TECHNICAL NOTE
Horton Solar Site – Management and Monitoring of the Site

Application Reference:
DC/24/0374 Horton Landfill, Henfield - solar panel development

INTRODUCTION

A technical note which sets out the management and monitoring of the site going forward has been requested by Horsham District Council as the application, if granted, would in part supersede the existing permissions on site.

SITE HISTORY

The extant consents for the site are:

WSCC/088/10/UB: Variation of Condition 1 of DC/814/07(UB) to allow waste disposal to continue at Horton from 1 Oct 2010 to 1 August 2011.

WSCC/042/19: Amendment to Condition 3 of Planning Permission WSCC/056/14/HB to extend the time allowed for infill of the SSSI to August 2020.

WSCC/042/13/UB: Variation of Condition 2 of planning permission WSCC/094/10/UB to allow for changes in design to the approved site layout.

CURRENT AFTERCARE MONITORING RESPONSBILITIES

Attached to this note is a Permission and Compliance plan (ECL9910.D01.012.A) showing the three extant permissions on the site. Aftercare monitoring responsibilities associated with the three extant planning permissions listed above are the responsibility of West Sussex County Council. If application DC/24/0374 is granted planning consent, the responsibility for monitoring would fall on Horsham District Council. It is the responsibility of Valencia Waste Management Ltd to submit any aftercare reports required under the extant or any future consent on site and to deliver the restoration and aftercare proposals on the site.

FUTURE RESPONSIBILITIES

The area within the redline boundary for application DC/24/0374 – Solar Panel Development would fall under the responsibility of Horsham District Council. All planning compliance matters in the area within the solar scheme red line would transfer to HDC moving forward (i.e. it would largely supersede any extant planning requirements for that part of the site). Any ongoing planning/aftercare requirements that relate to the remaining wider landfill site (i.e. outside of the solar scheme red line), will be for WSCC. Extant aftercare provisions will continue to remain in place for the periods specified in the approved schemes and continue to be monitored as per the requirements of the three extant consents (WSCC/088/10/UB, WSCC/042/19 and WSCC/042/13/UB) in accordance with the aftercare reports.

A site wide topographical survey will be provided to both WSCC and HDC for all areas (subject of both WSCC and HDC permissions) every 5 years so that the authorities can continue to observe settlement is occurring in general accordance with that predicted (post settlement contours identified at the application stage), and in accordance with Condition 18 of WSCC/088/10/UB,.

The proposed swales are situated outside of the red line site boundary as per drawing ECL.9910.D01.001 A. The swales are however within the land ownership boundary. The swales proposed are 500mm deep. There is 1m of sub soil and topsoil above the cap. The swales will be within this cap so will not penetrate the landfill liner. As set out within the approved LRAMP for the site when the surface of the land needs to be disturbed materials similar to original restoration will be used (Section 3.7 of LRAMP). Any work to the swales will need to be undertaken under the supervision of an ecologist. The monitoring of these swales would fall under the responsibility of both WSCC and HDC. The Applicant will seek agreement to changes to extant approved aftercare scheme (LRAMP) with WSCC in writing following approval of solar application. For the avoidance of doubt WSCC would only monitor the swales insofar as they form part of the restoration planting/seeding strategy. Any enforcement of their function as a drainage feature for the solar area, would remain within the remit of HDC (and should be subject conditions imposed upon the solar proposal). Approval of any amendments required to the LRAMP would be sought in writing from WSCC prior to any works commencing on site, following any grant of permission for the solar farm from Horsham District Council.

Requirements of the Environmental Permit

The Site is regulated under an Environmental Permit (reference EPR/BV9900IS). The Environment Agency granted a variation on the 30th May 2017 to allow the Site to enter into the aftercare period, requiring long-term environmental monitoring and management. The site operates in accordance with an approved Closure Plan approved by the Environment Agency in accordance with the Landfill Directive and the Environmental Permitting Regulations (England and Wales) 2016. During this period management systems remain in place to ensure that the site does not pose a risk to the environment or human health.

During this period, continuation of environmental monitoring is a requirement of the permit, including:

- Leachate levels with compliance points across cells 1 through 7 as a frequency specified in the permit.
- Landfill gas monitoring is required around various points around the site to be monitored at a frequency specified in the permit.
- Gas engines and flares – Engines and flares are installed and utilised on site to manage (recover) landfill gas. Emissions to air from the Gas Utilisation Plant are required to be monitored and specific limits for parameters set are specified in the permit.

- The permit allows for leachate treatment prior to discharge into the River Adur. Parameters and limits of the discharge are specified in the permit.
- Groundwater monitoring at specific groundwater monitoring locations for specific parameters and frequency specified in the permit.

The operator is required to continue to operate and maintain infrastructure including the gas and leachate systems including collection, treatment and in the case of landfill gas, the Gas Utilisation Plant where landfill gas is recovered.

Monitoring reporting is required to be submitted to the Environment Agency at periods specified in the Environmental Permit. All monitoring is carried out in accordance with the Environmental Permit and any other documentation approved by the Environment Agency.

The site will remain regulated by the Environment Agency until such a time that the Environment Agency have assessed and determined a permit surrender application submitted by the landfill operator, and this has been granted. The site would need to meet the Agency's surrender criteria. In order to achieve this, typically 3 or more years of stable environmental monitoring data would be required to demonstrate and evidence that the site has reached a point of long term stability. Additionally, evidence that environmental control systems are no longer needed and can be safely decommissioned and the permit conditions, including aftercare requirements, have been met.

EXTANT PLANNING CONDITIONS

The approved Restoration and Aftercare Scheme is the LRAMP (Ref. 407-0036-00368 Rev 1, May 2011), which will remain in force until January 2074. This document is included as Appendix 2 to this letter and applies only to areas outside the solar scheme red line boundary.

The following conditions still apply from the existing extant permissions and therefore require compliance:

WSCC/088/10/UB: Variation of Condition 1 of DC/814/07(UB) to allow waste disposal to continue at Horton from 1 Oct 2010 to 1 August 2011.

- Condition 20 – *Notwithstanding the landscape management plan / scheme required under Condition 8, an amended aftercare scheme showing the steps to be taken to return the site to a standard suitable for agriculture use shall be submitted for approval of the County Planning Authority by not later than three months from the date of this permission. The submitted scheme shall specify the steps to be taken on an annual basis over a period of sixty years from the completion of the restoration of each phase of the site in accordance with Condition 16. The aftercare of the site shall be carried out in accordance with the aftercare scheme as approved by County Planning Authority or any variation thereto that might subsequently be agreed in writing by the County Planning Authority*

Matters within the LRAMP (ref 407-0036-00368 May 2011 rev 1) that should be taken forward to be monitored by HDC as within the redline of the solar scheme.

- Measures for addressing any minor depression. When areas have sunk more than 300mm lower than the surrounding ground they are likely to produce areas of standing water. These areas will be subject to remedial action which will consist of the removal of 300mm of soil and rising of the subsoil layer to the desired level and then the top 300mm replaced and reseeded as necessary. (Section 3.7 of LRAMP).

- Due to the presence of subsurface infrastructure for landfill gas and other environmental monitoring and control systems, occasionally the surface of the land will need to be disturbed to carry out repairs to these installations. Such disturbances will be kept to a minimum and materials similar to original restoration will be used (Section 3.7 of LRAMP).
- Fencing shall be maintained through the aftercare period (Section 3.8 of LRAMP)
- The existing woodland management will focus on restructuring through selective thinning and coppicing over a long rotation (every 7-10 years) (Section 4.3 of LRAMP Ecological Enhancement).
- A restoration survey will be undertaken annually, report to HDC every 5 years (years 5-60) (Section 5.1 of LRAMP).
- Periodic removal of Ragwort will be undertaken as deemed necessary .
- Continued management of established habitats:
    - Monitoring of the substrate for signs of erosion or surface water ponding, and the undertaking of any necessary remedial measures;
    - Re-grading of 'blow-outs' of restoration substrate;
    - Monitoring/remediation of any excessive soil wash/deposition of fine material around the base of the landfill and in ponds and lagoons;
    - Re-seeding of any areas of failed germination or disturbance
    - Replanting and beating up of areas of failed woodland establishment;
    - Checking and repairing of restoration infrastructure;
    - Checking and repairing of any geosynthetics; and
    - Control of invasive and noxious weed species

WSCC/042/19: Amendment to Condition 3 of Planning Permission WSCC/056/14/HB to extend the time allowed for infill of the SSSI to August 2020.

- Condition 4: *The approved Restoration Plan (ref. 68185.ES.008 rev A) and Annex 1 ('Amended Submission of Details Pursuant to Planning Condition 7 Attached to Planning Permission WSCC/056/14/UB at Horton Landfill Site, West Sussex') shall be completed in full by no later than 28 August 2023, with the ongoing aftercare programme set out in Annex 1 adhered to for the following ten years to 28 August 2033.*

The approved drawing is Restoration plan 68185.ES.008 rev A. The approved aftercare programme remains in force until 28 August 2033 which is included as appendix 1 to this letter. This is only for the area outside of the Solar redline boundary

WSCC/042/13/UB: Variation of Condition 2 of planning permission WSCC/094/10/UB to allow for changes in design to the approved site layout.

- Condition 5: *All plant, structures and buildings within the leachate treatment plant shall be removed from the site following the permanent cessation of leachate production. Production cessation shall be confirmed in writing but the Waste Licensing Authority (Environment Agency). Not later than 3 months following the removal of the leachate treatment plant a scheme of restoration including measures for the aftercare of the site and its reinstatement shall be submitted to and approved in advance and in writing by the County Planning Authority. Thereafter, the scheme shall be implemented in full as approved.*

Condition 5 will continue to remain in force in full, and all necessary details and a restoration scheme for that area will be submitted to WSCC in due course.

END

Appendix 1: (WSCC/042/19) Restoration plan 68185.ES.008 rev A and approved aftercare programme

Appendix 2: Approved Restoration and Aftercare Scheme is the LRAMP (Ref. 407-0036-00368 Rev 1, May 2011)

Drawings:

ECL.9910.D01.001 B – Site Location Plan
ECL9910.D01.012.A – Permission and Compliance Plan

Appendix 1: (WSCC/042/19) Restoration plan 68185.ES.008 rev A and approved aftercare programme

INVERTEBRATES AND REPTILE RESTORATION HABITAT

INCLUDES AREAS SPREAD WITH AGGREGATE / SAND TO LIMIT VEGETATION COLONISATION AND PROVIDE HOLLOWS AND OPEN AREAS FOR SHELTERING AND BASKING.

NATIVE SCRUB PLANTING

SMALL IRREGULAR POCKETS TO ALLOW SLOW REGENERATION TO PREVENT RAPID SUCCESSION OF OPEN HABITATS

BUTTERFLY BANK

BUND OF INERT AGGREGATE / LOW NUTRIENT SUB-TOPSOIL, 0.5-1.0m HIGH, CAPPED WITH LOOSE AGGREGATE OR RUBBLE (50-100mm)

SUCCESSIONAL HABITAT

AREA OF BARE GROUND TRACKED LEVEL AFTER SOIL PLACEMENT, NO SEEDING. ALLOWED TO COLONISE NATURALLY.

