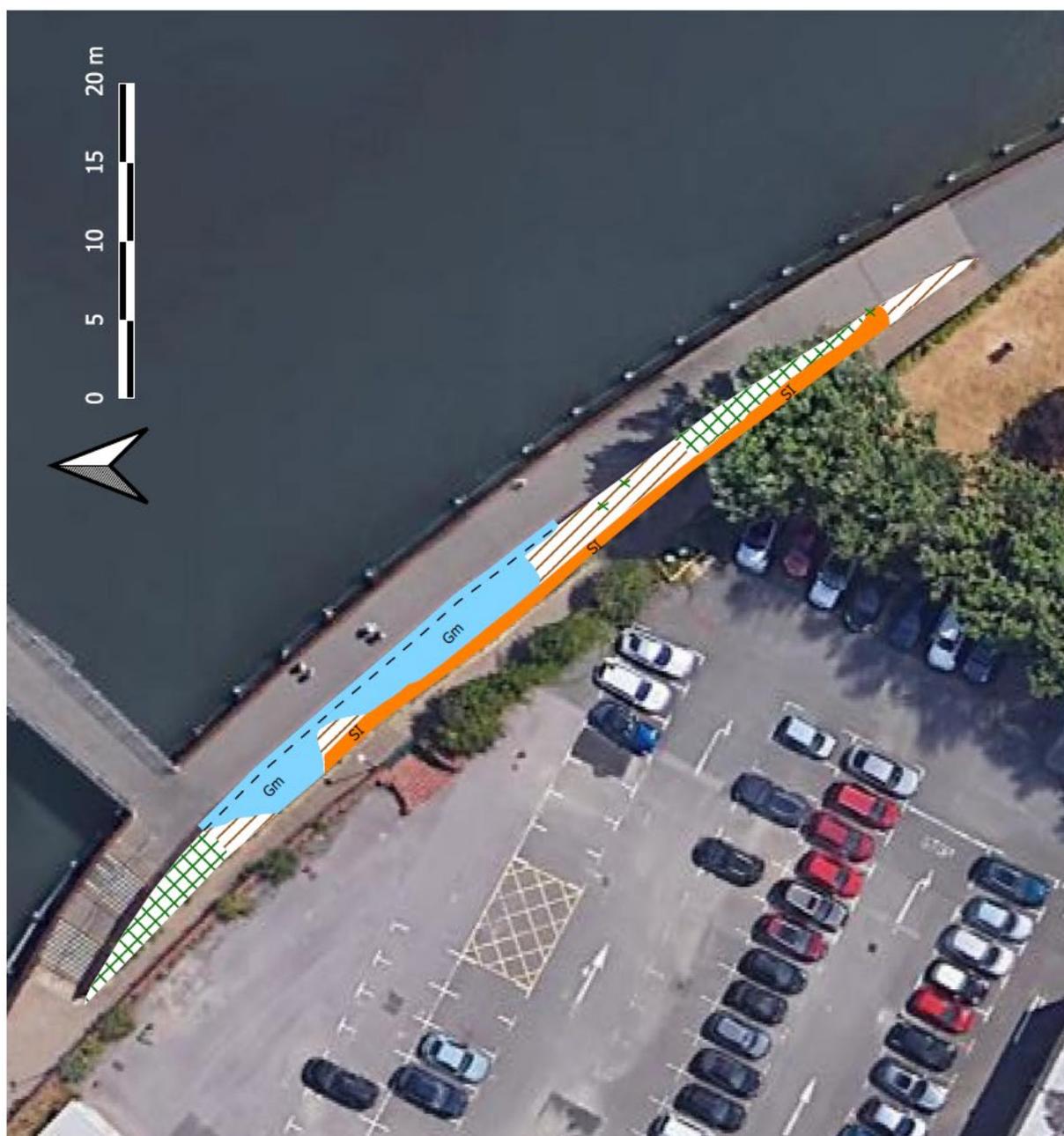
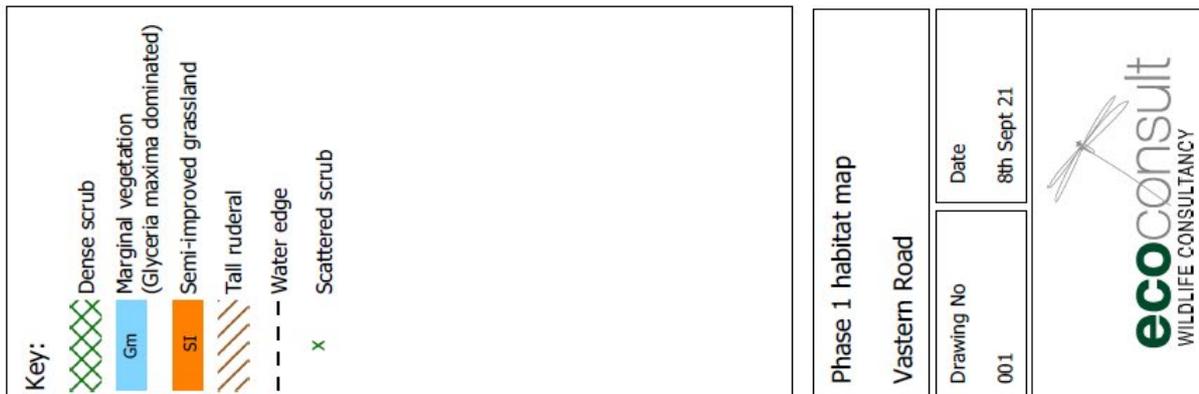
Hill, M.O.; Mountford, J.O.; Roy, D.B.; Bunce, R.G.H.. 1999 *Ellenberg's indicator values for British plants. ECOFACT Volume 2 Technical Annex*. Huntingdon, Institute of Terrestrial Ecology, 46pp. (ECOFACT, 2a).

JNCC (2010), Handbook for Phase 1 habitat survey – a technique for environmental audit, JNCC, Peterborough, ISBN 0 86139 636 7.

Ministry of Housing, Communities and Local Government (February 2021) National Planning Policy Framework.

Park, C. (2012), Dictionary of Environment and Conservation, Oxford University Press.

