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Restoration and Aftercare Report

for the

creation of

Tree and Shrub Planting and Agriculture Land

at

Bromley Farm Extension

Upper Cumberworth

On behalf of

Wavin Limited

Contents Page

Appendices

1. Introduction

1.1 Instructions were received from Mr P Sharland, Senior Planning Consultant of Silkstone Environment Ltd to prepare a report for Bromley Farm Extension for its restoration to create sustainable features and the aftercare requirements following completion of quarrying operations on behalf of their clients Wavin Limited, in support of a planning application.

The following information was used in the preparation of this report: -

- Site visit and discussion with Mr P Sharland.
- Intended final contours for the site plans of the site.

1.2 This document describes the restoration and aftercare proposals for the creation of, agricultural land, woodland and shrub planting areas as shown on Drawing number 22007/510 to accompany the planning application and shown at Appendix Nº 1.

The aim of this document is to: -

- Provide a strategic framework for the creation of sustainable features and their management.
- To provide the sites restored features that provide a net bio-diversity gain.
- Set out the policies for the maintenance principles to achieve these objectives.

The Bromley Farm Extension Restoration and Aftercare Scheme has been designed to complement the adjacent Bromley Farm Quarry Restoration Scheme the landscaping of which has been designed to increase the natural habitats having regard to the proposed reinstated contours for the site and increasing the bio-diversity of the site considerably to that which exists at present. Through providing productive agricultural land and areas for the establishment of trees, shrubs and species rich grass land, in all returning the site to a beneficial after use of high ecological diversity.

The ongoing management responsibility for the area intended for agricultural use will be undertaken by tenant farmers in conjunction with their routine agricultural practices following a five-year aftercare period. Management operations for the five-year aftercare period are described later in this report. These elements have been designed to create cover, food source, light, shade and diversity of aspect, long term maintenance regimes will maximise natural regeneration and sustainability.

2. Restoration

2.1 Creation to Landform

The site shall be restored to the agreed contours as detailed on Drawing No 22007/510. Contouring of the site shall be carried on completion of quarrying operations. Those areas where soils are to be reinstated the final 0.3 metre depth of overburden shall be ripped with a wing tyne subsoiler where gradients permit the safe working of machinery the aim of which is to alleviate compaction prior to replacing the subsoils and topsoil.

2.2 Soil Replacement

The aim of the sub and topsoil replacement is to utilise the stored site soils to achieve a thickness of soil suitable as a growing medium to promote the intended after-use of the land. To this end all activities in the replacement of soils are designed to ensure stability, permeability and freedom from compaction. The agricultural area shall be restored having a subsoil and topsoil profile commemorate to that existing prior to quarrying operations commencing. The remainder of the site area shall have subsoil and topsoil spread uniformly from the remaining reserves that were stripped and placed into storage bunds on commencement of quarrying operations.

2.3 Soil Testing

Following the replacement of soils, the soils will be tested by soil sampling for the pH, N:P:K and organic content. The results of these tests will indicate the need, if any, for soil amelioration and the application of fertiliser to correct any deficiencies, which may be present, relevant to the intended after-use of the habitat areas to be created.

3. Landscaping

3.1 Introduction to Landscape Works

On completion of the overburden replacement, due to the relativity small scale of operations it is likely that the reinstatement of soils will be carried out in one operation.

Elements to be included within the landscaping phasing include the following:

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3.2 Fencing and Boundary Treatment

The fencing indicated will provide stock proofing for the agricultural enclosure and protect the proposed woodland shrub areas, which will be set out in accordance with the approved plan.

Fencing will be erected on completion of the soiling operations, any initial drainage works and the creation of other physical features. The boundaries will comprise of stock proof fencing as detailed on Drawing Nº CDB/F/C at Appendix Nº 2 of either square or round timber posts driven to give a fence height of 1.065 metres of galvanised stock proof mesh with two strands of barbed wire above.

Field access gates 3.6 metres in width shall be provided at strategic points to allow for the movement of stock and machinery between enclosures. Access gates of suitable size to allow for the maintenance of the woodland/shrub areas, shall be installed as appropriate.

3.3 Agricultural Enclosure.

The aim of the restoration to the agricultural enclosures is to restore the land to at least its agricultural productivity, prior to the extraction of the mineral resource.