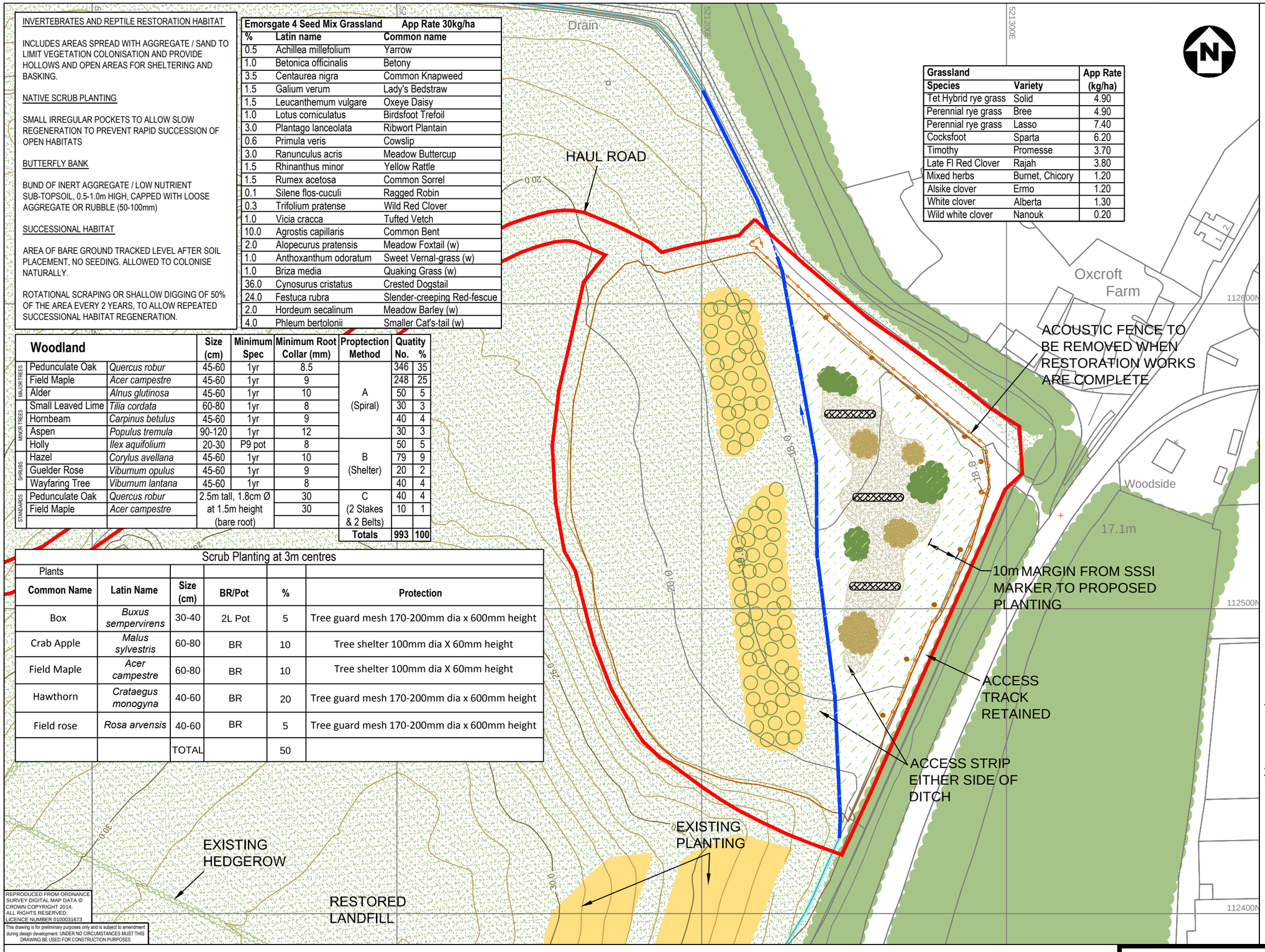
ROTATIONAL SCRAPING OR SHALLOW DIGGING OF 50% OF THE AREA EVERY 2 YEARS, TO ALLOW REPEATED SUCCESSIONAL HABITAT REGENERATION.

Emorsgate 4 Seed Mix Grassland		App Rate 30kg/ha
%	Latin name	Common name
0.5	Achillea millefolium	Yarrow
1.0	Betonica officinalis	Betony
3.5	Centaurea nigra	Common Knapweed
1.5	Galium verum	Lady's Bedstraw
1.5	Leucanthemum vulgare	Oxeye Daisy
1.0	Lotus corniculatus	Birdsfoot Trefoil
3.0	Plantago lanceolata	Ribwort Plantain
0.6	Primula veris	Cowslip
3.0	Ranunculus acris	Meadow Buttercup
1.5	Rhinanthus minor	Yellow Rattle
1.5	Rumex acetosa	Common Sorrel
0.1	Silene flos-cuculi	Ragged Robin
0.3	Trifolium pratense	Wild Red Clover
1.0	Vicia cracca	Tufted Vetch
10.0	Agrostis capillaris	Common Bent
2.0	Alopecurus pratensis	Meadow Foxtail (w)
1.0	Anthoxanthum odoratum	Sweet Vernal-grass (w)
1.0	Briza media	Quaking Grass (w)
36.0	Cynosurus cristatus	Crested Dogstail
24.0	Festuca rubra	Slender-creeping Red-fescue
2.0	Hordeum secalinum	Meadow Barley (w)
4.0	Phleum bertolonii	Smaller Cat's-tail (w)

Grassland		App Rate
Species	Variety	(kg/ha)
Tet Hybrid rye grass	Solid	4.90
Perennial rye grass	Bree	4.90
Perennial rye grass	Lasso	7.40
Cocksfoot	Sparta	6.20
Timothy	Promesse	3.70
Late FI Red Clover	Rajah	3.80
Mixed herbs	Burnet, Chicory	1.20
Alsike clover	Ermo	1.20
White clover	Alberta	1.30
Wild white clover	Nanouk	0.20

Woodland			Size (cm)	Minimum Spec	Minimum Root Collar (mm)	Proptection Method	Quatity No.	Quatity %
MAJOR TREES	Pedunculate Oak	*Quercus robur*	45-60	1yr	8.5	A (Spiral)	346	35
MAJOR TREES	Field Maple	*Acer campestre*	45-60	1yr	9	A (Spiral)	248	25
MAJOR TREES	Alder	*Alnus glutinosa*	45-60	1yr	10	A (Spiral)	50	5
MINOR TREES	Small Leaved Lime	*Tilia cordata*	60-80	1yr	8	A (Spiral)	30	3
MINOR TREES	Hornbeam	*Carpinus betulus*	45-60	1yr	9	A (Spiral)	40	4
MINOR TREES	Aspen	*Populus tremula*	90-120	1yr	12	A (Spiral)	30	3
SHRUBS	Holly	*Ilex aquifolium*	20-30	P9 pot	8	B (Shelter)	50	5
SHRUBS	Hazel	*Corylus avellana*	45-60	1yr	10	B (Shelter)	79	9
SHRUBS	Guelder Rose	*Viburnum opulus*	45-60	1yr	9	B (Shelter)	20	2
SHRUBS	Wayfaring Tree	*Viburnum lantana*	45-60	1yr	8	B (Shelter)	40	4
STANDARDS	Pedunculate Oak	*Quercus robur*	2.5m tall, 1.8cm Ø at 1.5m height (bare root)		30	C (2 Stakes & 2 Belts)	40	4
STANDARDS	Field Maple	*Acer campestre*			30	C (2 Stakes & 2 Belts)	10	1
						Totals	993	100

Scrub Planting at 3m centres					
Plants					
Common Name	Latin Name	Size (cm)	BR/Pot	%	Protection
Box	*Buxus sempervirens*	30-40	2L Pot	5	Tree guard mesh 170-200mm dia x 600mm height
Crab Apple	*Malus sylvestris*	60-80	BR	10	Tree shelter 100mm dia X 60mm height
Field Maple	*Acer campestre*	60-80	BR	10	Tree shelter 100mm dia X 60mm height
Hawthorn	*Crataegus monogyna*	40-60	BR	20	Tree guard mesh 170-200mm dia x 600mm height
Field rose	*Rosa arvensis*	40-60	BR	5	Tree guard mesh 170-200mm dia x 600mm height
		TOTAL		50	



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This drawing is for preliminary purposes only and is subject to amendment during design development. UNDER NO CIRCUMSTANCES MUST THIS DRAWING BE USED FOR CONSTRUCTION PURPOSES

KEY

- PLANNING PERMISSION AREA

EXISTING FEATURES

- DITCH ALIGNMENT
- CONTOURS
- GRASSLAND
- WOODLAND PLANTING
- HEDGEROW
- TREES / WOODLAND

PROPOSED FEATURES

- DITCH ALIGNMENT
- SUCCESSIONAL HABITAT
- BUTTERFLY BANK
- AREAS SPREAD WITH AGGREGATE / SAND
- NATIVE SCRUB PLANTING
- SSSI MARKER
- GRASSLAND
- EMORSGATE 4 SEED MIX GRASSLAND
- PROPOSED WOODLAND PLANTING - 0.44 Ha

NOTES

1. DESIGN BASED ON TOPOGRAPHICAL SURVEY DATA AS SUPPLIED BY VIRIDOR, DATED MAY 2013.
2. ALL RESTORATION AREAS TO THE WEST OF THE PROPOSED DITCH, INCLUDING THE HAUL ROAD, TO BE PREPARED TO AT LEAST AGRICULTURAL GRADE 3 PRIOR TO THE SURFACE TREATMENTS BEING APPLIED AS DETAILED ON THIS DRAWING. THAT IS MIN 700mm SUBSOIL AND 300mm TOPSOIL, FREE OF DEBRIS.

Drawing Title

HORTON LANDFILL - INERT INFILL OF GEOLOGICAL SSSI RESTORATION

68185.ES.008

Scale at A3 : 1:1,250

Drw DM	App CN	Rev A
Chk CN	Date JUL 14	Date MAR 15

AECOM

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ANNEX 1

Amended Submission of Details Pursuant to Planning Condition 7 Attached to Planning Permission WSCC/056/14/UB at Horton Landfill Site, West Sussex

Condition 7 - Restoration & Aftercare Scheme

Prior to the commencement of development a restoration and aftercare scheme relating to the restoration of the site (including haul road) shall be submitted to and approved by the County Planning Authority. The scheme shall indicate:

a) details of the top layers of fill including depths;
b) details for the restoration of the area west of the proposed woodland planting belt (shown on Restoration (dwg 68185.SS.008) to at least agricultural grade 3;
c) details of seeding, planting and subsequent aftercare of the restored land including, as relevant, the species and spacing of any plants/trees; and
d) details of the site's maintenance and aftercare for at least ten years after the completed restoration.

Once approved, the scheme shall be implemented in full in the first planting season (November - February) following the commencement of the development. Any plants which die, are removed or become seriously damaged or diseased shall be replaced in the next planting season with others of a similar size and species, unless otherwise agreed in writing with the County Planning Authority.

The scheme proposed in accordance with Condition 7 is as follows.

- All restoration areas to the west of the proposed ditch, including the haul road, are to be prepared to at least agricultural grade 3 prior to the surface treatments being applied as detailed on the attached plan ref. 68185.ES.008 Rev A; that is a minimum of 700mm subsoil and 300mm topsoil, free of debris. The soils shall be ripped or deeply cultivated after emplacement. Soils shall not be over compacted.

- The restoration areas to the east of the proposed ditch are to receive 300mm subsoil, free of debris, prior to the surface treatments being applied as detailed on drawing 68185.ES.008 Rev A.

- The planting is detailed on plan 68185.ES.008 Rev A attached, including species and spacing of plants and trees.

- The Emorsgate 4 Seed Mix (EM4) is a meadow mixture for clay soils (mix details below). Application rate 30kg/ha.

Wild Flowers

%	Latin name	Common name
0.5	Achillea millefolium	Yarrow
1	Betonica officinalis - (Stachys officinalis)	Betony
3.5	Centaurea nigra	Common Knapweed
1.5	Galium verum	Lady's Bedstraw
1.5	Leucanthemum vulgare	Oxeye Daisy
1	Lotus corniculatus	Birdsfoot Trefoil
3	Plantago lanceolata	Ribwort Plantain
0.6	Primula veris	Cowslip
3	Ranunculus acris	Meadow Buttercup
1.5	Rhinanthus minor	Yellow Rattle
1.5	Rumex acetosa	Common Sorrel
0.1	Silene flos-cuculi - (Lychnis flos-cuculi)	Ragged Robin
0.3	Trifolium pratense	Wild Red Clover
1	Vicia cracca	Tufted Vetch
20%		

Grasses

%	Latin name	Common name
10	Agrostis capillaris	Common Bent
2	Alopecurus pratensis	Meadow Foxtail (w)
1	Anthoxanthum odoratum	Sweet Vernal-grass (w)
1	Briza media	Quaking Grass (w)
36	Cynosurus cristatus	Crested Dogstail
24	Festuca rubra	Slender-creeping Red-fescue
2	Hordeum secalinum	Meadow Barley (w)
4	Phleum bertolonii	Smaller Cat's-tail (w)
80%		

Aftercare

- With regard to the land to the west of the proposed ditch, this will be managed in accordance with the approved Landscape, Restoration and Aftercare Management Plan (LRAMP, ref. SLR 407-0036-00368) - submitted to and approved by WSCC under Condition 8 of the landfill planning permission (ref. WSCC/088/10/UB).

- In respect of the new habitat land east of the ditch little intrusive aftercare is proposed because natural regeneration is the key point of the scheme. The use of a rotational scraping or shallow digging of 50% of the area every 2 years will be undertaken to allow repeated successional habitat regeneration and minimise the invasion of weeds. This will be reviewed after 2 cycles (i.e. 4 years).

- Aftercare for the Emorsgate Seed Mix (taken from http://wildseed.co.uk/mixtures/view/5, accessed October 2015) is as follows.

  First year management
  Most of the sown meadow species are perennial and will be slow to germinate and grow and will not usually flower in the first growing season. Any flush of annual weeds from the soil in the first growing season is likely to be limited as there is likely to be a limited seed bank in the subsoil soil resource. Given the intent is to allow natural regeneration maintenance at this stage would concentrate on spot treatment of any noxious weeds.

  Management once established
  In the second and subsequent years EM4 sowings can be managed in a number of ways which, in association with soil fertility, will determine the character of the grassland. In is intended to implement a traditional meadow management based around a summer hay cut, in combination with an autumn mowing or limited late summer grazing.

  The meadow grassland will not be cut or grazed from spring through to late July/August to give the sown species an opportunity to flower. After flowering the sward will be cut in mid August to 50mm height with a further cut in late September.