Appendix A: Habitat map of marginal and bankside vegetation adjacent to site



Appendix B: Photographs of habitats between the river and towpath adjacent to the site



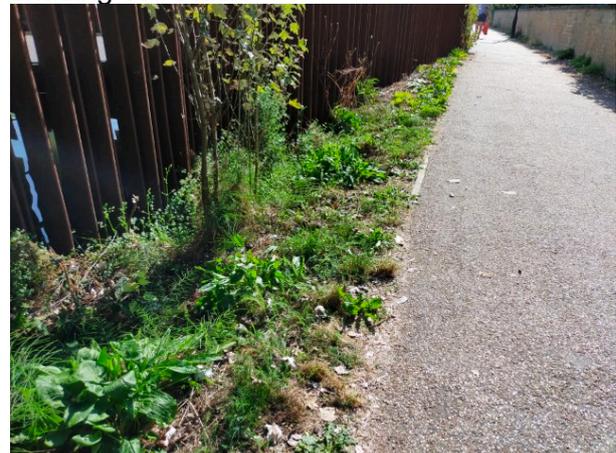
Stand of reed sweet-grass which qualifies as marginal vegetation



Tall ruderal habitat towards eastern end shading coir rolls



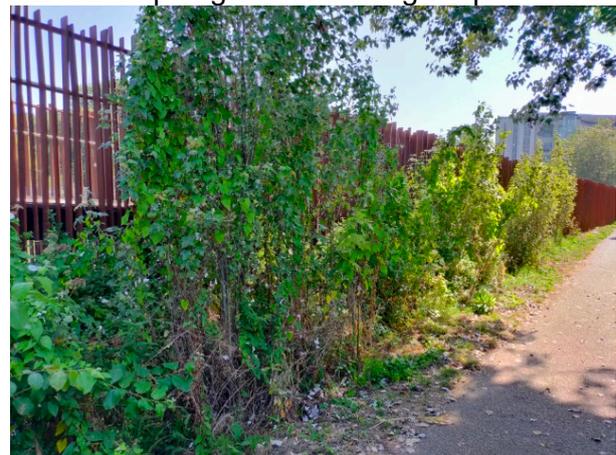
Narrow strip of grassland along towpath



Narrow strip of grassland along towpath



Scrub at western end



Scrub at eastern end

Appendix C: Definition of marginal vegetation in Phase 1 Habitat Survey Handbook (see red rectangle)

F2 Marginal and Inundation

Marginal vegetation (F2.1)

This category encompasses all narrow strips of emergent vegetation occurring on the (often steep) margins of lowland watercourses, where the water table is permanently high. Bands of tall vegetation wider than 5 m should be classified as swamp (F1). Marginal vegetation is typically open and contains plants such as *Glyceria* species, *Rorippa* species, *Apium nodiflorum*, *Berula erecta*, *Oenanthe* species, *Galium palustre*, *Nasturtium officinale*, *Myosotis* species, *Veronica* species, *Alisma* species, *Sparganium erectum*, *Carex riparia*, *Juncus effusus* and *Juncus inflexus*, also small stands of taller plants such as *Phragmites australis*, *Typha* species and *Phalaris arundinacea*. Areas of such vegetation will be too small to map, so should be target noted.

Inundation vegetation (F2.2)

This category includes open and innately unstable communities that are subject to periodic inundation, as found on sorted or unsorted silts, sands and gravels of river beds and islands and on the draw-down zone around pools, lakes and reservoirs. A wide variety of species occur in such communities, including *Polygonum* species, *Juncus bulbosus*, *Bidens* species, *Agrostis stolonifera* and *Alopecurus geniculatus*, as well as many ruderal species.

G Open water

Open water is defined as water lying beyond the limits of swamp or emergent vegetation, although it may contain submerged, free-floating or floating-leaved vegetation. The dominant species of any such vegetation should be coded, and the salinity of the water, whether fresh or brackish, indicated if possible. Where aquatic vegetation is present in quantity but there is insufficient room to code all abundant species, a target note should be provided. For those wishing to provide details of the trophic status of the water, Table 10 gives the characteristics of each type (see also Palmer 1989).

G1 Standing water

Standing water includes lakes, reservoirs, pools, flooded gravel pits, ponds, water-filled ditches, canals and brackish lagoons.

G2 Running water

Running water comprises rivers and streams. The direction of flow should be indicated by an arrow. If survey is needed at a more detailed level than for Phase 1, refer to Surveys of wildlife in river corridors (NCC 1985). This draft methodology includes a comprehensive classification of bank and open water habitats, a recording card and instructions on the preparation of habitat maps.

H Coastland

Coastal lagoons should be classified as standing water (G1.6).

H1 Intertidal

The codes for *Zostera*, green algal beds or brown algal beds should, where appropriate, be superimposed over the relevant Ordnance Survey symbols (mud/sand; shingle/cobbles; boulders/rocks).

H2 Saltmarsh

Saltmarsh/dune interface (H2.3)

Vegetation peculiar to this area, characterised by species such as *Frankenia laevis* or *Suaeda fruticosa*, should be mapped wherever large enough, and always target noted.

Scattered plants (H2.4)

The dominant species should be coded.

Dense/continuous (H2.6)

Dominant species should be coded, particularly noting *Spartina* where it is abundant. Areas of inland saltmarsh should be included in this category.

H3 Shingle/gravel above high-tide mark

Target note any vascular plants or lichen vegetation that may occur,

H4 Boulders/rocks above high-tide mark

Target note as for H3.

H5 Strandline vegetation

This type of vegetation occurs as an open community on the drift line and is characterised by species such as *Cakile maritima*, *Honkenya peploides*, *Rumex crispus*, *Salsola kali*, *Atriplex* species and *Beta vulgaris* ssp. *maritima*. In contrast to fore dunes, *Elymus farctus* (*Agropyron junceiforme*) is characteristically sparse or absent. Target note where feasible, stating whether the substrate is shingle or rock

H6 Sand dune

Dune slack (H6.4)

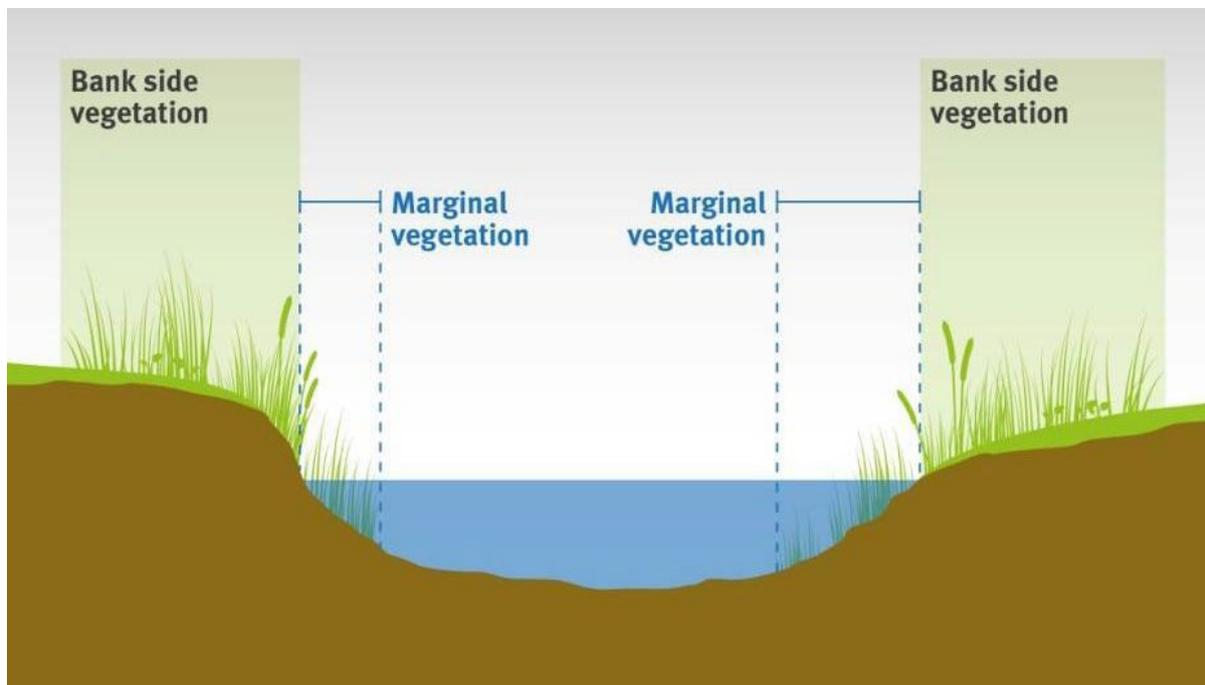
Dune slacks are valleys or hollows between dune ridges, where the water table is close to the surface for at least several months in the year, leading to marshy vegetation. *Ammophila arenaria* is usually absent. Characteristic species are *Salix repens*, *Hydrocotyle vulgaris*, *Dactyloctenium aegyptium* species and *Epipactis palustris*. Saline slacks should be classified as saltmarsh (H2).

