**Monitoring plan**

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| **Site Name** | | | |  | | | **Plan Period** | *Dates (50 yrs)* |
| **Size** | *(hectares)* | | | | **Location** | *Grid reference & town, postcode etc.* | | |
| **Designations** | | | *Relevant designations, further details can be given in description.* | | | | | |
| **Ownership** | |  | | | | | | |
| **Access Rights** | | | *Details of access to site.* | | | | | |

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| **Site Description** |
| *Describe what the site is currently, give a broad and not too detailed overview of all relevant aspects of the site.*  *Location & setting within wider landscape (connectivity, landscape designations, surrounding land-uses, priority habitats, integration with local/national nature recovery strategies).*  *Site overview (soil type, site layout, topography, historic/current land-use, carbon/biodiversity implications of historic/current land-use).*  *Existing habitats.*  *Species supported (current & future), priority species in wider area.* |

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| **Summary of Monitoring Requirements** |
| *Summarise the monitoring being undertaken for the project over the project lifetime.* |

**Minimum monitoring requirements**

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| **Habitat-based Biodiversity Uplift** |
| *Baseline habitats should be mapped using UK Habitat Classification and their condition (DEFRA metric) assessed. Habitat development will be monitored over the project lifetime (5 yearly).* |
| Sampling approach |
| *Sampling strategy to map habitats across site & capture future change. Collection of data needed for DEFRA biodiversity metric calculation (area of each habitat parcel, condition, strategic significance).* |

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| **Soil carbon** |
| *The baseline soil carbon stock for each starting habitat or site sub-unit, stratified by soil depth, and monitoring over project lifetime (years 5 & 10, then 10-yearly).* |
| Sampling approach |
| *Sampling intensity, spatial layout of sampling regime (e.g. stratification by soil type, starting habitat, other natural environmental gradients on site), sampling depth & depth increments. Ongoing monitoring strategy, aligned with anticipated habitat development within project.* |
| Analysis |
| *Lab approach to carbon monitoring within soil samples (minimum analysis of total carbon).* |

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| **Aboveground carbon** |
| *Baseline aboveground biomass carbon stock for each starting habitat or sub-unit and monitoring over project lifetime (years 5 & 10, then 10-yearly). The sampling approach should also capture the accumulation of aboveground carbon for areas of the site that are transitioning from open habitats to scrub or woodland habitat. At years 5 & 10 the areas targeted for scrub/woodland establishment should be surveyed to assess the density of tree establishment.* |
| Sampling approach |
| *Sampling intensity, spatial layout of sampling regime (e.g. stratification by habitat category), method of carbon estimation. Ongoing monitoring strategy, aligned with anticipated habitat development within project. Establishment of monitoring plots to capture future natural regeneration (tree density & aboveground carbon).* |

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| **Carbon fluxes (peatland habitats)** |
| *For peatland habitats carbon fluxes should be monitored in each sub-unit alongside carbon stocks (CO2, CH4, NO2), with baseline emissions being established to compare against. Fluxes in tCO2e ha−1 yr−1, to estimate overall fluxes in each sub-unit and across the site. Baseline fluxes and monitoring over project lifetime (years 5 & 10, then 10-yearly).* |
| Sampling approach |
| *Sampling intensity (number of sample sites, frequency of sampling across year), spatial layout of sampling regime (e.g. stratification by habitat category), method (e.g. flux-chamber monitoring – portable or fixed sampling chambers).* *Ongoing monitoring strategy, aligned with anticipated habitat development within project.* |

**Species monitoring**

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| **Monitoring of species** |
| *If any existing endangered species are present on the site at the start of the project, how will their populations be monitored throughout the project lifetime?*  *If any lost species are intended to be restored, how will this be monitored* |
| Sampling approach |
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**Leakage monitoring**

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| **Monitoring for carbon leakage** |
| *How will potential carbon leakage, as defined by the Wilder Carbon Leakage Protocol, be monitored.* |
| Sampling approach |
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**Monitoring of Sustainable Development Goals**

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| **Monitoring for Sustainable Development Goals** |
| *How will outcomes be monitored to assess whether they support the achievement of any Sustainable Development Goals?* |
| Sampling approach |
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**Monitoring of Risks**

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| **Monitoring of Risks** |
| *Detail the risks outlined in the Wilder Carbon Project Risk Assessment that will be monitored.*  *How will the monitoring undertaken on the site inform on whether risks are being mitigated for effectively or not?* |
| Sampling approach |
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**Additional monitoring**

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| **Wider Biodiversity Uplift** |
| *Wider biodiversity uplift can also be measured, through indicators such as:*   * *Species richness (e.g. using indicator taxa)* * *Bio-abundance (e.g. using indicator taxa)* * *Ecosystem functionality (e.g. trophic niche fulfilment, structural diversity of habitat, etc)* * *Wider ecosystem service benefits (e.g. water quality, soil quality, water storage etc)*   *Note that finance through future voluntary biodiversity credits is likely to require such monitoring.* |
| Sampling approach |
| *Sampling strategy to measuring wider biodiversity across the site and measuring change over time. How will indicators listed above be measured and monitored?* |

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| **Additional Monitoring (please specify)** |
| *Any additional monitoring e.g. control sites (same monitoring approach as focal site), biodiversity indicator groups, additional soil properties.* |
| Sampling approach |
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**Monitoring, reporting & verification overview**

Overview of monitoring variables and schedule.