Appendix 2: Approved Restoration and Aftercare Scheme is the LRAMP (Ref. 407-0036-00368 Rev 1, May 2011)

global environmental solutions

Horton Landfill

Landscaping, Restoration & Aftercare Management Plan

Pursuant to Conditions 8, 16, 20 & 34

Planning Permission DC/814/07 (UB)

SLR Ref : 407-0036-00368

May 2011

Rev 1

Viridor

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APPENDICES

Appendix A Specification for Establishment & Aftercare of Agricultural Grassland
Appendix B 2010 Woodland Planting & 2010-2014 Maintenance Specification
Appendix C Woodland Management Plan
Appendix D Grassland Aftercare Scheme
Appendix E Woodland Aftercare Scheme
Appendix F General Fencing Requirements

1.0 INTRODUCTION

1.1 Report Context

SLR Consulting Limited (SLR) has been appointed by Viridor to prepare a Landscaping, Restoration & Aftercare Management Plan pursuant to the discharge Condition 8, 16, 20 & 34 of Planning Permission DC/814/07 (UB).

This Restoration Plan has been written with reference to the following guidance documents;

- Environment Agency, "Review and Guidance on the use of Landfill Cover Materials, Document No. 1, Version 3.7, February 2000"; and
- Environment Agency, "Guidance for the Landfill Sector, Technical Requirements of the Landfill Directive and Integrated Pollution Prevention and Control (IPPC S5.02), April 2007".
- Viridor's Horton Landfill Site, Restoration & Aftercare Management Plan, January 2006
- Horton Landscape Assessment (Viridor), Keith Funnel Associates February 2002.

1.2 Site Setting

Horton Landfill site is located approximately 200m south-west of the hamlet of Small Dole and some 6.5km north of the Shoreham by Sea, West Sussex, at National Grid Reference (NGR) TQ 210 124. Access to the site is obtained from the A2037 (Henfield – Upper Beeding road), which forms the eastern site boundary.

The surrounding land use to the north and south of Horton Landfill site predominantly comprises agricultural land with occasional residential properties. Numerous residential and industrial properties exist immediately to the north east of the site in the hamlet of Small Dole. To the immediate north-west of the Horton Landfill site lies the Small Dole Landfill, a closed restored landfill which accepted non-biodegradable wastes (not construction wastes) managed by Cemex UK Materials Ltd. (formerly RMC Environmental Ltd).

Two Sites of Special Scientific Interest (SSSI) have been identified within a 2km radius of the site; Horton Clay Pit adjacent to the site to the east is a Geological SSSI comprising a Lower Gault sequence; Beeding Hill to Timber Hill 1.6km south east to south west is a site of geological and biological importance comprising karst Chalk geomorphology (including dry valleys) and three habitat types; south-east Chalk grassland, juniper scrub and pedunculate oak-ash-beech woodland.

The site is currently permitted under Environmental Permit reference BV9900IS. A Waste Management Licence for Horton Landfill was issued by Sussex County Council in 1991 to Blue Circle Industries plc and waste disposal operations commenced in 1992. The licence was transferred to Haul Waste Disposal Ltd in 1997, which subsequently became Viridor. The PPC Permit for the site was granted in March 2005, this has subsequently become an Environmental Permit with the advent of the Environmental Permitting regime in April 2008

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2.0 RESTORATION PLAN

2.1 Restoration Design

This Section describes the proposed form and method of restoration of the landfill at Horton.

The overall design concept has evolved to achieve a number of key objectives:

- A topographical form that is consistent with the surrounding landscape whilst being consistent with current design guidance in waste management Paper 26E, (WMP26E);
- The amalgamation of the reprofiling area and existing restored landform;
- The enhancement of the site's ecological value; and
- The visual integration of the site into its' surroundings;

In particular, it is envisaged that the existing landfill would be restored to an ecologically based restoration comprising a series of grassland fields enclosed by hedgerows, scrub, and deciduous woodland habitats in keeping with the adjoining landscape.

The design for the restoration of Horton landfill has been informed by the following factors:

- Visual and landscape considerations;
- Ecological status of the existing site and surrounding landscape; and
- Existing policy.

As far as possible within the constraints of landfill gas and other environmental control systems and as site operational timing will allow, the network of hedges will be replaced.

2.2 Design Details

The design concept was influenced by District-wide Landscape Character Assessment and characterised by;

- Appropriate management of existing peripheral vegetation to ensure it's long term contribution to landscape character;
- Establishment of a hedge along the open section of the western boundary;
- Management of recent planted woodland belt in the south-western corner of the site and extension of woodland planting along the full length of the southern boundary to reflect characteristic landscape pattern
- New woodland belt along eastern boundary to link with existing roadside vegetation and extend wooded character found east of the A2037;
- Existing scrub regeneration around the north-eastern edge of the site and on the northern side of the site access off the A2307, retained and encouraged to develop;
- Establishment of hedgerows to divide the pasture into four fields
- A further hedge along the fence-line on the western side of the geological SSSI

3.0 RESTORATION SUBSTRATE

Due to the nature of the site there are no on site restoration soils available, therefore all soils used for the restoration of the site after capping will be imported to the site. Historically the restoration soils have been a typical clayey soil. Some of these soils are known to be fairly stoney in nature, during cultivations any stones lying on the surface which are larger than 100mm, together with objects likely to obstruct future cultivation will be removed from the site.

All soils that are delivered to site in the future for the purpose of restoration will have to meet a soil specification, as indicated in Table 1,Table 2 and Table 3.

In addition suitable material shall not comprise material or constituents of material composed of the following

- Peat, material from bogs, swamps and marshes
- Logs, stumps and putrescible material;
- Material susceptible to spontaneous combustion;
- Material in a frozen condition

Table 1 - The soils acceptance criteria for imported topsoil/soil forming materials

Texture	**% Sand**	**2.0-0.06mm**	**7.5-95%**
	%Silt	0.06-0.002mm	5-90%
	% Clay	<0.002mm	<70%*
Maximum Stone Content (mm)	Stone Size	>2mm	60%
		>20mm	30%
		>50mm	<10%*[1]
pH value			6.0-8.2
Nutrient Content	P Index	Min	2
	K Index	Min	2
	Mg Index	Min	1
Loss on Ignition			>3.0%
Exchangeable Sodium Percentage (ESP) %			<15.0%

* less than or equal to 70% *[1] Maximum 100mm

Table 2 – Analytical Specification

Determinand* *All values as mg.kg unless stated	**Reference Value**
PH (unit)	5.0 – 8.2[2]
Total arsenic (mg/kg)	<50
Total Cadmium (mg/kg)	<3
Total Chromium (mg/kg)	<400
Total copper (mg/kg)	<(80 – 200 [pH dependent][3])
Total lead (mg/kg)	<300
Total Mercury (mg/kg)	<1
Total nickel (mg/kg)	<(50 – 110 [pH dependent][3])
Total Zinc (mg/kg)	<(200 – 300 [pH dependent][3])
Total petroleum hydrocarbons (mg/kg)	<500
Polycyclic aromatic hydrocarbons (mg/kg)	<50
Phenols (mg/kg)	<5
Total cyanide (mg/kg)	<25
Asbestos (fibres)	No visible fibres
[2]Values of pH<8.2 may be applicable in certain circumstances dependant on proposed vegetation cover i.e. intended planting species which tolerate or require high pH soils. [3] As defined in the MAFF soil code	

Table 3 - Soil acceptance criteria for imported subsoil

Texture	**% Sand**	**2.0-0.06mm**	**7.5-95%**
	%Silt	0.06-0.002mm	5-90%
	% Clay	<0.002mm	<70%
Maximum Stone Content	Stone Size	2-50mm	Max. 50% by weight
		>100mm<150mm	<10%
pH value			6.0-8.2
Organic Content			<2.0%

3.1 Soil Handling and Storage

In order to ensure that restoration materials are retained at optimum condition a number precautionary measures are proposed:

- **Soil Handling Generally:** Soils would be stripped and placed whilst in a dry and friable condition. No material affected by frost would be handled;
- **Inspection:** All materials would be inspected for evidence of chemical or organic contaminants. The selected materials would also be screened to remove refuse, large roots, debris or rubble;
- **Stockpiling:** Wherever possible, soils would be placed directly. However, should this not be possible restoration materials would be stored separately in clearly demarcated stockpiles according to type. Stockpiles would be below 4m in height and would be retained for no longer than 12 months. Materials would be placed and removed from stockpile utilising a suitable back actor or bucketed excavator to avoid tracking of the substrate;
- **Placement:** Restoration materials would be loose tipped and then spread using a back actor or low ground pressure plant;

It is envisaged that all the soils used for the upper 1m of restoration substrate will fall into the sandy loam/sandy silty loam/medium clay loam/heavy clay loam/sandy clay loam area of the soil texture chart

Soils coming on to the site will be monitored and those soils falling into these fractions would be placed as and when they arrive on site in the areas between the gas and leachate infrastructure to ensure that we have to handle these soils as little as possible, therefore keeping any damage to structure to an absolute minimum.

Soils of a significantly different nature and lighter texture that do arrive on site, would be separately stockpiled in a suitable area for their use within the overall restoration scheme either within areas of inert fill or there may be an opportunity to create a small area of lighter soils and seed these with a more biodiversity focussed grass seed mixture.

3.2 Placement

The soils will only be handled in the right conditions of weather and soil moisture and with suitable machinery. Compaction of the soil layer will be avoided throughout all soil handling operations, as follows:

- loose-tipping and grading of soil materials, to specified restoration profiles, using tracked excavator or bulldozer in accordance with MAFF's Good Practice Guide for Handling Soils, published in 2000, modified to take into account landfill technical considerations, such as protection of the cap; and
- soil shall only be handled when in a suitably dry and friable condition by reference to the lower plastic limit (minimum moisture deficit of light loams to be 25mm, medium loams or dense heavy loams or clays to be 50mm). Soils will not be handled during periods of heavy rain.

The cap will be protected throughout all soil handling operations, in particular by restricting traffic movements, as follows:

- all tracked vehicles, such as bulldozers will run on at least 300mm of cover over the cap; and

- all wheeled plant, such as dump trucks, shall be restricted to a limited number of designated haul routes with at least 1m of cover over the cap.

Soils shall be placed according to a 20% bulking factor to ensure the correct settled depth is achieved and where possible, placed early enough in the year to allow grassland vegetation to be established before the winter and reduce the risk of erosion.

In the event of differential settlement, the affected areas shall be rectified using appropriate materials, to ensure continuity of the final restoration soil profile.

3.3 Ripping & Pre-seeding

The receptor site shall be ripped to a depth of 300mm using rigid tines spaced at 450m centres in at least two directions using a machine of low ground bearing pressure. Any rocks, boulders or similar large material upturned during ripping will be removed. Stones in excess of a 100mm ring that lie on the surface will be collected and similarly disposed of. To avoid undue surface water run-off during heavy rainfall, the ground will be left broken up during the interval between soil placement and cultivations for seeding. Cultivations and/or herbicide application will be used to keep restored areas substantially weed-free between placement and subsequent seed bed preparation.

3.4 Amelioration

As stated previously, due to the nature of the site there are no on site restoration soils available, therefore all soils used for the restoration of the site after capping will be imported to the site. The imported topsoil /soil forming material will be ameliorated as a minimum to ensure it is appropriate for the restoration proposals, i.e. the addition of PAS100 compost/liming/fertiliser/stone picking/moling/tining as required. The most appropriate amelioration strategy shall be decided following that year's restoration survey i.e. soil assessment, soil analysis and testing related to that particular restoration area/phase.

The upper soil profile will be free from sharps/ceramics and glass etc.

3.5 Seedbed preparation

Cultivations and seeding will normally be implemented during August or September in any year. The soil over all available areas will be cultivated under suitable conditions to a depth of 150mm to produce lightly consolidated tilth for the sowing of grass seed. Any severe nutrient deficiencies that may prejudice the prescribed afteruse and related establishment of the sward will be corrected by fertiliser application, which will be limited to that deemed essential for the purpose.

3.6 Drainage

In accordance with current guidance in Waste Management Paper 26E, the restoration landform incorporates average slopes steeper than 1:25 ensuring that surface water would be shed from the surface of the landfill, thereby reducing the potential for surface water ponding an/or differential settlement. Land drainage will be installed on the steeper slopes at 10 degrees to normal at nominal 12/15 metre centres. Early land drainage installation will be limited to areas where it is required by stability risk assessment, the extent of this drainage will be modest (based on total restoration area) and the scheme will be linked to any subsequent agricultural drainage.

Surface water run-off would be intercepted by a series of perimeter drainage ditches connected to the fishing lake prior to discharge to the river Adur.

The fishing lake is to be retained for recreational use, with the surrounding scrub woodland managed as identified in the Woodland Management Plan (Appendix C).

Assessment of the requirement of further agricultural drainage shall be assessed within the annual restoration survey.