Dune grassland (H6.5)

All grassland occurring on consolidated and flattened dunes should be classified in this category. Generally, little *Ammophila arenaria* will be present. Machair should be included here.

Appendix D: EA diagram of marginal vegetation

From Environment Agency Practical watercourse maintenance for riparian owners



Appendix E: Definition of swamp where this is classified as marginal vegetation in Phase 1 Habitat Survey Handbook (see red rectangles)

E3 Fen

Fens are defined as minerotrophic mires, usually over peat more than 0.5 m deep (but see E3.3). The water table is at or just below the surface.

Three main types of fen can be distinguished, using topographical rather than vegetational criteria. These are valley mire, which, because there is obvious water flow, is classified as soligenous, and basin and flood-plain mires, which have impeded drainage and are termed topogenous. However, the distinction between these three mire types is not always clear in the field, so for Phase 1 mapping purposes their identification is optional.

'Poor fen' contains acid water (pH 5 or less) and short vegetation with a high proportion of Sphagnum. 'Rich fen' contains more calcareous water (pH above 5), Sphagnum is often absent and the vegetation usually includes patches of tall plants and species such as *Juncus subnodulosus*, *Schoenus nigricans* and *Carex lepidocarpa*, characteristic of base-rich situations. Where acid or basic fen can be identified, this should be made clear in a target note and basic fen should be indicated by the code 'B'.

Where there are very wet areas containing tall swamp vegetation such as *Phragmites australis* or large sedges, these should be target noted as swamp (F1), or marked as patches of sky blue, if large enough to map within the area delineated as fen. Parts of the mire dominated by marsh (fen meadow) or can should be mapped or target noted as grassland (B5), woodland (A1) or scrub (A2). Springs and small flushes which feed or lie within a fen should be treated as an integral part of the mire system and target noted (see E2). Areas of bog within a fen and patches of degraded fen should also be target noted.

Valley mire (E3.1)

A valley mire develops along the lower slopes and floor of a small valley and receives water from springs and seepages on the valley sides, feeding a central watercourse. Such a fen can be distinguished from a flush because the former is a complex, whereas a flush is a discrete single feature, usually of limited extent.

Valley mires are often dominated by acidophilous vegetation containing Sphagnum species, *Carex* species and ericoids. However, vegetation typical of base-rich conditions can also occur, for instance *Schoenus nigricans* and *Juncus subnodulosus*. Floating mats of mosses and sedges may be present. Acid watercourses often contain *Hypericum elodes* and *Potamogeton polygonifolius*.

Basin mire (E3.2)

This type of fen develops in a waterlogged basin and contains very little open water. The water

table within the basin is level, but small flushes may occur around the edges and there is a limited through-flow of water.

The vegetation may be dominated by Sphagnum species, together with *Carex rostrata* and ericoids, or by tall swamp plants such as *Phragmites australis*, *Schoenoplectus (Scirpus) lacustris*, *Typha* species and, in base-rich situations, *Cladium mariscus*.

Flood-plain mire (E3.3)

This type of fen forms on a river or stream flood-plain which is waterlogged and, typically, inundated periodically. The substrate may be peat, mineral or a mixture of both. The range of vegetation types is similar to that of a basin mire (E3.2).

E4 Bare peat

Patches of bare peat more than 0.25 ha in extent (that is, approximately 50 m x 50 m) should be mapped. Peat haggings and areas of eroding peat haggings should be target noted. Commercial peat-workings are included in this category.

F Swamp, marginal and inundation

This habitat category is defined as emergent or frequently inundated vegetation, occurring over peat or mineral soils. The depth of water at the time of survey, or seasonal variation in water level, if known, should be target noted, also the nature of the substrate. Note that this category differs from mire (E) and from marsh/marshy grassland (B5) in having the water table distinctly above the level of the substrate for most of the year.

F1 Swamp

Swamp contains tall emergent vegetation typical of the transition between open water and exposed land. Swamps are generally in standing water for a large part of the year, but may occasionally be found on substrates that are seldom immersed, as in the later stages of the seral succession to marshy grassland.

Species composition varies according to the trophic status of the water, the substrate type, etc. Note that vegetation dominated by *Molinia caerulea*, *Filipendula ulmaria*, mosses, small *Carex* species or *Juncus* species, should be classified as marsh/marshy grassland (B5) or flush (E2), as appropriate. Swamp vegetation includes both mixed and single-species stands of *Typha* species, *Phragmites australis*; *Phalaris arundinacea*, *Glyceria maxima*, *Carex paniculata*, *C. acutiformis*, *C. rostrata* or other tall sedge. Single-species stands are usually found in deeper water and should be indicated with species codes.

Strips of swamp vegetation narrower than 5m bordering watercourses should be classified as marginal vegetation (F2.1).

Appendix F: UKHAB definition for f2d Aquatic marginal vegetation

UK HABITAT CLASSIFICATION – HABITAT DEFINITIONS

f2d Aquatic marginal vegetation

Definition

Vegetation fringing open water often developed as a narrow (< 0.5m wide or < 0.25ha in extent) part of a hydrosere between standing water and upslope vegetation.

Species

Species include Valerian *Valeriana officinalis*, Great Willowherb *Epilobium hirsutum*, Meadowsweet *Filipendula ulmaria*, Hemlock Water Dropwort *Oenanthe crocata*, Marsh Woundwort *Stachys palustris* and Purple Loosestrife *Lythrum salicaria*.