The results of the soil testing undertaken following completion of the soil replacement will be used to assess the analysis of fertiliser and the rate to be applied depending on the use of the land. The aim throughout the aftercare period is to achieve a P & K indices of 2, for the agricultural land. The actual quantities of subsoil stored from the stripping operations shall be quantified prior to re-spreading, subsoils shall be respread evenly over the loosened overburden to the available thickness with minimal trafficking to prevent unnecessary compaction to the overburden layer. Following the laying of the subsoil, the whole depth of subsoil shall be ripped with a wing tyne subsoiler to alleviate compaction, that ensure that the profile is thoroughly loosened to its whole depth. Particular attention shall be paid to penetrating the interface with the previous layer which will ensure that no compacted layer exists, once the relaying of soils has been completed any compaction at depth will not be capable of being alleviated. The importance of de-compacting as each layer of soil is laid cannot be over emphasised, the objective is to bring any compaction to the surface where normal agricultural equipment can manage the task.

Stored topsoil shall be quantified and laid onto the subsoiled areas in the same fashion as the subsoil to an even thickness as determined by the resource available. On completion, the topsoil shall be ripped with a subsoiler preferably with a wing tyne suitable for agricultural operations, particularly attention shall be paid to the correct working depth in ensuring the interface with the subsoil is pierced and alleviates any compaction

caused through the spreading process. Attention shall be taken in the machine settings so as not to intermix subsoil with topsoil in carrying out this operation.

All works to the top and subsoil shall be carried out when soil moisture levels are suitable, the machines used in carrying out this operation shall be tracked vehicles whenever possible with low ground pressure tracks.

The method described in replacing the soils is to maximise and utilise the soil resource conserved and stored in the storage mounds, to this end all activities in the replacement of soils are designed to ensure suitability, permeability and be free from compaction.

The soils shall be cultivated with typical operations consisting of discing, harrowing and rolling to produce a fine firm seedbed into which to sow grass seeds. Stone picking will be carried out as necessary to remove any material that would impede agricultural operations. Typically a permanent grass seed mixture will be sown consisting of the species and at the rate shown at Appendix Nº 3 Mix Nº 1. The variety of seeds quoted are likely to change given the continual development of grass seeds, in which case the appropriate alternative variety will be used to produce a sustainable pasture given its intended after use. A seedbed fertiliser of an appropriate analysis will be incorporated prior to the sowing of seeds to promote growth.

3.4 Tree/shrub Planting Areas

Planting will take place during the first available planting season October - March following the restoration of soils. Prior to the planting of trees and shrubs the areas to be planted will be sown with a non-aggressive fine grass seed mixture as detailed in Mix Nº 2 at Appendix Nº 3. This is to allow for the protection of the soils from erosion and to assist in preventing the emergence of undesirable weed species, which may establish themselves within the planting areas.

As with the agricultural operations, soils shall be worked when sufficiently dry as to produce a fine firm seedbed following the soil loosening operation described in 3.5 above. In addition to these operations ground preparation work will be carried out prior to planting consisting of subsoiling slightly across the contours at 2 metre centres over the area in which the tree plants will be planted. This operation will assist tree roots to penetrate, establish and promote the movement of and retention of water along the rip lines, in all aiding the development of the plants. The amenity grass mixture will be sown uniformly over the whole woodland shrub planting area. Within the planting area up to 20% of the total area shall be left as open ground in to which will be sown wild flower seeds at 4gms/m^2 mixed with the amenity seed mix at the time of sowing. Mix Nº 3 at Appendix Nº 3 details the intended mix and percentages to be used.

The trees and shrubs to be planted are detailed at Appendix Nº 4, the species shall consist of native species growing in the area. In the main these shall be planted as bare rooted stock at a spacing of 2.0 metres between plants, in species groups of 5, 7 and 9 randomly distributed throughout the planting area.

3.5 Drains

Interception ditches shall be constructed at strategic points, where surface flows are likely to occur, these ditches shall be of shallow cross sections and gradients to prevent erosion. During the aftercare period the drainage characteristic of the site will be assessed. At the annual aftercare meeting any additional drainage works will be reviewed and if appropriate remedial work agreed for implementation.

4. Aftercare Proposals

4.1 Future Management

To ensure successful establishment and long-term care of the restored landscape this section of the report describes the proposed maintenance and management operations, which will be carried out. These activities will follow on from the construction, planting and seeding phase described above, the management regime for the tree and shrub areas has been designed to maximise the potential for wildlife and conservation habitats. The operative aim is to create sustainable features.

Those parts of the scheme which are to be returned to agricultural use will be maintained for five years following practical completion of restoration works after which this will become the responsibility of the tenant farmers in conjunction with their management regime for other land they farm.

4.2 Scope of Management Operations.

On completion of the construction and planting works the following vegetative types will be present on site: -

New Vegetation
Woodland / shrubs

The aim of management is to create and maintain the newly planted areas in such a way as to ensure their development into healthy mature plants with diverse composition through carrying out a regular cycle of thinning, removal of dead and damaged plants and gapping up and control of invasive species.