3.7 Infrastructure & Soil Remediation

Because of the presence of subsurface infrastructure for landfill gas and other environmental monitoring and control systems, it must be recognised that occasionally the surface of the land will need to be disturbed to carry out repairs to these installations. Such disturbances will be kept to a minimum and when the ground is restored, materials similar to those used for the original restoration will be used, to minimise the long term effects of this work.

The restored area will be left with a grass lay for a period of five years during which time any depressions in the final surface are likely to appear. The refuse used to fill the site is not homogenous and is subject to biodegradation at varying rates depending on its consistency. For this reason, local areas of higher settlement may occur within the final restored surface. It is intended that minor areas of settlement be allowed to remain. When areas have sunk more than 300mm lower than the surrounding ground, where they are likely to produce areas of standing water or where they produce an unsightly appearance, then these areas will be subject to remedial action.

Remedial action will consist of the removal of the top 300mm of soil and raising of the subsoil layer to its desired level using similar material to that initially used during the restoration process, and then replacing the top 300mm of soil which will be re-seeded as necessary.

It is not proposed to graze sheep on the restored land during the first 5 years of the aftercare period due to potential remediation following settlement, and gas infrastructure work, however this will be subject to review in the future. An assessment on grazing/stocking rates per hectare per year will be undertaken as outlined in years 5-60 of the aftercare period.

A water connection will be made from the treatment compound and piped to the fields for a drinking water supply for future grazing animals.

3.8 Fencing

Planted areas of woodland, hedgerows, grassland and scrub would be protected by suitable stock-proof fencing as required. Provision of the fencing will be assessed as the restoration progresses (i.e. following review of grazing/stocking rates). This fencing would be maintained throughout the subsequent aftercare period of this permission. The fencing shall generally be as indicated by the Keith Funnel details FD1 and FD3, (see Appendix F).

4.0 GRASSLAND RESTORATION

4.1 Objectives

The proposed grassland restoration will be based on the establishment and management of a long-term species rich grass ley, with the objective of promoting the development of stable structures within the soil volume and eventually developing valuable species rich grassland that will compliment the ecologically based restoration concept as set out at section 2.1 above.

It is intended that the longer-term use of the land would be grass, mainly for seasonal grazing or hay cropping. Initially the critical factor will be to ensure the effective greening of the restoration soils and the development of a viable soil structure.

4.2 Establishment and Management

Initially a suitable long-term rye grass based seed mix will be sown. A recommended mix that will be suitable for the soil conditions on the site is presented in Table 4 below.

Table 4: Meadow Mania Seeds Ltd – GU6 Golden Dragon

Species	Variety	Application Rate (kg per ha)
Tet Hybrid ryegrass	Solid	4.9
Perennial rye grass	Bree	4.9
Perennial rye grass	Lasso	7.4
Cocksfoot	Sparta	6.2
Timothy	Promesse	3.7
Late Fl Red Clover	Rajah	3.8
Mixed herbs	Burnet, chicory	1.2
Alsike clover	Ermo	1.2
White clover	Alberta	1.3
Wild white clover	Nanouk	0.2
	Total	34.8kg/ha

A full specification for the establishment, maintenance and aftercare of the restoration grassland is attached at Appendix A.

In summary the aim will be to secure an effective early greening of the site and the establishment of an agricultural grass sward that will secure improvements to the structure of the restoration soils and provide a diverse sward that will meet the bio-diversity objectives of the restoration and aftercare scheme and provide a productive sward that will support a range of long term management options e.g. grazing or hay cutting.

4.3 Ecological Enrichment

It is proposed to enrich the woodland margins and a network of 6m buffer strips around all the field enclosures in year 2 after successful establishment of the structural grass sward. The location of these buffer strips is as shown on the attached Restoration Masterplan (Drawing HL4). It is suggested that a suitable grass and wildflower mix would be Emorsgate EM4.

Wild Flowers %	Latin Name	Common Name
0.5	Achillea millefolium	Yarrow
0.5	Betonica officinalis – (Stachys officinalis)	Betony
2.2	Centaurea nigra	Common Knapweed
2.1	Galium verum	Lady's Bedstraw
1.5	Leucanthemum vulgare	Oxeye Daisy
1	Lotus corniculatus	Birdsfoot Trefoil
0.8	Plantago lanceolata	Ribwort Plantain
1	Primula veris	Cowslip
2.2	Prunella vulgaris	Selfheal
3	Ranunculus acris	Meadow Buttercup
1.5	Rhinanthus minor	Yellow Rattle
0.5	Rumex acetosa	Common Sorrel
2.5	Silaum silaus	Pepper Saxifrage
0.2	Silene flos-cuculi (Lychnic flos-cuculi)	Ragged Robin
0.5	Trifolium pratense	Wild Red Clover
20		

Grasses %	Latin Name	Common Name
10	Agrostis capillaries	Common Bent
3	Alopecurus pratensis	Meadow Foxtail (w)
2	Anthoxanthum odoratum	Sweet Vernal-grass (w)
36	Cynosurus cristatus	Crested Dogstail
25	Festuca rubra	Red Fescue (w)
4	Phleum bertolonii	Smaller Cat's-tail
80		

This process is detailed within Natural England's Technical Information Note TIN064 "Sward Enhancement; diversifying grassland by oversowing and slot seeding". As detailed in the technical note a wildflower seed rate of 7.5kg/ha is proposed.

Following enrichment seeding these areas would be managed as set out in the Natural England Technical Note avoiding all fertiliser applications and restricting herbicide applications to spot treatments for noxious weeds. Any such treatments would be discussed and agreed with the MPA. The approach to fencing of the 6m ecological zones will need to be considered carefully in the light of grazing and grass management when appropriate, in

consultation with the MPA, to best reflect the composition and suitability of areas for either productive agriculture or bio-diversity.

Woodland Restoration

Description & Location

A total of 11.48 hectares of woodland is either present on site, or due to be planted over the next two years (2010/2011). All existing and planned planting comprises purely broadleaf species and can be divided into 6 types, ranging from mature broadleaf woodland to the north-west and east, semi-mature broadleaf woodland to the south and dense stands of scrub woodland to the west..

A full Woodland Management Plan (WMP) is provided at Appendix C in the standard Forestry Commission (FC) template. The WMP lists both the long term vision for the site (WMP Section 4) and outline management programme (WMP Section 8). It is anticipated that this plan will be submitted to the FC shortly for their approval. The objectives and management proposals listed in the WMP are summarised briefly below;

Woodland objectives:

- Enhancement of the local landscape setting by complementing existing woodland features and establishment of an effective screen around the existing landfill site
- To enhance the woods' biodiversity value as evidenced though the presences of declining woodland birds, species rich ponds & enhanced ground flora
- To enhance the structural value of the woodland through sound siviculture
- To manage the woods on a sustainable basis through the production of quality timber and firewood. including effective screening of the landfill site, enhancement of the existing biodiversity

Existing Woodland (Cpt 2a, 3, 4 & 5 and majority of Cpt 1c)

Management in the more mature woodland will focus on restructuring through selective thinning and coppicing over a long rotation (every 7-10 yrs) to favour the development of the best timber trees and encourage a more diverse vertical structure. In the semi-mature plantations and scrub stands management effort will focus on the creation of gaps in the canopy to facilitate the underplanting of native species and encourage natural regeneration. As part of the new planting undertaken in Cpt 1c during spring 2010 ongoing works will focus on maintaining the growth of these trees, replacing failures, formative pruning to encourage straight stems and guard maintenance.

New Woodland Creation (Cpt 1a-1d. Inc. a small part of Cpt 1c)

The balance of the remaining woodland is to be established in line with the agreed EWGS Contract with the Forestry Commission (Ref: 20563), and will comprise an even mixture of Natural Regeneration and formal planting (see Appendix B). The areas of Natural Regeneration (Cpts 1a&b) are due to be cultivated this winter. Planned operations include bramble scrub removal, scarification, genguard installation and a small amount of additional planting to provide shelter for the developing ash and to enrich the structural diversity of the stand going forward. The remaining areas (Cpts 1c and 1d) are due to be planted during winter 2010/11. Planting will be at a density of 2,250 stems per ha and consist of a mixture of native tree and shrub species. Future management within these compartments will focus on protection of emerging regeneration, weed control, replacement of losses, guard and grassland corridor maintenance.

Horton Wood (Cpt 2b)

In recent years a proportion of Horton Wood (Ancient Semi-Natural Woodland) has suffered from sustained periods of inundation which has resulted in the formation of a substantial pond surrounded by a dense belt of wetland scrub. Following a site visit in 2008 by the County Ecologist and subsequent visit in 2010 by Lockhart Garratt an indicative management plan for this area has been drafted (see Appendix C).

The primary management objectives for this area are to secure its current ecological value as a BAP[1] habitat and where possible develop new niches for a variety of species going forward. Provisions incorporated within the plan include coppicing back of shrubs to encourage marginal plant growth around the edge of the pond, planting of rare and declining native tree species (e.g. black poplar) and the erection of a series of wildlife boxes beneficial to a range of local BAP species including small woodland birds, bats and owls.

These measures combined with the planned programme of woodland management and additional hedgerow and tree planting should enrich the existing ecological value of the site as a whole, and provide additional foraging, commuting and nesting opportunities for a range of woodland and open ground species in future years.

Seeding of Woodland Areas

All of the woodland areas will be seeded prior to planting. It is proposed to utilise a relatively simple amenity grass seed mix with scope for good early establishment for suppression of weeds and some hardwearing slower growing species to take over once inter-row mowing becomes more regular. The mix below is a guideline and may be adjusted slightly according to commercial availability at time of implementation.

30% Strong Creeping Red Fescue (Festuca rubra)
50% Perennial Rye Grass (Lolium perenne)
10% Hard Fescue (Festuca longifolia)
5% Brown Top Bent (Agrostis tenius)
5% White Clover (Trifolium repens)

Following the initial woodland establishment and subject to landfill infrastructure maintenance, the reseeding of some of the areas of rides and open ground will be reassessed in order to diversify the flora on these areas and on the woodland margins. Any reseeding would be agreed with the LPA as part of the ongoing site monitoring.

[1] Biodiversity Action Plan (BAP) - Plan identifying targets improving and protecting biodiversity in an area. There are regional, county and local BAPs. The original impetus for these plans and in particular the UK Biodiversity Action Plan derives from the 1992 Convention on Biological Diversity (CBD).

5.0 AN AFTERCARE PLAN

5.1 Aftercare and Management

The restoration profile, planting and seeding should be reinstated carefully following any essential maintenance of the capping and other engineering systems in the post-closure management period.

To ensure that the fertility of the soil is monitored and weeds controlled within restored areas, a restoration survey will be undertaken annually, report to MPA every year (Yrs 1-5), every 5 years (Yrs 5-60).

The restored areas will be surveyed which will involve quantitative sampling of vegetation and aimed to assess the progress of landfill restoration. .

The restoration survey will include:

- Soil sampling for pH, phosphorous (P), potassium (K) and magnesium (Mg) and analysis to help inform future management decisions such as fertiliser applications
- Appearance or health of vegetation
- Methods of maintenance of required soil fertility (fertilisers, use of legumes, organic manures, sewage sludge etc.)

Other attributes that will also be assessed during the survey will include:

- Vegetation height;
- Health of the vegetation;
- Openness of the sward;
- Amount of bare ground;
- Presence of litter;
- Species present (Including target species);
- Presence of potentially dominating grasses;
- Presence of problem weed species; and presence of clonal plants, such as legumes.

The recommendations of the survey will be incorporated into that year's cultivation works. The periodic removal of Ragwort will be undertaken as and when deemed necessary by Site Management, in accordance with the Ragwort Control Act 2003, and the DEFRA "Code of Practice on How to Prevent the Spread of Ragwort", other injurious weeds will be controlled as necessary according to the Weeds Act 1959.

The success of the proposed restoration would rely, to a large extent, on the continued management of the establishing habitats. Consequently, the restored site would be subject to an aftercare period during which time the key aftercare priorities would include:

- Monitoring of the substrate for signs of erosion or surface water ponding, and the undertaking of any necessary remedial measures;
- Re-grading of 'blow-outs' of restoration substrate;
- Monitoring/remediation of any excessive soil wash/deposition of fine material around the base of the landfill and in ponds and lagoons;
- Re-seeding of any areas of failed germination or disturbance
- Replanting and beating up of areas of failed woodland establishment;
- Checking and repairing of restoration infrastructure;

- Checking and repairing of any geosynthetics; and
- Control of invasive and noxious weed species.

The aftercare programmes developed for the Grassland and Woodland areas are presented in Appendix D and E respectively.