Position in the Classification

Primary

Level 4

Edition

Basic and Professional

More detailed categories available

0 subset categories

Categories at the next level

None

Status

Feature Type

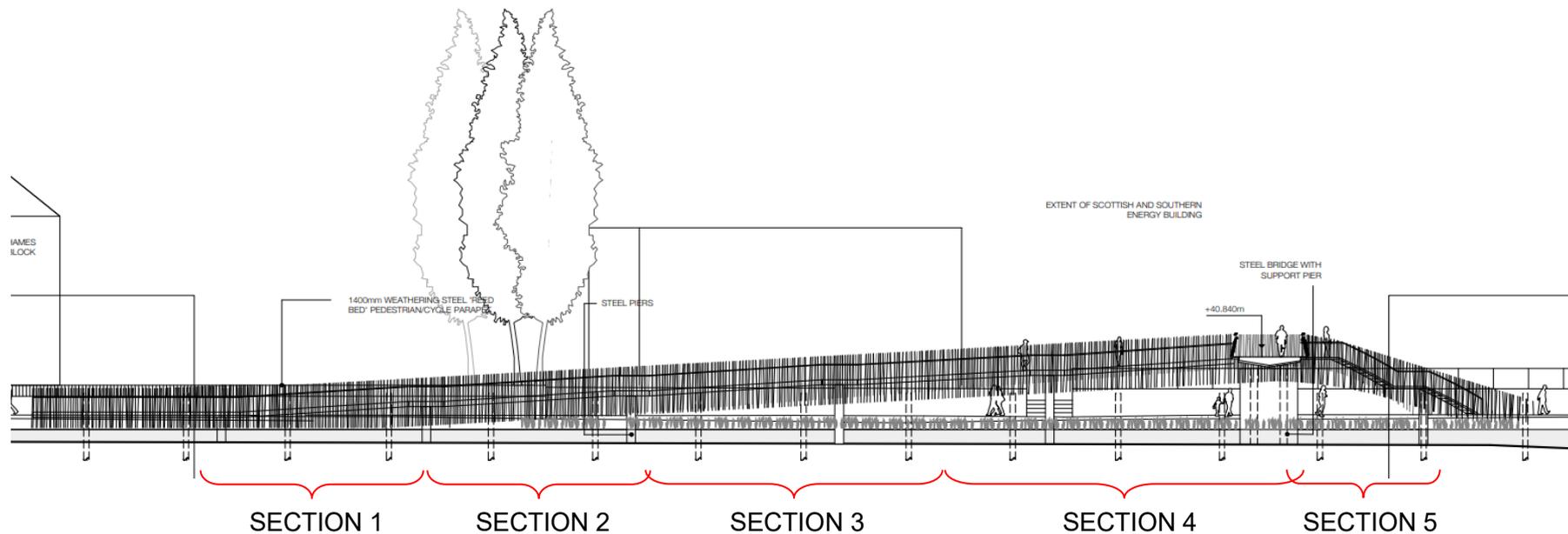
Area or Line

Appendix G: Landscape Planting Plan for the Christchurch Bridge (Drawing No. S150/TTP300.2) screenshot



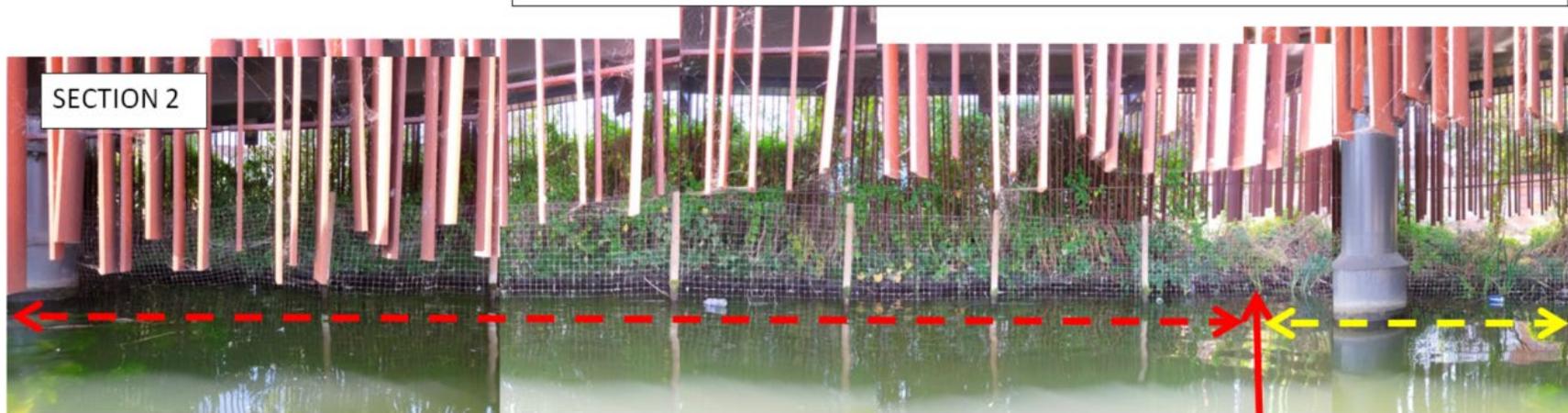
Appendix H: Photographs of marginal vegetation adjacent to the site from the river

The sections of photographs on the following pages correspond to the sections below on the proposed elevation (drawing 27272/P/010) which was submitted with the planning application number 131234 for the bridge. Note that the photographs are not to scale.





START OF COIR ROLL AND WILDFOWL FENCE (RED DASHED LINE SHOWS WHERE COIR ROLLS HAVE FAILED)



15M COIR ROLLS HAVE FAILED (SHOWN BY RED DASHED LINE) TO LEFT (EAST) OF THIS POINT YELLOW DASJED LINE IS WHERE COIR ROLLS HAVE ESTABLISHED



MARGINAL VEGETATION HAS ESTABLISHED IN COIR ROLLS ALONG ALL OF THIS SECTION (YELLOW DASHED LINE)



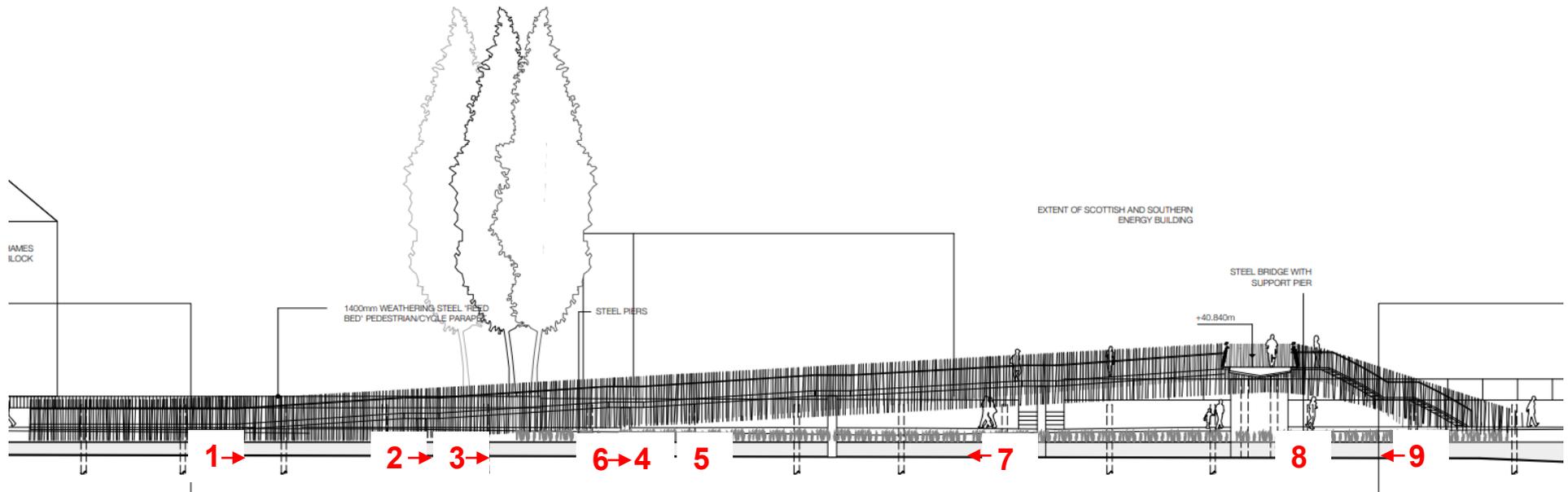
MARGINAL VEGETATION HAS ESTABLISHED IN COIR ROLLS TO LEFT (EAST) OF CENTRE OF BRIDGE BEHIND PILLAR (YELLOW DASHED LINE)

2M COIR ROLLS HAVE FAILED (SHOWN BY RED DASHED LINE) TO RIGHT (WEST) OF THIS POINT



Appendix I: More photographs of coir roll planting under the bridge ramps

Approximate locations and directions of photographs are shown below.