Year 1 - 3

Weed control in the early establishment years is perhaps the most important management operation determining to a large extent the success of new planting. During the first three years after planting, a weed free zone will be maintained around each plant. To achieve this, two maintenance visits as a minimum need to be made throughout April to September. Weed control will be by an approved method of either a chemical application and or hand weeding as felt appropriate given site conditions.

During the early establishment years attention will be given to firming up plants which shall be carried out following periods of frost to prevent exposure of roots.

Any stakes or canes used to support plants will be checked annually and replaced and secured as necessary.

Depending on ground conditions particularly if success of planting is poor, investigation will be made of the likely causes and appropriate mitigating measures taken, this may involve the use of slow-release fertiliser, pesticides or other specific treatments.

Pruning of any dead, dying, diseased or damaged branches will be carried out with an appropriate tool to leave a clean angular cut to prevent disease.

Replacement of failed plants will be undertaken annually, to achieve by the end of year 3 a ninety percent survival rate providing that any failed planting stations are evenly distributed throughout the planted areas.

The Schedule at Appendix Nº 5 details the annual maintenance requirement and timing for the planted areas during the five-year aftercare period.

Species Rich Grassland

The seed mix has been selected to provide a diverse habitat of conservation value whilst enable a late hay crop to be harvested once seeds have dropped providing conditions for natural regeneration to occur.

5. Site Inspection

In order to ensure the objectives, set out in this report are achieved an annual aftercare meeting will be held to deal specifically with the details of the agreed aftercare and restoration scheme. The success of the planting and seeding will be assessed, and a schedule agreed of replacement planting required or other appropriate management regime to be adopted. Fencing and gate conditions shall be inspected and if necessary appropriate repairs will be undertaken.

At the end of the statutory aftercare period the area restored to agricultural use will be managed by the occupier of the land or local farmer as part of their normal farming practice.

Redacted

Signed …….
Charles D Baker FRICS

Dated 11th January 2023

Appendix No 1

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Planning Application Area

Normal contour (mAOD)