6.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

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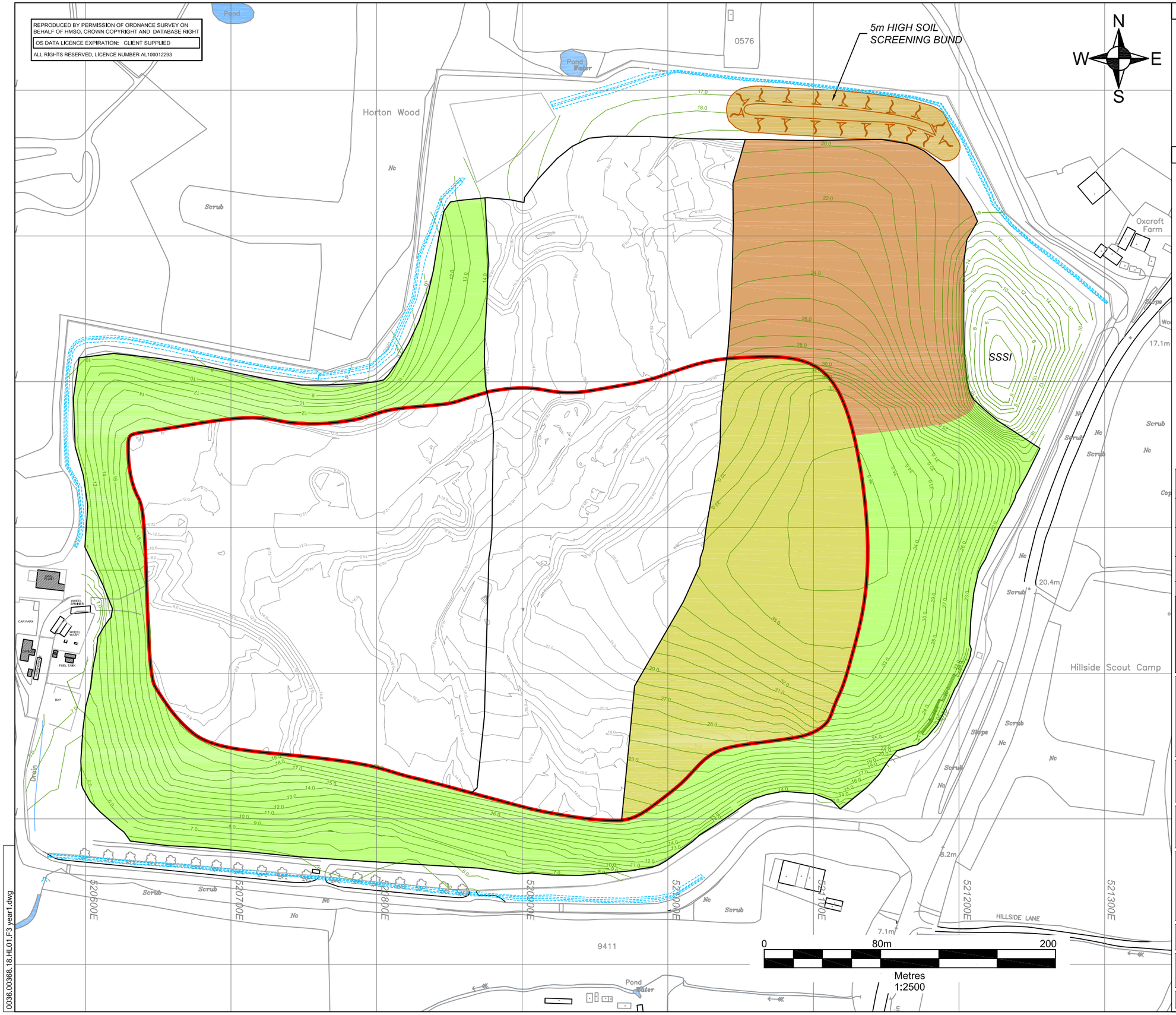

NOTES

- BASED UPON VIRIDOR DRAWING, APPROVED PRE-SETTLEMENT RESTORATION CONTOURS mAOD, No HCP248, DATED FEBRUARY 2007
- AND REVISED CONTOURS FOR AREA COVERED BY CELLS 3 AND 4 FOR SOIL INPUT ONLY AS DEPICTED IN VIRIDOR DRAWING 'LANDFORM EXERCISE PLAN 5 SHT 1 OF 2, No.HCP276, DATED JANUARY 2009

LEGEND

- PROPOSED REPROFILING AREA
- LANDSCAPING RESTORATION PHASING
- 124.0 PROPOSED PRE SETTLEMENT RESTORATION CONTOURS
- AREA TO BE RESTORED WITH IMPORTED SOILS ONLY
- AREA TO BE LANDSCAPED
- AREA TO BE RESTORED

Revision	By	Chk'd By	Date	Comments
3	AB	LM	09/10	Title block updated
2	AB	LM	06/09	Contours amended
1	AB	LM	05/09	Legend amended
0	AB	LM	05/09	First issue

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Site
HORTON LANDFILL

Project
LANDSCAPING, RESTORATION AND AFTERCARE MANAGEMENT PLAN

Drawing Title
RESTORATION PHASING YEAR 1

Scale
1:2500 @A3

Date
MAY 2009

Drawing Number
HL01

Revision
0

FINAL

0036.00368.18.HL01.F3 year1.dwg

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5m HIGH SOIL SCREENING BUND

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Revision	By	Chk'd By	Date	Comments
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Site
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Project
LANDSCAPING, RESTORATION AND AFTERCARE MANAGEMENT PLAN

Drawing Title
RESTORATION PHASING YEAR 2

Scale	Date
1:2500 @A3	MAY 2009

Drawing Number	Revision
HL02	0

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0 80m 200
Metres
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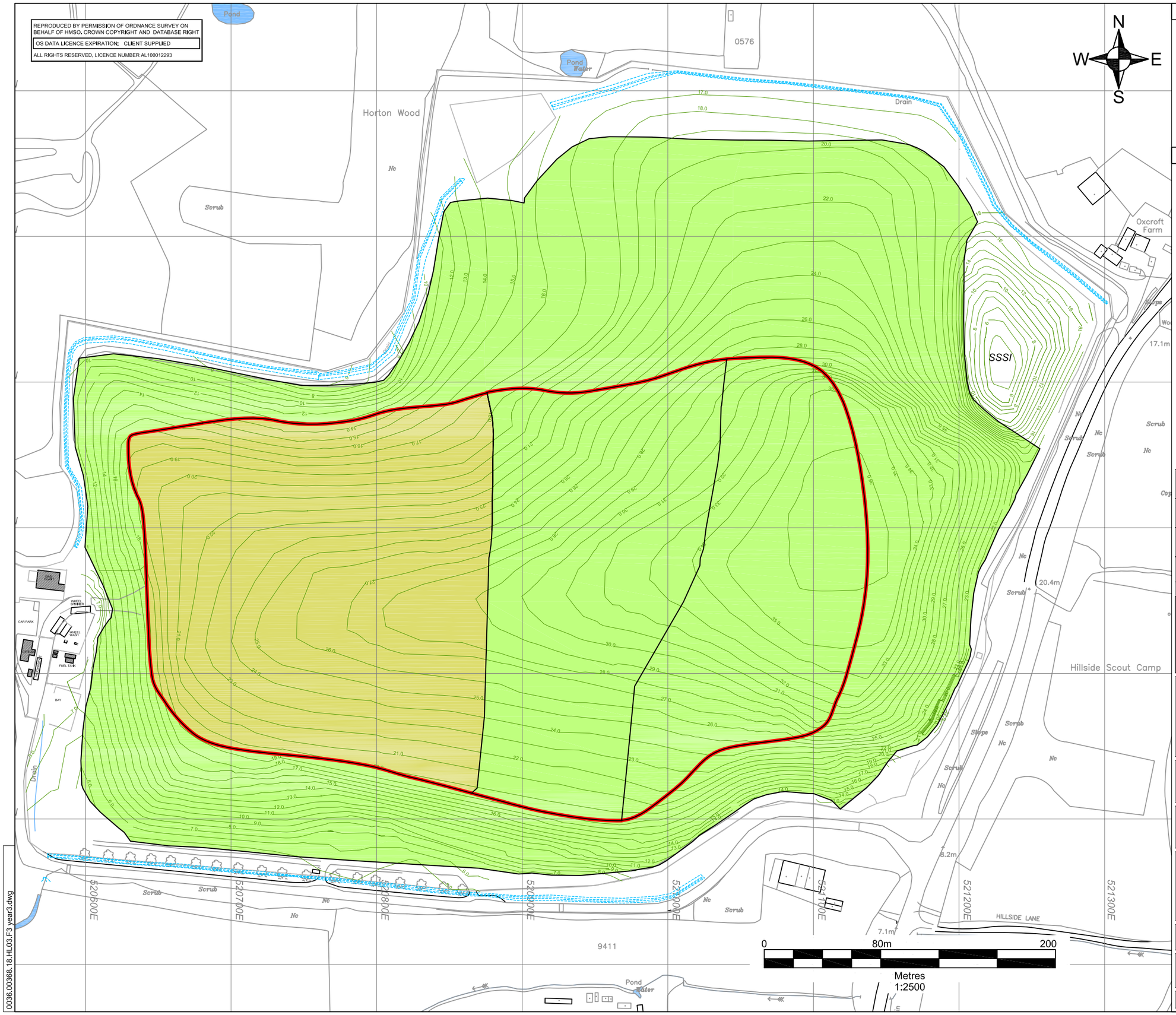

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- BASED UPON VIRIDOR DRAWING, APPROVED PRE-SETTLEMENT RESTORATION CONTOURS mAOD, No HCP248, DATED FEBRUARY 2007
- AND REVISED CONTOURS FOR AREA COVERED BY CELLS 3 AND 4 FOR SOIL INPUT ONLY AS DEPICTED IN VIRIDOR DRAWING 'LANDFORM EXERCISE PLAN 5 SHT 1 OF 2, No.HCP276, DATED JANUARY 2009

LEGEND

- PROPOSED REPROFILING AREA
- LANDSCAPING RESTORATION PHASING
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- AREA TO BE RESTORED WITH IMPORTED SOILS ONLY
- AREA TO BE LANDSCAPED
- AREA TO BE RESTORED

Revision	By	Chk'd By	Date	Comments
3	AB	LM	09/10	Title block updated
2	AB	LM	06/09	Contours amended
1	AB	LM	05/09	Legend amended
0	AB	LM	05/09	First issue

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Project
LANDSCAPING, RESTORATION AND AFTERCARE MANAGEMENT PLAN

Drawing Title
RESTORATION PHASING YEAR 3

Scale
1:2500 @A3

Date
MAY 2009

Drawing Number
HL03

Revision
0

FINAL

0036.00368.18.HL03.F3 year3.dwg

VIRIDOR WASTE MANAGEMENTLTD - HORTON LANDFILL									FEB-MAR 2010 PLANTING												Nov 2010 -Mar 2011 PLANTING		
PLANTS & PROTECTION - TABLE 2			Size (cm)	Minimum Spec	Minimum Root Collar (mm)	Protection Method			Cpt 1a+1b		Cpt 1c (Southern Section) Feb 2010		Cpt 1e (Roadside Belt) Feb 2010		Cpt 1f (NE Plantation) Feb 2010		Western Hedgerow - Mar 2010		Internal Hederows 1300m, note 1)		Cpt 1d (Eastern Section)		Total
REF: 09-2889 V4									200		2.14	Ha net	-	-	-	-	100	No.	6500	No.	1.58	Ha net	
									No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
MAJOR TREES	Pedunculate oak	*Quercus robur*	45 - 60	1yr	8.5	A (Spiral) for new woodland planting, B for supplementary planting in Cpts 1e and 1f			80	40%	963	20%	30	30%	50	50%					818	23%	1861
	Ash	*Fraxinus excelsior*	45 - 60	1yr	10				80	40%	963	20%	30	30%	50	50%					853	24%	1896
	Field maple	*Acer campestre*	45 - 60	1yr	9				200	10%	626	13%									462	13%	1088
	Alder	*Alnus glutinosa*	45 - 60	1yr	10						578	12%									178	5%	756
MINOR TREES	Wild cherry	*Prunus avium*	45 - 60	1yr	9						48	1%									36	1%	84
	Small leaved lime	*Tilia cordata*	60 - 80	1yr	8						96	2%									71	2%	167
	Hornbeam	*Carpinus betulina*	45 - 60	1yr	9						144	3%									107	3%	251
	Aspen	*Populus tremula*	90 - 120	1yr	12						96	2%									71	2%	167
	Whitebeam	*Sorbus aria*	45 - 60	1yr	9.5						48	1%									36	1%	84
	Silver birch	*Betula pendula*	60 - 80	1yr	7						48	1%									36	1%	84
	Holly	*Ilex aquifolium*	20 - 30	P9 pot	8	B (Shelter)					48	1%									36	1%	84
	White willow	*Salix alba*	90 - 120	Rooted cuttings	12	B					96	2%									71	2%	167
	Grey Sallow	*Salix cinerea*	90 - 120		12	B					96	2%									71	2%	167
SHRUBS	Hazel	*Corylus avellana*	45 - 60	1yr	10	B for woodland, A for hedgerow			20	10%	337	7%	40	40%			25	25%	325	5%	249	7%	651
	Hawthorn	*Crataegus monogyna*	45 - 60	1yr	7						96	2%					55	55%	5200	80%	71	2%	222
	Guelder rose	*Viburnum opulus*	45 - 60	1yr	9						48	1%					20	20%	325	5%	36	1%	104
	Wild privet	*Ligustrum vulgare*	45 - 60	1yr	9						48	1%							325	5%	36	1%	84
	Wayfaring Tree	*Viburnum lantana*	45 - 60	1yr	8						144	3%									107	3%	251
	Dogwood	*Cornus sanguinea*	45 - 60	1yr	7						48	1%							325	5%	36	1%	84
STANDARDS	Pedunculate oak	*Quercus robur*	2.5 m tall, 1.8cm diameter at 1.5m height (bare root)		30	C (2 Stakes & 2 Belts)					96	2%									71	2%	167
	Ash	*Fraxinus excelsior*			30						96	2%									71	2%	167
	Field maple	*Acer campestre*			30						48	1%									36	1%	84
	TOTAL								380	100%	4815	100%	100	100%	100	100%	100	100%	6500	100%	3555	100%	8670

SOIL PROFILE
THE APPROVED SOIL PROFILE ABOVE THE ENGINEERED CAP IS 0.7m OF SUBSOILS AND 0.3m OF SELECTED SOILS AND OTHER MATERIALS CAPABLE OF PROMOTING PLANT GROWTH. THE DEPTHS OF SOILS SHALL BE THOROUGHLY RIPPED OR DEEPLY CULTIVATED AFTER EMPLACEMENT SO THAT COMPACTED LAYERS ARE EFFECTIVELY BROKEN UP.

