5.7   Pilot Project 6 – Whitewater Meadows

Pilot project recommendations

5.7.1   The recommendations below are displayed on Figure 29, Appendix A.

Floodplain enhancement

5.7.2   The northern field is situated on the floodplain River Whitewater floodplain (Table 2) and once contained a channel running through it from the mill to the south, which was filled in post 1958 (Ref 17).

5.7.3   The channel should be re-excavated and widened to the level of, or just below, the water table. This area should be allowed to colonise with marginal plants and eventually succeed to a linear wet woodland. The banks of this channel should be shallow and have scalloped edges in places on the east side to allow for seasonal pooling. The spoil from these works could be placed along the bank to the west, enhancing the footpath along the hedgerow, which is slightly elevated from the floodplain. As noted for other sites such proposals will need to be discussed with the EA.

5.7.4   The remaining grassland to the east of this channel should be enhanced towards a more species-rich sward, akin to floodplain meadow. The dominance of grasses and presence of ruderals suggests nutrient levels are high, therefore the vegetation should be frequently cut and collected for two years to attempt to reduce them. All arisings from this area should be removed from site. The area can then be seeded using local green hay or a suitable seed mix. Table 2 highlights that soils are 'seasonally wet and slowly permeable' suggesting that conditions would not be too wet for this type of grassland.

5.7.5   The bank to the west of the excavated channel should be seeded with a neutral grassland mix, suitable to drier conditions.

5.7.6   A hay cut with aftermath grazing should be used to manage the north field, however fencing may need to be installed to restrict livestock into the excavated channel to stop trampling and browsing damage. A buffer should be left un-cut along the river and allowed to colonise with ruderal and scattered scrub to stabilise the banks.

5.7.7   Footpaths are present around this field, including along the river. These should be enhanced using gravel and boardwalks to guide recreational users around the area, formalize desire lines and reduce trampling and compaction of soil.

   - Objective i – Excavate and widen channel through centre of north field. Create scalloped edges on the east side.

   - Objective i – improve species diversity of grassland areas to at least 9 species per m^2 by reducing nutrient inputs into grassland and allowing flowering and seeding of wildflowers.

   - Objective ii – 30% or more of the vegetation made up of wildflowers, including those indicative of wet meadows in the floodplain grassland, i.e., Meadowsweet, and less than 30% rye grass.

Wet woodland regeneration

5.7.8   The damp area in the south-east corner of the north field contains scattered scrub and dense vegetation. Succession of this area should be allowed to continue towards wet

woodland, in addition to the wet woodland regeneration along the channel, described above.

5.7.9   Management in this area would be hands off, allowing for the vegetation to develop through natural succession to wet woodland with monitoring undertaken to ensure no non-native tree or shrub species establish. Future management however could improve species diversity by additional planting, if required.

- Objective i – Regenerated woodland to comprise native tree and shrub species.

Hedgerow creation

5.7.10   The middle field contained two parcels of wildflower meadow separated by a fence and bordered by hedgerows.

Community orchard

5.7.11   The north section of the south field would be an ideal place to create a community orchard. This would consist of a variety of fruit trees, approximately 10m apart, managed in a low intensity manner. The grassland should be enhanced to improve species richness before planting the orchard. Involvement of local people to create and manage this habitat would be key to its success.

- Objective i – improve species diversity of grassland areas to at least 9 species per m^2 by reducing nutrient inputs into grassland and allowing flowering and seeding of wildflowers.

- Objective ii – 30% or more of the vegetation made up of wildflowers, including those indicative of wet meadows, and less than 30% rye grass.

- Objective iii – Use of native fruit trees.

Wood-meadow creation

5.7.12   The south field contains ponds, habitat piles and scrub however many of these features are isolated in close mown modified grassland. A wood-meadow landscape, described in Section 5.2, should be created in the area in between the two ponds to link up these features. Planting could include fruit trees, particularly in the north of this area, which would tie in with the managed traditional orchard described above.

5.7.13   The paths should be kept in their current place and the south of this field left as modified grassland to maintain some open space.

- Objective i – improve species diversity of grassland areas to at least 9 species per m^2 by reducing nutrient inputs into grassland and allowing flowering and seeding of wildflowers.

- Objective ii – 30% or more of the vegetation made up of wildflowers, including those indicative of wet meadows, and less than 30% rye grass.

- Objective iii - Objective i – Ensure at least 5 native tree and shrub species are planted.

- Objective ii – Plant trees and shrubs at a minimum of 5m spacings in randomised or 'Lazy S' formation, i.e., not in rows, or in 'Lazy S' to create a more natural feel.

Biodiversity and carbon benefits

5.7.14   The highest biodiversity value habitat at Whitewater Meadows is the middle wildflower field. The proposal outlined above would enhance habitats in the northern and southern fields to create a biodiverse corridor along the River Whitewater.