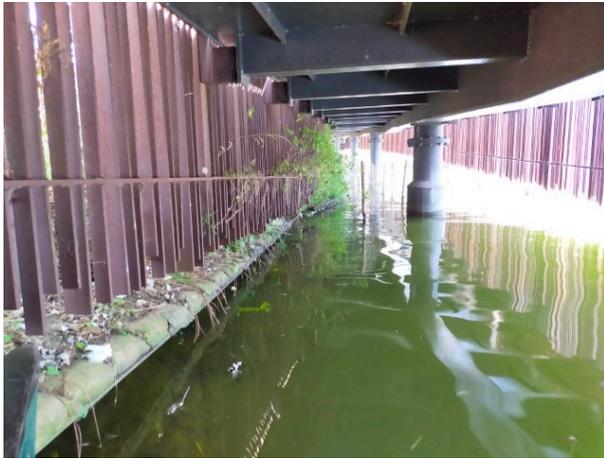


Photo 1: East end under bridge ramps with no coir roll planting



Photo 2: The start of coir rolls and wildfowl fence at east end where coir roll planting has failed



Photo 3: Coir rolls and wildfowl fence where coir roll planting has failed



Photo 4: Wildfowl fence has been damaged



Photo 5: Posts have rotted and need replacing



Photo 6: The start of marginal vegetation with poor establishment



Photo 7: Better establishment of marginal vegetation



Photo 8: The west end of the coir rolls and wildfowl fence



Photo 9: West end under bridge ramps with no coir roll planting

Appendix J: Species proposed for use in coir rolls and bank from the Full Site Planting Schedule for the Christchurch Bridge

Proposed coir rolls

Pre-established Coir Roll (P3)

Full length: 108 lin m

Supplier: Salix or similar and approved,

pre-planted with native mix of local provenance to include:

Iris pseudacorus [Yellow Flag Iris]

Lythrum salicaria [Purple Loosestrife]

Juncus effusus [Soft Rush]

Carex acutiformis [Lesser Pond Sedge]

Phalaris arundinacea [Reed Canary Grass]

Glyceria maxima [Reed Sweet Grass]

Treatment for the bank

Wildflower Turf (P4)

To comply with ecologist recommendations

Wildflower Turf Ltd, Landscape Turf or similar approved

Product code: WFT-Landscape-34

Indicative size of turfed area: 152 m²

Native Shrub Planting (P5)

Total Area = 16m²

Crataegus monogyna - Hawthorn	40-60cm,WHP	7, DS, plant in groups of 5-9. 30% of mix = 33no
Ilex aquifolium - Holly	40-60cm, 3L	7, DS, plant in groups of 5-9. 25% of mix = 30no
Prunus spinosa - Blackthorn	40-60cm,WHP	7, DS, plant in groups of 5-9. 30% of mix = 33no
Rosa canina – Dog Rose	30-40cm,3L	7, DS, plant in groups of 5-9. 10% of mix = 11no
Ruscus aculeatus - Butcher's Broom	20-30cm,3L	7, DS, plant in groups of 5-9. 5% of mix = 6no

Amenity Grassland to match existing (P1)

Amenity Perennial Ryegrass	<i>Lolium perenne</i>	60%
Strong Creeping Red Fescue	<i>Festuca rubra</i>	20%
Smooth Stalked Meadow Grass	<i>Poa pratensis</i>	15%
Certified Browntop	<i>Agrostis capillaris</i>	5%

Appendix K: Photographs of riverbank between Caversham Bridge and Reading Bridge which support grassland, tall ruderal and scrub habitats



South riverbank west of Christchurch Bridge



South riverbank west of Christchurch Bridge



South riverbank west of Christchurch Bridge



North riverbank west of Christchurch Bridge



North riverbank west of Christchurch Bridge



North riverbank west of Christchurch Bridge



North riverbank west of Christchurch Bridge



North riverbank west of Christchurch Bridge



North riverbank west of Christchurch Bridge



North riverbank west of Christchurch Bridge



North riverbank east of Christchurch Bridge



North riverbank east of Christchurch Bridge

Appendix L: Photographs of plants of marginal vegetation growing in shade, partial shade or dappled shade alongside Hills Meadow Park and Kings Meadow Park

Hills Meadow Park



Kings Meadow Park



Appendix M: Photographs of grassland, tall ruderal and scrub growing on the shaded north side of trees at Hills Meadow Park



Appendix N: Photographs of damage to coir rolls east of Christchurch Bridge where Option B is proposed



Failed 8m of coir roll at east end due to boat damage

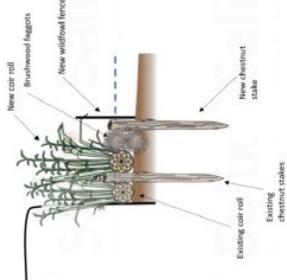


Failed 8m of coir roll at east end due to boat damage



Wildfowl fence has been pushed down towards western end allowing access to wildfowl

Appendix O: Indicative cross-section of additional planting for Option B and email from Salix confirming water depth

<p>Additional Notes:</p> <ol style="list-style-type: none"> 1. This drawing should be used as an indicative guide only. Part of the current wildfowl fencing is currently failing. Removal of existing wildfowl fencing would be required. 2. 2m x 0.3dia brushwood bundles stacked underneath coir rolls. 3. 1.8m chestnut stake fixings 4. 3m x 0.3dia pre-established coir rolls with 5. watervole/wetland mix: <ol style="list-style-type: none"> 1. <i>Carex acutiformis</i> 2. <i>Iris pseudacarus</i> 3. <i>Glyceria maxima</i> 4. <i>Phalaris arundinacea</i> 5. <i>Schoenoplectus lacustris</i> 6. <i>Mentha aquatica</i> 7. <i>Lythrum salicaria</i> 	 		<p>Salix River and Wetland Services Salix, Croxton Park, Thetford, Norfolk, IP24 1LS</p> <p>Contact: 0370 350 1851 info@salixrv.com</p>	 <p><u>Indicative cross-section</u> Option B</p> <p>Solution: Application:</p>
--	---	--	--	---

iaincorbyn@eco-consult.co.uk

From: Alex Clark <Alex@salixrw.com>
Sent: 17 September 2021 12:15
To: iaincorbyn@eco-consult.co.uk
Cc: 'Joseph Harding'
Subject: RE: 28876. Vastern Road

Hi Iain,

I visited the site on 24th May 2021 in relation to the proposed mitigation planting at Vastern Road.