Grassland		
Species	Variety	Application Rate (kg per ha)
Tet Hybrid ryegrass	Solid	4.90
Perennial rye grass	Bree	4.90
Perennial rye grass	Lasso	7.40
Cocksfoot	Sparta	6.20
Timothy	Promesse	3.70
Late Fl Red Clover	Rajah	3.80
Mixed herbs	Burnet, chicory	1.20
Alsike clover	Ermo	1.20
White clover	Alberta	1.30
Wild white clover	Nanouk	0.20

NOTES
1. RESTORATION PLAN TAKEN FROM SCOTT WILSON, HORTON LANDFILL LVIA FIGURE 6 RESTORATION MASTERPLAN', REV A, REF D113261/LVIA/006, DATED 04/01/06
2. NEW WOODLAND CREATION CPTS 1A, 1B, 1C & 1D
3. MATURE WOODLAND CPTS 21, 4A & 4D
4. WET WOODLAND CPT 2B
5. SCRUB WOODLAND CPTS 2C, 4B & 5
6. YOUNG BROADLAND PLANTATION CPT 3
7. SEMI-MATURE BROADLEAF WOODLAND CPTS 4C, 4E

LEGEND
- EXISTING TREES / WOODLAND (ON SITE)
- EXISTING TREES / WOODLAND (OFF SITE)
- GRASSLAND
- EXISTING SCRUB
- FISHING LAKE
- PONDS
- PROPOSED SURFACE WATER DITCHES
- PROPOSED HEDGEROW
- NATURAL REGENERATION
- PROPOSED NEW WOODLAND PLANTING TO MARCH 2011
- OPEN GROUND
- FINAL RESTORATION OF SSSI TO BE DETERMIND FOLLOWING NEGOTIATION WITH NATURAL ENGLAND & WSCC
- ROUTE OF PUBLIC FOOTPATH TO NORTH-WEST
- OPEN GROUND CORRIDORS (INDICATIVE LOCATION)
- AREA UNDER VIRIDOR'S CONTROL
- 1c — INDICATIVE EXTENSION TO COMPARTMENT 1C (EXACT PLANTING DETAILS WILL BE PROVIDED AS PART OF THE LTP RESTORATION SCHEME)
- ECOLOGICAL ENHANCEMENT TO FIELD MARGINS (6m)

Revision	By	Chk'd By	Date	Comments
6	AB	LM	05/11	Buffer zones added
5	AB	LM	01/11	Indicative extension to compartment 1C
4	AB	LM	09/10	Planting schedule updated Grassland extended Grassland table updated
3	AB	LM	09/10	Planting schedule updated Legend updated Title box updated
2	AB	LM	08/10	Hedgerow updated, ditches added Viridor control boundary added
1	AB	LM	02/10	Planting amended
0	AB	LM	05/09	First issue

Viridor

SLR
FULMAR HOUSE
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Site: HORTON LANDFILL

Project: LANDSCAPING RESTORATION & AFTERCARE MANAGEMENT PLAN

Drawing Title: **RESTORATION MASTERPLAN**

Scale: 1:1500 @A1 | Date: MAY 2011

Drawing Number: **HL04** | Revision: **6**

FINAL

0089.00/3B3-1\HL04.FK Revd masterplan.dwg

APPENDIX A

LOCKHART GARRATT
TREES • WOODLAND • FORESTRY

SPECIFICATION FOR ESTABLISHMENT & AFTERCARE OF AGRICULTURAL GRASSLAND

HORTON LANDFILL

REF: 10-1080 3204 D11 V3
DATE: 19th May 2011

Prepared For
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1. OUTLINE STRATEGY

The scheme has been prepared following the guidance at paras. A59–A86 of MPG 7 (Nov. 1996) and feedback in relation to the draft grassland establishment and management proposals from Reading Agricultural Consultants on behalf of WSCC.

1.1 Objectives

The proposed restoration will be based on the establishment and management of a long-term species rich grass ley, with the objective of promoting the development of stable structures within the soil volume and eventually developing valuable species rich grassland that will compliment the ecologically based restoration concept as set out within para 2.1 of the RAMP.

1.2 Cropping

It is intended that the longer-term use of the land would be grass, mainly for seasonal grazing or hay cropping. Initially the critical factor will be ensure the effective greening of the restoration soils and the development of a viable soil structure.

Initially a suitable long-term rye grass based seed mix will be sown. A recommended mix is presented in Table 1 below.

This traditional mix should provide good cover in the short term and in the long term provide a productive agricultural sward capable of supporting grazing or forage harvesting. The presence of a small concentration of forbs and legumes within the mix should also provide immediate biodiversity gains through creation of nectar sources for invertebrates.

Table 1: Meadow Mania Seeds Ltd – GU6 Golden Dragon

Species	Variety	Application Rate (kg per ac)
Tet Hybrid ryegrass	Solid	2.0
Perennial rye grass	Bree	2.0
Perennial rye grass	Lasso	3.0
Cocksfoot	Sparta	2.5
Timothy	Promesse	1.5
Mixed herbs	Burnet, chicory	0.5
Alsike clover	Ermo	0.5
White clover	Alberta	0.5
Wild white clover	Nanouk	0.1
	Total	14.1/ac (34.8kg/ha)

An appropriate seed rate will be determined following the results of the soil analysis and will be dictated by the final seed mix chosen, seeding rates are likely to be in the range 30-40kg/ha.

During the aftercare period (a maximum of 5 years) the sward will be managed principally by mowing for hay or silage. If practicable, the aftermath following the last cut would be grazed by sheep at a relatively low stocking density. If this is not practicable, the aftermath would be mowed until the end of autumn to maintain it at a height of no more than 100mm to ensure that any excess growth does not layer and mulch the sward over winter.

Should a grazing strategy be introduced then the Operator will agree with the MPA a detailed fencing strategy for the site. Additional infrastructure to support the grazing activities i.e. water troughs, loading facilities and access will also be reviewed and agreed as part of any such proposal.

1.3 Cultivation practices

Normal agricultural machinery would be used for cultivations, fertiliser applications, weed and pest control, mowing and harvesting – as appropriate.

Such usage would be kept to the absolute minimum necessary and timeliness would be observed for all land operations.

If weed or pest control, or fertiliser applications are absolutely necessary before the land has dried out sufficiently (e.g. in spring) to allow normal agricultural machinery to be used without excessively damaging the surface, then low ground pressure (LGP) machinery would be used to avoid any possible compaction.

1.4 Secondary treatments

Should it be agreed to be necessary during the aftercare programme, subsoiling to relieve subsurface compaction arising from soil placement would be carried out using a paraplow (or similar) to minimise disruption to the grass sward and surface.

Any necessary stone or debris picking would also be carried out following that operation. Subsoiling/stonepicking would be followed by the use of a light roller towards levelling the surface.

Where appropriate the grassland areas will be chain harrowed in the late spring to remove any thatch and dead grass and level any minor rutting that may have occurred. This operation will also in the later stages help to expose the mineral soil to enable the introduction of wild flower and more ecologically important grass and herb species to be introduced into the sward.

1.5 Ecological Enrichment

It is proposed to enrich the woodland margins and a network of 6m buffer strips around all the field enclosures in year 2 after successful establishment of the structural grass sward. The location of these buffer strips is as shown on the attached restoration masterplan. It is suggested that a suitable grass and wildflower mix would be Emorsgate EM4.

Wild Flowers %	Latin Name	Common Name
0.5	Achillea millefolium	Yarrow
0.5	Betonica officinalis – (Stachys officinalis)	Betony
2.2	Centaurea nigra	Common Knapweed
2.1	Galium verum	Lady's Bedstraw
1.5	Leucanthemum vulgare	Oxeye Daisy
1	Lotus corniculatus	Birdsfoot Trefoil
0.8	Plantago lanceolata	Ribwort Plantain
1	Primula veris	Cowslip
2.2	Prunella vulgaris	Selfheal
3	Ranunculus acris	Meadow Buttercup
1.5	Rhinanthus minor	Yellow Rattle
0.5	Rumex acetosa	Common Sorrel
2.5	Silaum silaus	Pepper Saxifrage
0.2	Silene flos-cuculi (Lychnic flos-cuculi)	Ragged Robin
0.5	Trifolium pratense	Wild Red Clover
20		

Grasses %	Latin Name	Common Name
10	Agrostis capillaries	Common Bent
3	Alopecurus pratensis	Meadow Foxtail (w)
2	Anthoxanthum odoratum	Sweet Vernal-grass (w)
36	Cynosurus cristatus	Crested Dogstail
25	Festuca rubra	Red Fescue (w)
4	Phleum bertolonii	Smaller Cat's-tail
80		

This process is detailed within Natural England's Technical Information Note TIN064 "Sward Enhancement; diversifying grassland by oversowing and slot seeding". As detailed in the technical note a wildflower seed rate of 7.5kg/ha is proposed.

Following enrichment seeding these areas would be managed as set out in the Natural England Technical Note avoiding all fertiliser applications and restricting herbicide applications to spot treatments for noxious weeds. Any such treatments would be discussed and agreed with the MPA. It is not proposed that these areas be separately fenced but the development of the grassland areas will be monitored and management modified, in consultation with the MPA, to best reflect the composition and suitability of areas for either productive agriculture or bio-diversity.

1.6 Drainage

The restored ground should be adequately permeable to about 1m depth, provided that the pre-soiling fill surface is loosened and the soil is carefully placed so that

compaction is avoided. Under-drainage of the land is not therefore proposed. However, any temporary drainage measures that prove necessary during the staged placement of soil will be implemented.

The drainage of the site will be reviewed annually as part of the reporting to WSCC. If it becomes apparent that under drainage will be required to address any specific drainage issues, then an appropriate scheme will be prepared and agreed with the MPA.

1.7 Manuring, weed and pest control

A compound fertiliser would be applied before seeding, based on the results from bulk topsoil analysis after cultivation.

Subsequent fertiliser applications will be based on soil analysis with the initial focus being on secure establishment of the green cover and root development to improve and secure the soil structure.

Following initial establishment the aim will be to gradually facilitate the reduction in the soil nutrient status to enable the herb and more diverse grass species to establish and flourish within the sward. This strategy and detailed management actions would be included within the annual aftercare reports and agreed with the MPA.

Weed and pest control would be carried out as necessary.

All such operations would be subject to the land operation provisions of section 1.3 for minimising soil damage.

1.8 Annual review

The site operator will prepare and submit a detailed aftercare report annually in September.

Should it be required, there would be an annual review of on-site progress at which the Planning Authority and the Operator could agree any necessary remedial works or significant amendments to the annual programme.

2. ANNUAL PROGRAMME

Detailed proposals are set out below for Year 1. Unless otherwise agreed between the Operator and the MPA, these proposals would also be followed in subsequent years.

Details for Year one and the balance of the aftercare period are then provided in the attached schedule at **Appendix 1** and within the main RAMP document at Appendix D.

2.1 Year 1

Following satisfactory restoration compliance (i.e. appropriate loosening of fill base, placement of soils, stone and debris removal – as set out earlier) the surface will be cultivated to an appropriate seed bed for grass.

Lime and fertiliser will be applied, as appropriate, based on the results of nutrient analysis of a bulked topsoil sample. Following seeding (varieties, mix and sowing rate to be agreed) the ground will be lightly rolled (ring roller).

Ground and crop conditions will be monitored during the growing season, especially during winter and early spring.