5.7.15   The excavation of the historical watercourse will create a inundated channel, particularly during winter. The scalloped edges of this will create ephemeral of still water that would benefit invertebrates, amphibians, reptiles and other animals. Allowing the channel and south-east hollow to develop naturally towards wet woodland vegetation will allow for an array species to inhabit this area at various times during its successional journey, as the provision of niches change. Wet woodland is a priority habitat and creation within Whitewater Meadows will increase the wet woodland resource in the local area. This habitat would also sequester CO_2 and store carbon in woody vegetation.

5.7.16   The enhancement of the floodplain to a species-rich sward will complement the establishing wet woodland vegetation and inundated areas and create an important habitat mosaic. The increase in species diversity will provide an important nectar source for invertebrates and improved the carbon storage potential of the soil.

5.7.17   Planting trees in the south of the site, in community orchard and wood-meadow areas, will also improve carbon storage of the site along with improving the diversity of microhabitats within the area. Increased tree cover in this field, through current and proposed hedgerows and wet woodland in the north of the site will provide a vegetated habitat corridor, improving the movement of species through the site.

5.7.18   The proposed interventions will enhance habitats whilst maintaining recreation. The proposed community orchard goes a step further by engaging local people to help manage part of the site.

Defra Metric 3.1 potential future score

5.7.19   The number of Habitat Units delivered for the above proposal is displayed in Table 23. Further details, including proposed future condition justifications, are provided in the Whitewater Meadows Defra Metric spreadsheet.

5.7.20   Following the methodology outlined in Section 5.2, the wood-meadow areas have been captured in the metric by assuming a ratio of 60% woodland to 40% grassland.

Table 23 Whitewater Meadows number of Habitat Units delivered

Unit type	Baseline Units	Units delivered	Change in Units (Marketable Units)	Net % Change
Habitat	68.68	107.66	38.97	56.74
Hedgerow	7.64	10.58	2.94	38.56

Carbon storage potential

5.7.21 The amount of CO_2 sequestered by the wet woodland regeneration area was calculated using the Woodland Carbon Code spreadsheet and is displayed in Table 24. This table provides the amount of CO_2 sequestered at 5-10 yearly intervals after woodland establishment that can be sold as carbon credits. It is assumed that woodland establishment would be from 5-10 years after the area had been fenced off and allowed to succeed and assumes tree spacing of > 3.5m. The equivalent amount of carbon stored has also been given.

Table 24 Carbon storage potential of proposed wet woodland regeneration at Whitewater Meadows

Years since woodland establishment	Claimable carbon credits (tCO₂e)	Amount of carbon stored (tC)
5	0	0.00
15	34	9.27
25	164	44.73
35	112	30.55
45	71	19.36
55	55	15.00
65	22	6.00
75	12	3.27
85	10	2.73
95	21	5.73
100	1	0.27
Total	**502**	**136.91**

5.7.22 The amount of CO_2 sequestered by the wood-meadow habitats was calculated using the Woodland Carbon Code spreadsheet and is displayed in Table 25. This table provides the amount of CO_2 sequestered at 5-10 yearly intervals after woodland creation that can be sold as carbon credits, assuming tree spacing of approximately 3.5m. The equivalent amount of carbon stored has also been given.

Table 25 Carbon storage potential of proposed wood-meadow creation at Whitewater Meadows

Years since woodland creation	Claimable carbon credits (tCO₂e)	Amount of carbon stored (tC)
5	0	0
15	8	2.18
25	39	10.64
35	27	7.36
45	17	4.64
55	13	3.55
65	6	1.64
75	2	0.55
85	2	0.55
95	5	1.36
100	1	0.27
Total	**120**	**32.73**

5.7.23   The carbon storage potential of enhancing non-woodland habitats is displayed in Table 26

Table 26 Carbon storage potential of non-woodland habitat creation and enhancement at Whitewater Meadows

Baseline habitat	Proposed habitat	Area (ha)	Carbon exchange from literature (CO₂/ha/year)	CO₂ sequestered on site (tCO₂/yr)	Carbon captured on site (tC/yr)
Modified grassland	Floodplain meadow	3.18	3.8 – 6.96[16]	12.08 – 22.13	3.3 – 6.04
Modified grassland	Neutral grassland	1.45	3.8 – 6.96	5.51 – 10.09	1.5 – 2.75
Modified grassland	Neutral grassland within and around wood-meadow	0.21	3.8 – 6.96	0.8 – 1.46	0.22 – 0.4
Modified grassland	Traditional Orchard	0.24	Not enough data	N/A	N/A
Total	**-**	**-**	**-**	**18.39 – 33.69**	**5.02 – 9.19**

5.7.24   The table suggests a maximum of 33.69 tCO₂ could be sequestered each year following habitat interventions, which equates to 9.19 tC stored.

---

[16] Restoration of flower-rich grassland