At Option B, the water depth appears quite shallow and I measured the depth as 0.3m as shown in our indicative cross-section. This location is suitable for additional coir rolls as the margin is quite silted.

Increasing the wetland planting along the margin would be relatively simple and would increase the resilience of the current planting from boat wash by providing a larger buffer.

We would recommend reinstalling the anti-grazing fence along this stretch as it is currently failing. Failure could be due to improper installation or to vandalism.

The 8m section which has been lost at the eastern end could also be repaired, strengthened and coir rolls added there as well if required. Other materials such as brushwood and/ or rock rolls could be used to help increase the buffer and resilience from boat wash.

Kind regards,

Alex Clark
Technical Manager

Mob: 07881 341 697

MSc MCIWEM



Salix River & Wetland Services Ltd

CONTRACTS & ACCOUNTS OFFICE Salix, The Byre, Blakenhall Park, Bar Lane, Barton – Under – Needwood, Staffs DE13 8AJ

CROXTON NURSERY Salix, Croxton Park, Croxton, Thetford, Norfolk IP24 1LS

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Registered in England and Wales Number 04944506

Appendix P: Photographs of marginal vegetation along riverside of Hills Meadow Park



Wide strip of marginal vegetation on riverside of Hills Meadow Park above weir



Wide strip of marginal vegetation on riverside of Hills Meadow Park opposite View Island

Appendix Q: Vastern Road: Mitigation Works Water Management Technical Note (Stantec)

TECHNICAL NOTE

Job Name: SSE Site, Vastern Road

Job No: TBC

Note No: TBC

Date: 23rd September 2021

Prepared By: Paul Jenkin

Reviewed By: Scott Witchalls

Subject: **Vastern Road: Mitigation Works Water Management Technical Note**

Item	Subject
1.	<p>The proposed redevelopment of the SSE site at 53-55 Vastern Road, Reading, consists of the demolition of existing structures and erection of a series of buildings ranging in height from 1 to 11 storeys including residential dwellings (C3 use class) and leisure floorspace (A3 use class), together with a new north-south pedestrian link, connecting Christchurch Bridge to Vastern Road.</p> <p>The planning submission (RBC planning reference 200188) was accompanied by a range of technical support documents covering the impacts and proposed mitigation as it related to aspects such as transport, flood risk, drainage, biodiversity and other issues.</p> <p>The existing site wall along the northern boundary is to be removed following pre-app discussions with Environment Agency (EA). The EA have confirmed that proposals to remove the wall will enhance corridor and result in an improvement in floodplain storage capacity (the associated Flood Risk Assessment (FRA) confirming a floodplain storage capacity improvement of 120m³).</p> <p>The scheme has also been designed in liaison with EA to provide continuity of their proposed Reading and Caversham Flood Alleviation Scheme</p>
2.	<p>Additional Compensation Works</p> <p>It has been suggested that the proposals would require some additional compensation to offset any potential harm to the existing marginal habitats of the River Thames due to shading by the buildings.</p> <p>The proposals produced by Berkeley Homes have been rejected by Reading Borough Council (RBC) as set out in 7.1.5 to 7.1.6 of the Statement of Case produced by GS Ecology. Broadly the reasons are as follows</p> <ul style="list-style-type: none"> • Impact on the River Thames and whether the EA would accept the impact on the overall width of the channel. • Impact on navigation and access and whether the proposals would affect this. • Concerns over water depth and whether the proposals could establish a viable habitat. <p>The works would require a 'Flood Risk Activity Permit' from the EA and this would consider the issues above. It is noted that in their response dated 16th October 2020 the EA have suggested this approach as below.</p> <p><i>“Option 2 would be to see additional marginal planting installed as a combination of mitigation and ecological enhancement in recognition of the impact of shading. We would also like to see shade tolerant plants added to the footbridge planting area to allow for succession to a shadier environment.</i></p> <p><i>There are a number of locations that could be explored for this additional marginal planting on either side of the river. Ideally, upstream between the footbridge and Caversham Bridge. We believe that much of this land is under the ownership/control of Reading Borough Council and so</i></p>