Normal fertiliser applications and other weed and pest control measures will be carried out during the growing season. LGP vehicles will be used if the ground is in an unsuitable condition for normal agricultural machinery when such applications are absolutely necessary.

The sward will be cut for hay or silage up to three times during the growing season (the number of cuts will depend upon grass growth and weather conditions), with appropriate supplementary fertiliser applied between cuts.

After the last cut, the sward will be mown to maintain the height at no more than 100mm OR the aftermath grazed by sheep at a low stocking density (12/hectare maximum) before the stock are removed and land is shut down for the winter.

APPENDIX 1: OUTLINE AFTERCARE PROGRAMME

Ref: 10-1095

VIRIDOR: HORTON LANDFILL

OUTLINE AFTERCARE PROGRAMME - GRASSLAND

Ref: 10-1082 3204 D11 R

Year	Operation	Timing			
		Q1, 1-3	Q2, 4-6	Q3, 7-9	Q4, 10-12
1	Completion of soil placement			✓	✓
	Soils analysis and testing			✓	
	Liming, fertilising and soil amelioration (including stone picking), if required			✓	
	Agricultural cultivation and seeding with agreed grass mixture			✓	
	Monitor ground and crop conditions			✓	✓
	Monitor slug damage and implement control measures as required			✓	✓
2-5	Monitor ground and crop conditions	✓	✓	✓	✓
	Undertake regrading/reprofiling of severe settlement areas			✓	
	Soil analysis and testing		✓		
	Fertilisation, weed and pest control measures as required		✓	✓	
	Cut grass sward (late hay cut)			✓	
	Undertaken enrichment seeding of margins and buffers with wildflower seed mix			✓	
	Flail mow to maintain maximum sward height into winter of 100mm				✓
	Aftercare report to MPA			✓	
	Site meeting with MPA				✓
6-60	As for 2-5 with the following amendments: • Aftercare report to MPA every 5 years • Review options to reduce nutrient levels (N & P) through reductions in fertiliser application to encourage diversification of existing sward to secure biodiversity gains • Explore opportunities to chain harrow sward to reduce thatch and encourage annual wildflowers • Explore opportunities to carry out low intensity sheep grazing on the sward once established including the provision of stock fencing, water supply and access				

APPENDIX 2: TECHNICAL INFORMATION NOTE TIN064

Natural England's Technical Information Note TIN064 "Sward Enhancement; diversifying grassland by oversowing and slot seeding"

Sward enhancement: diversifying grassland by oversowing and slot seeding

Sward enhancement refers to management techniques which aim to increase the botanical diversity (mainly the wildflower component) of species-poor grassland. Such work can be funded under Environmental Stewardship Higher Level Scheme (HLS). Oversowing and slot seeding are two methods of sward enhancement. Other techniques of spreading species-rich green hay and planting pot-grown transplants and plug plants are described in separate information notes.

Key points

- Suitable sites must be selected to ensure the best chance of success.
- Seed must be carefully chosen for a particular site.
- The site should be prepared prior to oversowing to achieve a short sward with 50% bare ground.
- When oversowing, seed must be broadcast on the surface and then bedded in.
- Slot seeding requires specialist machinery, which may have to be adapted, for example, to attach a band sprayer.
- Subsequent site management is important.

Introduction

Not all grassland is suitable for enhancement. The main requirements include low soil fertility and low/no weed burden. Enhancement methods usually involve disturbance to the sward. The benefits of enhancement, must be balanced against the risk of erosion or damage to other features for example, where there is buried archaeology or bird interest. If in doubt consult your Natural England adviser.



Six-spotted burnet moth on common knapweed

For more information see Technical Information Notes TIN061 - *Sward enhancement: selection of suitable sites* and TIN062 - *Sward enhancement: choice of methods.*

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First edition 22 June 2010

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NATURAL ENGLAND

Sward enhancement: diversifying grassland by oversowing and slot seeding

On the right sites, both oversowing and slot seeding can be very effective techniques of diversifying grassland. Oversowing is the more commonly used method, as slot seeding requires specialist machinery.

Timing

Both oversowing and slot seeding should be undertaken in late summer or early autumn (ideally early August to mid September). This favours autumn-germinating species, and seeds of species such as cowslip *Primula veris*, which require a period of cold to break their dormancy before they germinate in the spring.

Later sowings should be avoided because of the risk of frost damage to seedlings. Spring sowings are possible, but many species will not germinate in the first year, and there is greater risk of failure due to drought.

Seed mixes

The species chosen must be suited to the site conditions and should be appropriate for the area. Where possible seed should be of local origin ie collected from grassland close to the site where it is to be sown. Wildflower seed should always be of British native origin.

For more information see Technical Information Note TIN038 *Seed sources for grassland restoration and re-creation in Environmental Stewardship*.

For sites in the early stages of restoration, it may not be worthwhile sowing species which are more difficult to establish – see section on successive sowing.

Weed control

All pernicious weeds present in the sward should be controlled before ground preparation. Any application of herbicide should be by spot treatment or weed wiping to avoid damaging non target species.

Spear thistle *Cirsium vulgare*, ragwort *Senecio jacobaea* and other weeds with wind-blown seeds should be controlled where they occur on adjacent areas, as they can quickly invade once the sward has been opened up.

Oversowing

The success of oversowing depends on the presence of gaps in the sward which are large and persistent enough for seeds to germinate and establish free from competition. Seeds must land and then be pressed into the bare soil in the gaps with sufficient moisture to germinate and sustain them.

Ground preparation

In the majority of cases, ground preparation will be required prior to oversowing. Sowing onto a closed sward is extremely unlikely to be successful. Seed may fail to come into contact with the soil and die, and any seedlings which germinate may be out-competed by the existing sward.

The starting point is a short sward, created by cutting (with cuttings removed) or grazing. The aim is then to create 50% bare ground, using livestock (the 'hoof and tooth' method) or machinery.

This may seem drastic but research and experience has shown this to be necessary to reduce competition from the existing sward. Within a few months (or even less) the sward will recover and very little bare ground will remain. However, if there are known archaeological sites in the area, consult your historic environment advisor to ensure archaeological features are not damaged.

Where livestock are used to create bare ground, cattle are most effective as their hooves more easily break up the sward. Sheep can also be effective on damp ground. As a guide there should be frequent gaps of at least 10 cm in diameter.

Where livestock are unavailable, or where the ground is too dry for them to be effective, bare ground can be created using a power harrow or set of discs.

Mechanical sward disturbance may release nitrogen from the soil and stimulate herbage

growth which should be controlled – see section on subsequent management. It may also stimulate the weed seed bank, so it should only be undertaken on sites with very low or no weed burden.

In a few cases, notably in upland hay meadows, there may be sufficient bare ground and soil moisture following the hay cut for seed to be sown without further ground preparation. However, such cases are likely to be rare.

Seeding

The following seed rates are recommended:

- 5-10 kg/ha of a wildflower and grass seed mix (usually including at least 10% wildflower seed).
- 1-2 kg/ha of a pure wildflower seed mix.

Seed can be sown either over the whole field or in patches. Patch sowing may be appropriate where:

- seed is in short supply;
- certain parts of the field are being targeted (for example, areas with lighter soils); or
- there is a risk of soil erosion.

The seed must be sown on or only just below the surface. The most appropriate method is to broadcast the seed using for example, a fertiliser spreader, slug pellet applicator, grass seed box or one of the modern arable seed drills with the coulters lifted up. Slug control may be needed – see later section.

For small areas, seed can be sown by manual broadcasting using a hand-held lawn fertiliser applicator, seed fiddle or seed barrow.

Seeds of different sizes and weights may settle out or become partitioned during sowing, causing a patchy sowing distribution. A more even coverage can be obtained if the seed is bulked up with an inert carrier for example, barley meal, silver sand, fine sawdust, or poultry chick crumbs, and then sown at half rate in two directions. Light coloured carriers make it easier to see which areas have been sown.

Bedding in the seeds

After sowing, seed must be bedded in to ensure good contact with the soil, by trampling with livestock (preferably cattle) or light rolling.

Successive sowing

Successive sowing, which introduces new species over several years, may be a good approach since many plant species vary greatly in their ease of establishment.

TIN050 – *Selecting indicators of success for grassland enhancement* categorises species according their ability to colonise new sites.

Those in Group 1 are relatively easy to establish. It is thought that some of these (for example, red clover) are 'facilitator species' which over time can create soil and sward conditions which speed up subsequent colonisation by species in Group 3 which are difficult to establish.

It will often be useful to sow yellow rattle (a Group 2 species) which parasitizes more competitive species, such as white clover, perennial ryegrass and Yorkshire fog but seed must be very fresh (For more information see TIN060 *The use of yellow rattle to facilitate grassland diversification*).

In the early stages of restoration the cost of sowing Group 3 species may not be justified.

Successive sowing will not be appropriate every year, as plants should be given time to establish before the sward is disturbed again. Some of the introduced species may not appear in the sward for several years, so the success of sward enhancement should not be judged too soon.

Slot seeding

Slot seeding was originally developed as a technique for increasing the productivity of grassland by introducing species such as white clover *Trifolium repens* and ryegrass *Lolium perenne*. The method has been used with some success to introduce wildflowers.

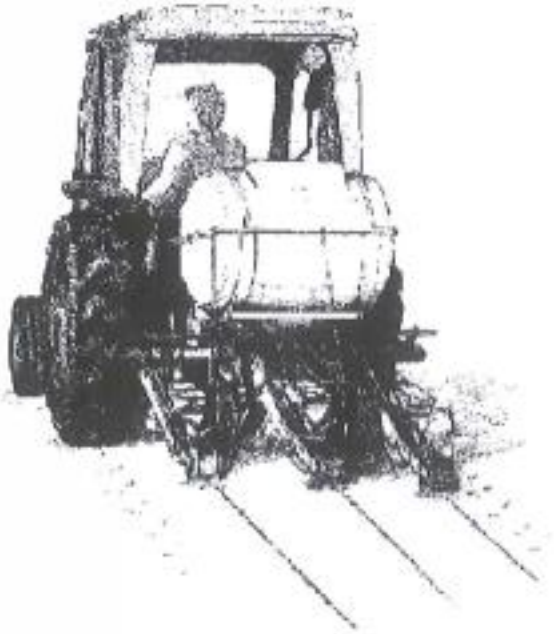
Sward enhancement: diversifying grassland by oversowing and slot seeding

Slot seeding requires specialist machinery which drills seed into shallow slots, up to 15 mm deep, cut into the turf. Suitable machinery includes:

- a sugar beet drill (for example, Stanhay/Gibbs drill);
- a Howard Rota seeder; and
- a Gallagher/Aitchison Seedmatic.

Normal arable direct drills are usually unsuitable, either because they are unable to penetrate hard ground, or they bury seed too deeply. In addition, these drills are not designed to create gaps or to reduce sward competition.

It is essential to control competition from the existing sward in order for seedlings to establish and survive. The best means of doing this is by fitting the slot seeder with a band sprayer which applies a narrow strip of contact herbicide to the sward at the same time as the seed is sown.



Slot seeding with adapted Stanhay/Gibbs drill

Some machines have a rotovating attachment, which serves a similar purpose by removing the existing sward. However, rotovating may release nitrogen from the soil and stimulate the weed seed bank.

A major advantage of slot seeding is that good results can be achieved with very low seed rates. However, the stripes of the drill lines may be visually unappealing and can take several years to disperse. The use of herbicide or a rotovator also risks the loss of desirable species from the sward.

The method is not recommended on poorly drained soils because slots can smear or fill with water, and there is a greater risk to seedlings of slug damage and damping off. It is also unsuitable where there are visible archaeological features.

Ground preparation

Before slot seeding create a short sward by cutting (with the cuttings removed) or hard grazing. Allow the sward to green up slightly to provide a target for the herbicide.

Seeding

Avoid undertaking the work when the ground is too hard or too wet.

A wildflower seed rate of 1-2 kg/ha is recommended. Seed should be bulked with a suitable inert carrier to aid spreading.

Where lines are widely spaced, ie >30 cm apart, consider cross drilling at half rate in two directions.

Successive slot seeding

Successive slot seeding is not recommended because of the risk of destroying the plants already introduced.

Slug control

Slugs can devastate wildflower seedlings and populations should be carefully monitored. Control is particularly likely to be necessary when slot-seeding as slugs will readily follow the sown strips and eat the seedlings.

Rolling can help control slugs. Alternatively, slug pellets can be used - ideally drilled into the slots at the time of seeding. Slug pellets must be used in accordance with statutory instructions and directions for use on the product label. For land in agri-environment scheme agreements, prior approval will be needed from your local adviser.

Sward enhancement: diversifying grassland by oversowing and slot seeding

Subsequent management (both methods)

In the period immediately after sowing (usually September - November), the sward should be kept short so that light can help germination.

This is best done by short periods of intensive grazing. Alternatively the sward can be cut and the cuttings removed. Prolonged grazing should initially be avoided in order to reduce the risk of seedlings being selectively grazed.