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| **Monitoring (Year 1-5)** | | | | | | | | | | | |
| **Management Objective** | **Monitoring Objective** | | **Dates to be Done** | | | | | | | | **Observation** |
| *Year 1* | *Year 2* | | *Year 3* | | *Year 4* | | *Year 5* |
| Natural process led management | Habitat change | |  |  | |  | |  | |  | Mapping habitat development in response to natural process led management. |
| Carbon sequestration | Soil carbon | |  |  | |  | |  | |  | Monitoring changes in soil carbon. |
| Aboveground carbon | |  |  | |  | |  | |  | Monitoring changes in aboveground carbon. |
| CO2 flux | |  |  | |  | |  | |  | Monitoring changes in fluxes |
| CH4 flux | |  |  | |  | |  | |  |
| NO2 flux | |  |  | |  | |  | |  |
| Biodiversity uplift (habitat-based) | Habitat change | |  |  | |  | |  | |  | Verifying minimum 50% biodiversity uplift using DEFRA biodiversity metric. |
| Conservation/restoration of species | Species conservation/restoration | |  |  | |  | |  | |  | Presence/absence and (if feasible) abundance of identified endangered or priority species |
| Carbon leakage | Mitigation of carbon leakage | |  |  | |  | |  | |  | Is any carbon leakage taking place? |
| Supporting the achievement of Sustainable Development Goals | Various, depending on SDGs | |  |  | |  | |  | |  | Various, depending on SDGs |
| Mitigation of identified project risks | Various, depending on identified risks | |  |  | |  | |  | |  | Various, depending on identified risks |
| Wider biodiversity uplift | Various, depending on indicators (add below) | |  |  | |  | |  | |  | Various, depending on indicators (add below) |
| **Monitoring (Year 10-30)** | | | | | | | | | | | |
| **Management Objective** | **Monitoring Objective** | | **Dates to be Done** | | | | | | | | **Observation** |
| *Year 10* | *Year 15* | | *Year 20* | | *Year 25* | | *Year 30* |
| Natural process led management | Habitat change | |  |  | |  | |  | |  | Mapping habitat development in response to natural process led management. |
| Carbon sequestration | Soil carbon | |  |  | |  | |  | |  | Monitoring changes in soil carbon. |
| Aboveground carbon | |  |  | |  | |  | |  | Monitoring changes in aboveground carbon. |
| CO2 flux | |  |  | |  | |  | |  | Monitoring changes in fluxes |
| CH4 flux | |  |  | |  | |  | |  |
| NO2 flux | |  |  | |  | |  | |  |
| Biodiversity uplift (habitat-based) | Habitat change | |  |  | |  | |  | |  | Verifying minimum 50% biodiversity uplift using DEFRA biodiversity metric. |
| Conservation/restoration of species | Species conservation/restoration | |  |  | |  | |  | |  | Presence/absence and (if feasible) abundance of identified endangered or priority species |
| Carbon leakage | Mitigation of carbon leakage | |  |  | |  | |  | |  | Is any carbon leakage taking place? |
| Supporting the achievement of Sustainable Development Goals | Various, depending on SDGs | |  |  | |  | |  | |  | Various, depending on SDGs |
| Mitigation of identified project risks | Various, depending on identified risks | |  |  | |  | |  | |  | Various, depending on identified risks |
| Wider biodiversity uplift | Various, depending on indicators (add below) | |  |  | |  | |  | |  | Various, depending on indicators (add below) |
| **Monitoring (Year 35-50)** | | | | | | | | | | | |
| **Management Objective** | **Monitoring Objective** | **Dates to be Done** | | | | | | | | | **Observation** |
| *Year 35* | | | *Year 40* | | *Year 45* | | *Year 50* | |
| Natural process led management | Habitat change |  | | |  | |  | |  | | Mapping habitat development in response to natural process led management. |
| Carbon sequestration | Soil carbon |  | | |  | |  | |  | | Monitoring changes in soil carbon. |
| Above ground carbon |  | | |  | |  | |  | | Monitoring changes in aboveground carbon. |
| CO2 flux |  | | |  | |  | |  | | Monitoring changes in fluxes |
| CH4 flux |  | | |  | |  | |  | |
| NO2 flux |  | | |  | |  | |  | |
| Biodiversity uplift (habitat-based) | Habitat change |  | | |  | |  | |  | | Verifying minimum 50% biodiversity uplift using DEFRA biodiversity metric. |
| Conservation/restoration of species | Species conservation/restoration |  | | |  | |  | |  | |  |
| Carbon leakage | Mitigation of carbon leakage |  | | |  | |  | |  | |  |
| Supporting the achievement of Sustainable Development Goals | Various, depending on SDGs |  | | |  | |  | |  | |  |
| Mitigation of identified project risks | Various, depending on identified risks |  | | |  | |  | |  | |  |
| Wider biodiversity uplift | Various, depending on indicators (add below) |  | | |  | |  | |  | |  |

Version Control

Generated by: Programme Director, Wilder Carbon

Approved by: Wilder Carbon Data, Management, Monitoring, Reporting & Verification Advisory Board

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