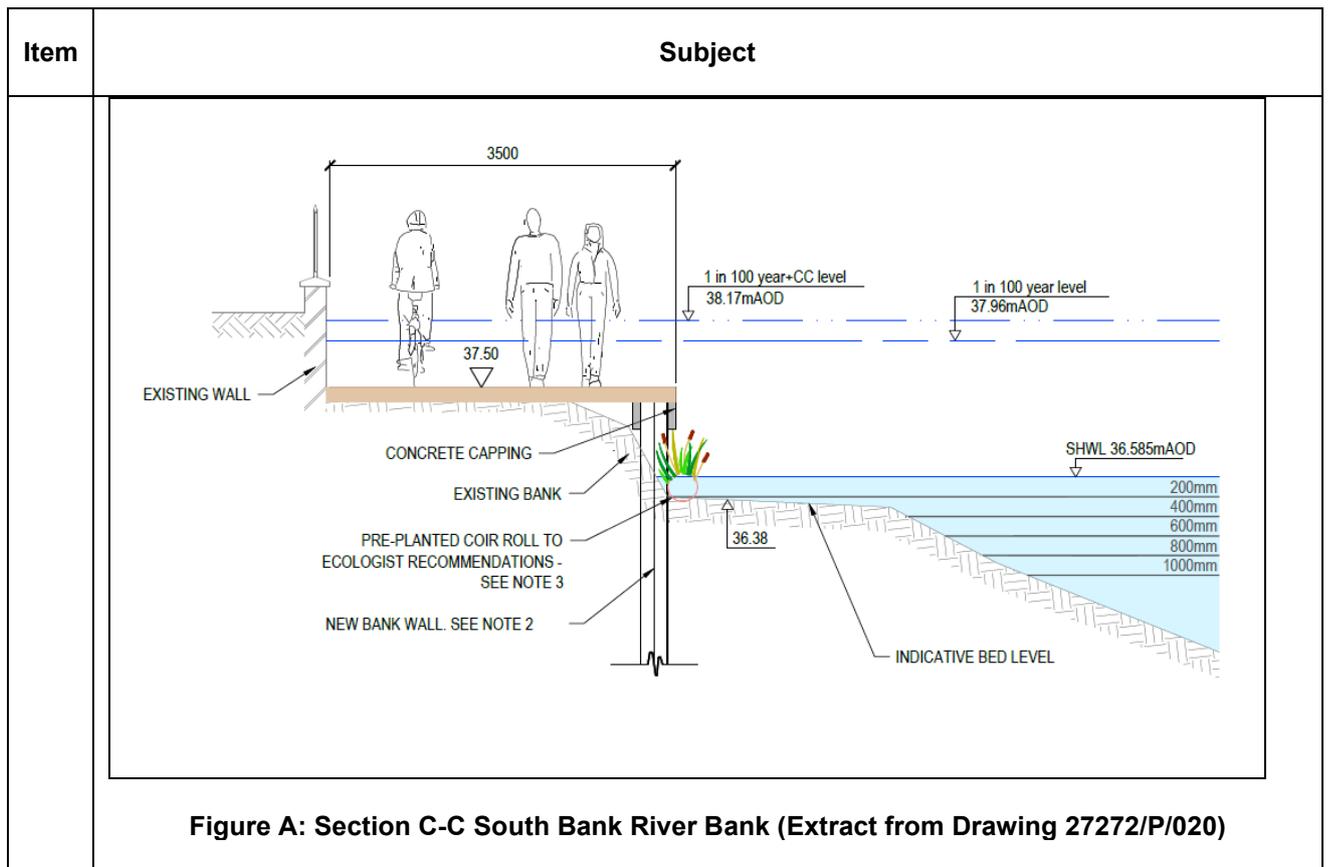
TECHNICAL NOTE

Item	Subject
	<p><i>any discussions regarding this should include the relevant Reading BC representative”.</i></p> <p>In response to this, Berkeley Homes have proposed areas of additional habitat as shown on Appendix J of the Statement of Case prepared by Ecoconsult (herein attached in Appendix A).</p> <p>Two locations have been identified for potential mitigation measures, as shown in Appendix A. The preferred option would be Option B: to add an additional line of coir rolls in front of the existing coir rolls located immediately downstream of Christchurch Bridge on the southern bank. It is our understanding that Option A has been rejected by RBC for amenity and recreation reasons but for the purposes of this note the conclusions on navigation and conveyance would be the same for both options.</p> <p>It is also noted that the recently constructed Christchurch Bridge, crossing the River Thames to the immediate north of the site, adopted substantially the same approach for mitigation and the existing marginal habitat is there largely because of the success of this mitigation.</p> <p>The FRA document (October 2014) for the Christchurch Bridge is in the public domain and has been used to complement the assessment below.</p>
3.	<p>Impacts on the Capacity of the River Thames from Compensation Option B</p> <p>At this location the River Thames is approximately 66 metres wide.</p> <p>The proposals are to install additional line(s) of coir rolls in front of the existing established coir rolls. This would effectively increase the width of the marginal vegetation in this location.</p> <p>Depending on whether one or two lines of rolls are added this would result in extending the coir rolls by approximately 0.6-0.9 metres northwards from the existing bank along the 53m length of existing planting.</p> <p>The existing coir rolls that are present were installed at the same time as the Christchurch Bridge and were consented by the EA as part of the FRA and the FRAP process. As part of this process the EA would have considered both the ecological benefits and any impacts on flood risk and considered these to be satisfactory.</p> <p>It is very unlikely that the addition of a further one or two lines of coir rolls to this existing line of marginal vegetation would have any significant impact on the overall flood conveyance in this location during design flood conditions. This is because the area of potential flow area occupied by the proposed planting would be insignificant compared to the overall area available for flood flows.</p> <p>As the EA previously consented the existing coir rolls and with due regard to the above considerations, it unlikely that they would have reasonable grounds to raise an objection to the principle of adding more of the same in the same location.</p>
4.	<p>Impacts on Navigation from Compensation Option B</p> <p>The provision of an additional line(s) of coir rolls in Option B would have no impact on the navigability of the River Thames at this point or as a whole.</p> <p>Within the line of existing and proposed coir rolls there are no consented moorings, although it is regularly observed that downstream of the existing coir rolls there are a number of boats that are believed to be moored without permits (see Photo 1).</p>

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	<div data-bbox="667 331 1082 880" data-label="Image"> </div> <div data-bbox="491 882 1262 943" data-label="Caption"> <p>Photo 1: Existing line of coir rolls & non-permitted moorings (South bank looking downstream)</p> </div> <div data-bbox="276 974 1477 1066" data-label="Text"> <p>Signs are erected in the vicinity of the coir rolls to reiterate that mooring is not allowed. The proposals would make it increasingly difficult to moor boats at this location of the bank and therefore reduce illegal mooring but would not affect any of the consented mooring locations.</p> </div> <div data-bbox="276 1097 1477 1218" data-label="Text"> <p>The proposed compensation would be downstream of the existing bridge ramp and the fenders which are there to prevent the close passage of vessels. Also, the channel profile is shallow at this location (see below). Consequently, the proposed compensation is in an area not currently available for navigation or mooring and so there will be no impacts as a result.</p> </div>
5.	<p>Concerns over Water Depths</p> <p>Figure A shows a section of the existing approved southern bank from the Christchurch Bridge Proposal Drawing 27272/P_020 (Section C-C is at location of the approved rolls immediately downstream of the bridge), taken from the associated FRA.</p> <p>This shows that water depths are relatively shallow for up to 2m metres from the original south bank in this location ranging from 0.2 to 0.4 metres deep.</p> <p>Based on the nature of the proposals these depths would allow the vegetation to become established even if the width of planting were doubled or tripled. An example of this is shown in Appendix B.</p>

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DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
	-	23/09/2021	PJ	RR	PJ	SW