225 Prominent contour (mAOD)

Rev	Description	Date	By	Chkd

Client: wavin

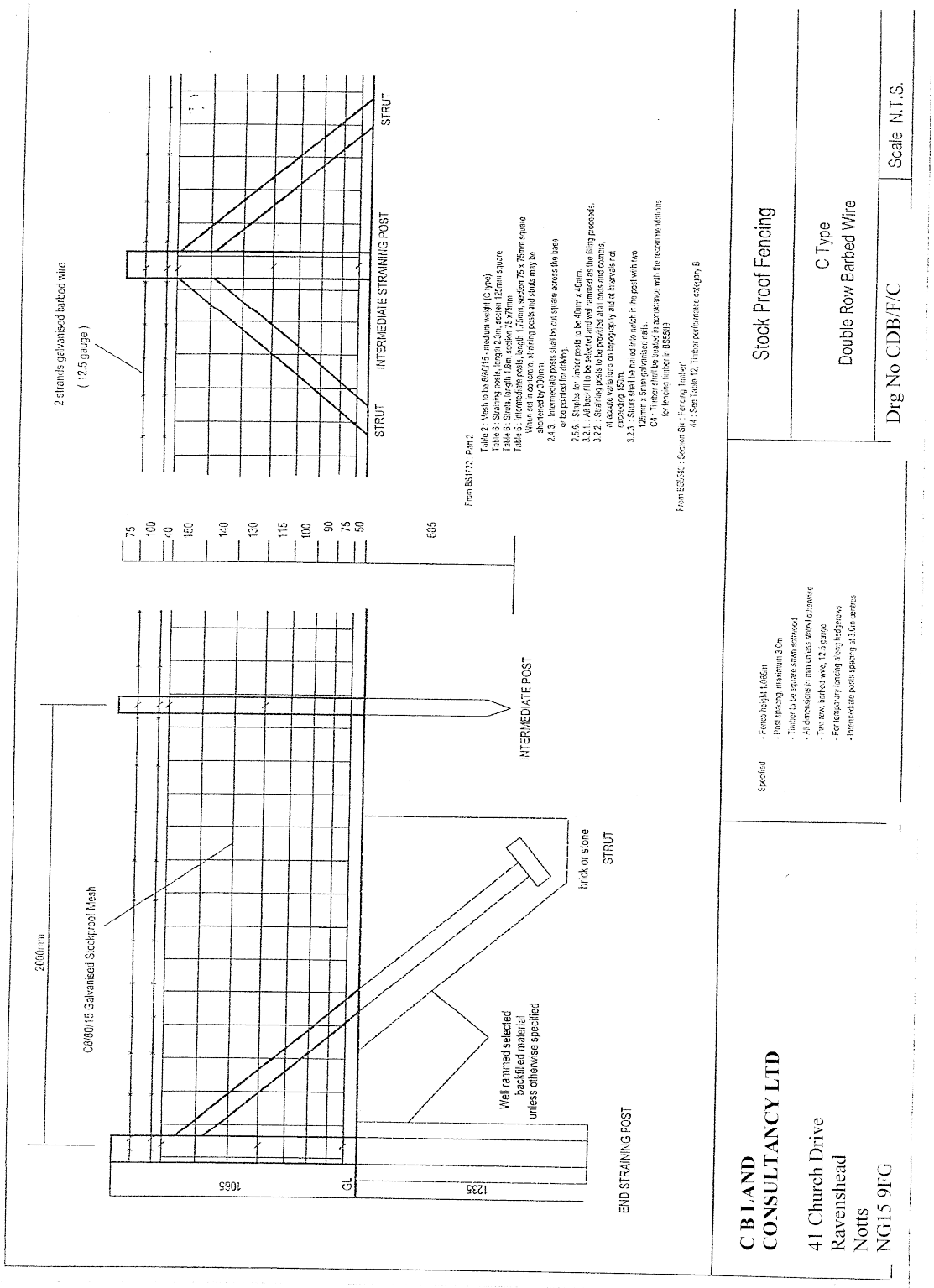
Project: BROMLEY FARM EXTENSION

Plan Title: Restoration Planting Scheme

Drawing No. 22007/510	Rev
Project No. 22007	
Date: Jan 2023	
Scale: 1:2000 @ A3	
Drawn: MS	
Chkd: PS	

Appendix Nº 2

Fencing Diagram



Appendix Nº 3

Seed Mixture Specification

Mixture No 1

Perennial Ryegrass	Fenema	8.0
Perennial Ryegrass	Gilford	12.0.
Perennial Ryegrass	Glen	8.0
Timothy	Motim	3.0
White Clover	Avoca	1.0
White Clover	Menna	2.0
Creeping Red Fescue	(Festuca rubra rubra)	8.0
	Seed Rate per Ha	42.0 Kg/ha

Mixture No 2

Strong Creeping Red Fescue	21.0
Highland Browntop	7.0
Smooth Stalked Meadow grass	4.0
Hard Fescue	4.0
Seed rate per Ha	36.0 Kg/ha

Mixture No 3

Wild Flowers	%	Grasses	%
Yarrow	0.5	Common Bent	10
Common Knapweed	1.0	Crested Dogstail	36
Tufted Vetch	2.0	Red Fescue	25
Wild Red Clover	0.5	Smaller Cat's tail	4
Yellow Rattle	1.5	Vernal-grass	1
Lady's Bedstraw	2.1	Meadow Foxtail	4
Oxeye Daisy	2.0		80
Birdsfoot Trefoil	0.5		
Ribwort Plantain	1.0		
Cowslip	1.0		
Selfheal	2.2		
Meadow Buttercup	3.5		
Common Sorrel	1.0		
Pepper Saxifrage	1.0		
Ragged robin	0.2		
	20	Sowing rate 4 grams per M^2	

Appendix Nº 4

Tree and Shrub Species

See Plan 22007/510 for planting areas.

Tree Areas

Native trees planting at 2 metre centres

Species	Specification	% to be planted
Silver Birch	60-90 cm Bare rooted	15
Rowan	60-90 cm Bare rooted	10
Common Alder	45-60 cm Bare rooted	10
Goat Willow	45-60 cm Bare rooted	10
Scots Pine	45-60 cm Bare rooted	15

Shrubs /trees planting at 1.5 mtre centres

Holly	Container grown	2.5
Hawthorn	45-60 cm Bare rooted	7.5
Hazel	45-60 cm Bare rooted	5.0
Guelder Rose	45-60 cm Bare rooted	5.0
Alder	45-60 cm Bare rooted	5.0
Silver Birch	45-60 cm Bare rooted	5.0
Goat Willow	45-60 cm Bare rooted	5.0
Blackthorn	45-60 cm bare rooted	5.0

Appendix Nº 5

Woodland/Shrub Planting
Annual Maintenance Requirements

Operation	Timing	Year
Maintain a weed free zone 0.5 metre in diameter around each planting station	April, June & September	1 - 3
Check stake, ties and fencing	Once per year	1 - 5
Apply fertiliser, pesticides as appropriate	April - June	1 - 3
Re-firm plants after frost or strong winds	Once per year	1 - 5
Replace initial planting to 100% where plants have failed	Once per year October - March	1 - 3
Remove stake and ties	As soon as tree is wind firm	3 - 5