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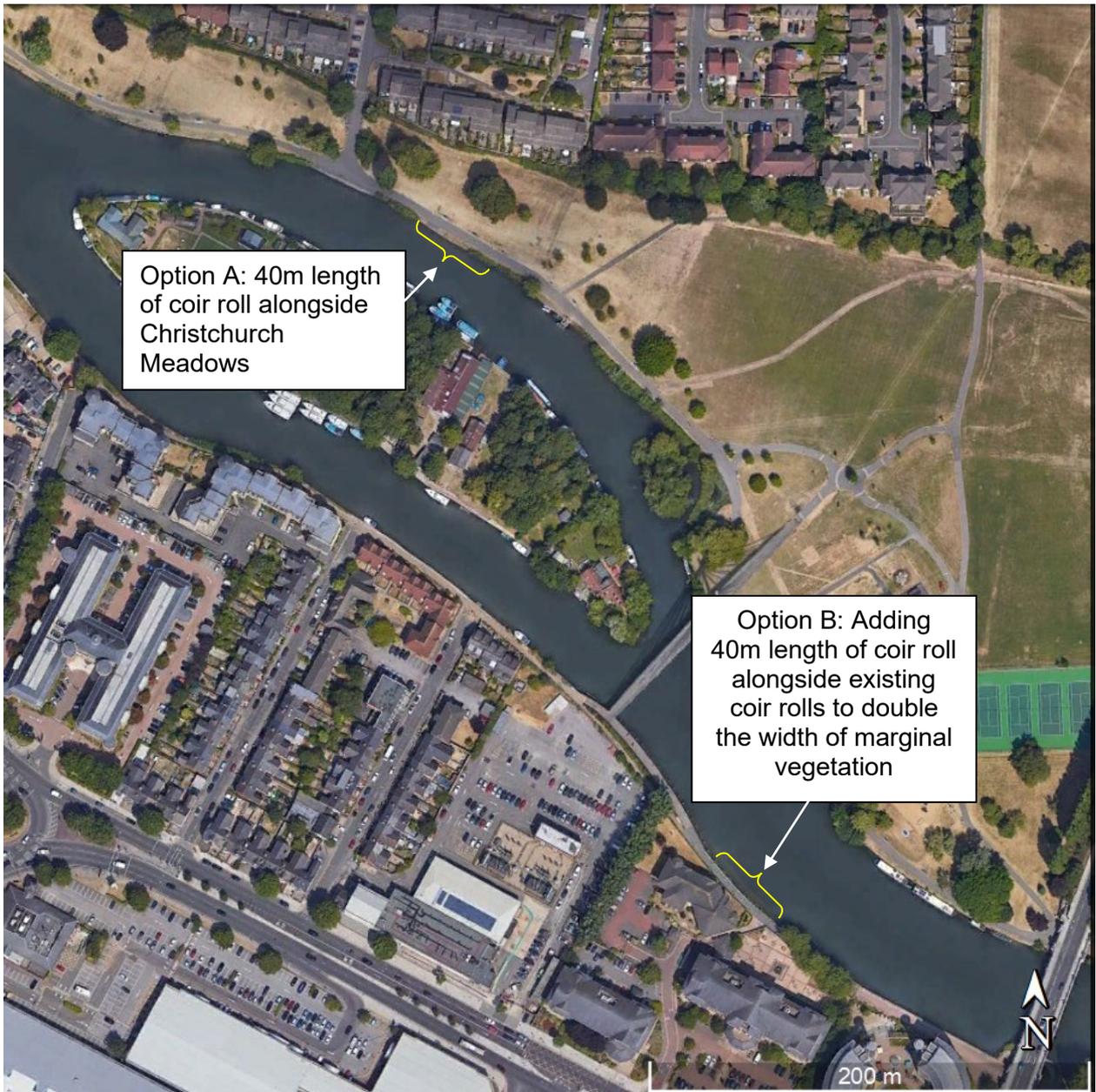
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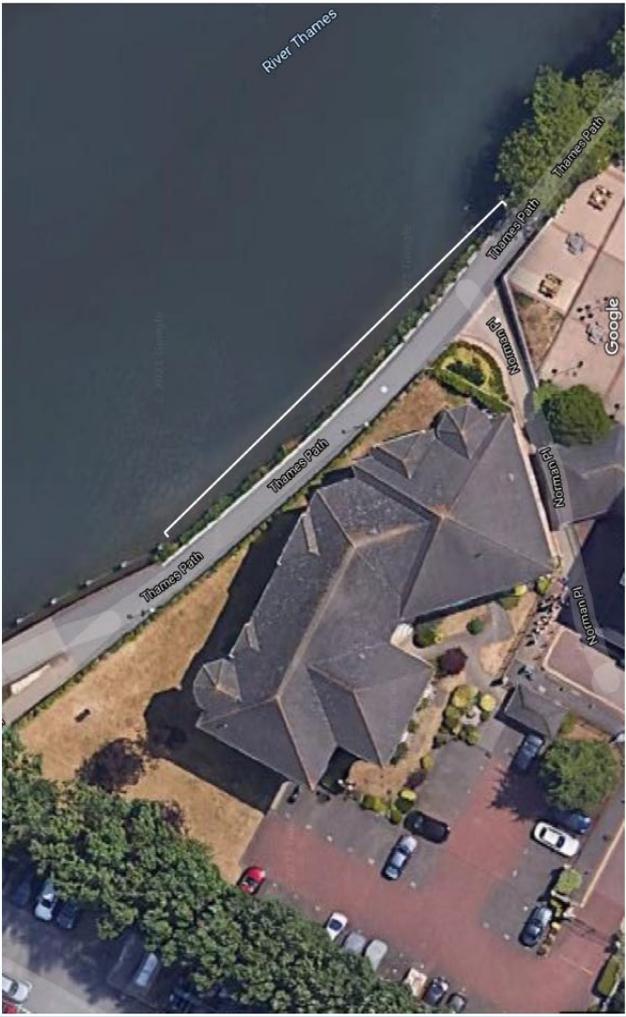
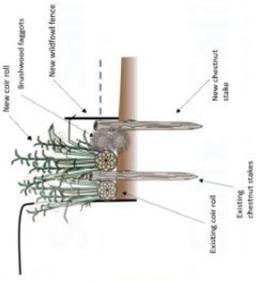
Item	Subject
A	APPENDIX A Appendix J – Two options for location of new coir rolls - Ecoconsult

Appendix J: Two options for location of new coir rolls



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Item	Subject
B	APPENDIX B
Indicative Cross Section: Option 2 - Salix	

	 	<p>Additional Notes:</p> <ol style="list-style-type: none"> 1. This drawing should be used as an indicative guide only. 2. Part of the current wildflower fence is currently failing. Removal of existing wildflower fence would be required. 3. 2m x 0.3dla brushwood bundles stacked underneath coir rolls. 4. 1.8m chestnut stake fixings 5. 3m x 0.3dla pre-established coir rolls with watervole/wetland mix: <ol style="list-style-type: none"> 1. <i>Carex acutiformis</i> 2. <i>Iris pseudacorus</i> 3. <i>Glyceria maxima</i> 4. <i>Phalaris arundinacea</i> 5. <i>Schoenoplectus lacustris</i> 6. <i>Mentha aquatica</i> 7. <i>Lythrum salicaria</i> 	<p>Salix River and Wetland Services Salix, Croxton Park, Thetford, Norfolk, IP24 1LS Contact: 0370 350 1851 info@salixrw.com</p>
<p><i>Indicative cross-section</i></p> <p>Option B</p>		<p>Solution:</p> <p>Application:</p>	

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Qualification and Experience

My name is Paul Jenkin. I hold a Master of Science degree in Water Resource Technology and Management from the University of Birmingham. I am a Fellow of the Chartered Institution of Water and Environmental Management, a Chartered Engineer and a Chartered Water and Environmental Manager. I have over twenty-five years' experience in the field of flood risk and water management.

I have appeared as an expert witness at numerous Public Inquiries and appeared in Court as an expert witness in legal disputes.

I am a Director of Water Management at Stantec. Stantec is a multi-disciplinary development and infrastructure consultancy that advises public and private sector clients with respect to planning, design and construction of infrastructure and land development projects in the United Kingdom and overseas. Stantec's Infrastructure and Buildings Group, of which I am a member, provides consultancy services in all areas of flood risk planning and assessment as well as river and water engineering.

I have worked on a variety of major flood risk and land development projects, including all aspects of flood risk assessment, water related environmental assessment and engineering solutions to flood risk management problems. Many years ago I developed the first flood risk mapping model for the Reading area on behalf of the Environment Agency and also used the physical model developed by HR Wallingford to provide additional calibration as part of developing the Olympic Rowing Course downstream. More recently I have been involved in many flood risk assessments including this area of the River Thames at the Crown Plaza and numerous sites in Caversham.

I am familiar with the site and its surroundings having worked on the numerous development and infrastructure projects in Reading since the late 1990's as above. I have also worked on the surface water management plan for Reading Borough Council as part of the actions arising from the Flood and Water Management Act 2010.

In undertaking the analysis for the purposes of preparing this Technical Note on Flood Risk, I have been assisted by specialist technical teams at Stantec under my supervision.