In the first spring, it may be necessary to cut or graze the sward to prevent seedlings being shaded out by the existing vegetation.

A short period of intensive grazing, or cutting (with the cuttings removed) is recommended. However, this may not be appropriate on all sites and care should be taken to avoid damage to other interests on the site, for example, birds and invertebrates.

Any perennial weeds which have colonised should be controlled early on, for example, by spot treatment with herbicide. Any annual weeds are likely to be controlled by the regular cutting or grazing outlined above.

Subsequently, if the field is to be managed as a hay meadow it should be cut late (for example, after mid July), with swath turning or tedding undertaken to assist seed shedding. The use of livestock, particularly for aftermath grazing, is important because they create gaps in the sward and trample in the seed, which helps the introduced species to spread.

Where the field is managed as pasture, plants must be allowed to flower and set seed by reducing the grazing pressure for a period of about eight weeks in spring and summer.

Inorganic fertilisers or widespread application of herbicides should not be applied after sowing or seeding.

Commitment to an appropriate long term management is essential if a grassland enhancement project is going to succeed and be maintained.

Further information

Natural England Technical Information Notes are available to download from the Natural England website: **www.naturalengland.org.uk**. In particular see:

- TIN035: Soil sampling for habitat recreation and restoration in agri-environment schemes
- TIN036: *Soils and agri-environment schemes: interpretation of soil analysis*
- TIN038: *Seed sources for grassland restoration and re-creation in Environmental Stewardship*
- TIN060: *The use of yellow rattle to facilitate grassland diversification in agri-environment schemes*
- TIN061: *Sward enhancement: selection of suitable sites*
- TIN062: *Sward enhancement: choice of methods*
- TIN063: *Sward enhancement: diversifying grassland by spreading species-rich green hay*
- TIN065: *Sward enhancement: diversifying grassland using pot-grown wildflowers or seedling plugs*

For further information contact the Natural England Enquiry Service on 0300 060 0863 or e-mail **enquiries@naturalengland.org.uk**.

This note does not supersede prescriptions in agri-environment scheme agreements. If there is any conflict between the information in this note and your agreement please contact your Natural England Adviser.

Authors and contributors

This note was previously published as RDS Technical Advice Note 29. It was compiled by Morwenna Christian and Steve Peel. Editor Susie Smith, photograph John P Martin, illustration Richard Yardley.

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APPENDIX B

LAND RESTORATION

2010 WOODLAND PLANTING & 2010-2014 MAINTENANCE SPECIFICATION

HORTON LANDFILL

REF: 10-1053 3204 D11
DATE: 18th April 2011

Prepared For
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1. INTRODUCTION

This specification covers the planting of **4.23ha (net)** of new woodland over 2 phases. It also covers maintenance and supplementary planting in existing plantations, management of roadside willow and poplar, protection of natural regeneration adjacent to Ancient Woodland and maintenance of existing hedgerow planting. See the attached Planting Map at ***Appendix 1 (M09-2905)***.

The phasing of new planting work is as follows:

Phase 1 (Feb-Mar 2010):

- Cpt 1c - 2.14 ha net planting at 2,250 stems per hectare
- Cpt 1e – supplementary planting of 100 trees
- Cpt 1f - supplementary planting of 100 trees

Phase 2 (Nov 2010 –Mar 2011):

- Cpt 1d – 1.58 ha net planting at 2,250 stems per hectare
- Cpt 1a and 1b 0.51ha. Supplementary.

Phase 3 (Nov 2012 – Mar 2013) Provisional

- Hedgerows within the main restoration area

2. GROUND PREPARATION

2.1 New Woodland Planting

All areas will be ripped to relieve compaction and grass seeded prior to planting

Initially it is proposed to utilise a relatively simple amenity grass seed mix with scope for good early establishment for suppression of weeds and some hardwearing slower growing species to take over once inter-row mowing becomes more regular. The mix below is a guideline and may be adjusted slightly according to commercial availability at time of implementation.

30% Strong Creeping Red Fescue (Festuca rubra)

50% Perennial Rye Grass (Lolium perenne)

10% Hard Fescue (Festuca longifolia)

5% Brown Top Bent (Agrostis tenius)

5% White Clover (Trifolium repens)

Enrichment seeding with a suitable wildflower mix will be undertaken on the rides and open ground (some 20% of the planted area) in year 4 or 5 once woodland condition area becoming more established. Further details are given at para xxx below.

Planting lines are to be marked out with canes in rows 2.1 m apart in line with the long axis of the compartment. These lines are to follow a gentle wave or curve pattern across the face of the slope (known as curvi-linear rows) as indicated on the attached plan at ***Appendix 1***.

2.2 New Woodland & Hedgerow Planting

Following planting (within 1 week) rows are will be sprayed out along a band of 0.8m width to control the emergence of weeds with a residual herbicide mixture (suggested Kerb and Stomp). This work is to be undertaken regardless of the weed status on the site at time of application. Any drift, due to application in inappropriate weather conditions or incorrect procedure, onto neighbouring crops or onto grassland in the inter-row space will be re-instated by patch up seeding.

Hedgerows

Hedgerow gaps and new hedge lines will be rotovated or dug over to a minimum depth of 300mm prior to planting. All gaps will be cleared of existing weed growth and vegetation.

Natural Regeneration Areas Cpt 1a and 1b

Clearance of bramble and other vegetation over 50% of the area. Surface scarification to expose mineral soil by compact tractor and rotavator/power harrow.

3. IMPROVEMENT WORKS TO EXISTING WOODLAND / HEDGEROWS

3.1 Cpt 1e - Roadside Woodland Belt

Supplementary Planting –100 trees will be planted in groups of 5 to 10 trees within the areas opened up by coppicing placing oak and ash in the centre of the belt (i.e. away from the road edge) and hazel on the margins.

3.2 Cpt 1f – North East Plantation

Supplementary Planting –100No oak and ash will be planted in single species groups of 5-10 trees in existing weaker areas of stocking (location to be confirmed in detail on the ground).

3.3 Western Boundary Hedgerow

Beat Up – This 100m long hedgerow was planted approx. 2 seasons ago by another party. An estimated 20% failure is present which is to be replaced with 45-60cm bare root transplants. Planting stock to be as per the spec for woodland shrubs on the new planting. V-notch planting can be used here.

4. MAIN PLANTING LAYOUT

4.1 General

Boundaries of the planting areas will be marked out before commencement of works. Rows will be correctly laid out and species correctly spaced and placed within the rows. Planting layout will ensure an **average minimum density of 2250 stems per net planted hectare** is achieved (excluding rides and glades).

4.2 Row Spacing & Layout

Planting to be at the following spacing's:

Between the rows	2.1 m	Tolerance 2.1 – 2.3m **STRICT**
Within the rows	1.6 m– 2.6 m	Tolerance 1.5 – 2.7m

Within the rows, spacing is to be varied from 1.6m to 2.6m randomly to create small areas of open ground within the main body of the planting and areas of denser tree groups alongside these. These niches will provide open ground for wildlife, in line with the requirements of the grant funding contract with the Forestry Commission. The EWGS Contract (Ref: 20563) is attached ***Appendix 2.***

4.3 Planting Prescriptions

New Woodland Planting (All Phases)

Pedunculate oak and ash to be planted as the main matrix of woodland in single species drifts of approx. 20 - 30 No. Where wetter areas of soil occur, pure ash or alder groups are to be planted.

Woody shrubs to be planted mainly at woodland edges and adjacent to rides and glades in single species groups of 10-15 No. plants spanning up to 3 rows. Otherwise, tree and shrub planting groups of 5 – 10 No. are to be distributed randomly throughout the oak-ash matrix.

Standard trees are to be evenly distributed across the area at approximately 9-10 m centres, within the exiting row layout and within their single species groups.

Hedgerows

New hedgerows and hedgerow gaps are to be planted as double staggered rows. The rows are to be spaced at 30cm apart, with plants spaced at 40cm apart within each row to give a net planting density of 5 plants per linear metre.

Natural Regeneration Areas (Cpt 1a and 1b)

10 No 2.5m x 2.5m fenced enclosures (Genguards) or similar will be placed at approximately 20m centres throughout the areas to protect emerging natural regeneration and supplementary regeneration that may establish.

200No oak and ash will be planted in single species groups of 5-10 trees throughout the area (location to be confirmed in detail on the ground).

4.4 Open Ground

A network of landfill gas pipes is laid 0.3 -1.0 m below the soil surface and the open ground and glades will therefore be positioned to avoid this underground infrastructure. The location of open ground shown on the layout plan at ***Appendix 1*** is therefore indicative and the final positions will be agreed on site.

All open ground corridors are to average **7m** width with a tolerance of 6-8m. Circular glades are to be located along the open ground structure at **10m** diameter and will also be marked. A 10m wide strip of open ground is to be left adjacent to the southern boundary of Cpt 1c for future access.

No planting is to be carried out within 3m of an existing boundary or hedgerow, leaving room for compact tractors to turn if used for inter-row mowing.

4.5 Rides/Open Ground

4.5.1 Once woodland conditions start to establish it is proposed to enrich the woodland rides and open ground area with a suitable grass and wildflower mix such as Emorsgate EW1 at a seed rate of 7.50kg/treated ha.

Wild Flowers %	Latin Name	Common Name
2	Alliaria petiolata	Garlic Mustard
0.5	Allium ursinum	Ramsons
1	Betonica officinalis – (Stachys officinalis)	Betony
0.6	Campanula trachelium	Nettle-leaved Bellflower
1	Digitalis purpurea	Foxglove
1	Filipendula ulmaria	Meadowsweet
2	Galium album – (Galium mollugo)	Hedge Bedstraw
2.5	Geum urbanum	Wood Avens
1.5	Hyacinthoides non-scripta	Bluebell
0.2	Primula vulgaris	Primrose
2	Prunella vulgaris	Selfheal
2.5	Silene dioica	Red Campion
0.2	Silene flos-cuculi – (Lychnis flos-cuculi)	Ragged Robin
2	Stachys sylvatica	Hedge Woundwort
1	Teucriu, scorodonia	Wood Sage
20		

Grasses %	Latin Name	Common Name
5	Agrostis capillaries	Common Bent
2	Anthoxanthum odoratum	Sweet Vernal-grass (w)
6	Brachypodium sylvaticum	False Brome (w)
30	Cynosurus cristatus	Crested Dogstail
1	Deschampsia cerpitosa	Tufted Hair-grass (w)
26	Festuca rubra	Slender-creeping Red-fescue
10	Poa nemoralis	Wood Meadow-grass
80		

4.5.2 Work would be as prescribed within Natural England's Technical Information Note TIN064 "Sward Enhancement; diversifying grassland by oversowing and slot seeding". Ongoing management following enrichment seeding would comprise a late cut of all of the areas not kept cut short for access and the collection of arisings. These would either be removed from site or heaped in a defined location to be agreed with the MPA. Any detailed management works would be informed through

the ongoing site monitoring and agreed as part of the ongoing aftercare management with the MPA.

5. PLANTS

5.1 Species

A detailed Plant Table is attached as ***Appendix 3 Table 2***, which details percentages of species by planting prescription.

All plants to be of English provenance and origin, and British grown, and where possible of Region 405, as detailed in Forestry Commission Practice Note 8.

5.2 Plant Condition

All plants to be of good quality, free of disease, infestation, and physical injury, to BS3936 and to sizes and specification as detailed on Table 2.

All plants will be inspected (comprising a visual inspection of root to shoot ratio, balanced root system, single straight stems on tree species, undamaged leaders and root dipping) prior to planting.

5.3 Plant Handling and Storage

All bare-root plants to be supplied in co-extruded nursery bags sealed around the roots to prevent desiccation. Plants to be handled with care in line with good practice. No bare-rooted stock to be left uncovered and exposed.

Plants to be stored under cover at night with no extremes of temperature, in line with good practice. **Deliveries to be phased so that individual plants are not stored for more than 14 days prior to planting.**

Cell grown plants (Holly) to be stored unpacked and upright and watered to ensure they do not dry out.

6. PLANTING PRACTICE

6.1 Root Dipping

All bare-rooted plants to be root dipped in a Broadleaf P4 (moisture retention gel) and mycorrhizal powder (rate of 6ml per tree) mixture prior to delivery to site, to manufacturers approved specifications.

Suppliers for mycorrhizal powder are:

Plantworks Ltd
Sittingbourne,
Kent
ME9 8HL
Tel. 01795 411527
contact Mark Mackie (Sales & Marketing Director) on 07976 715445.

6.2 Manual Planting

Woodland Planting (Including Supplementary Planting)

10 litres of peat free tree planting compost and 2 Sierrablen Slow Release Fertiliser Tablets (15-9-9 + 3% Mg) are to be manually incorporated into cultivated pits of sufficient size to allow full and unimpeded root spread.

- 20cm x 20cm x 20cm for smaller stock (ash / oak)
- 30cm x 30cm x 30cm for larger stock (willow)
- 40cm x 40cm x 40cm for standard trees (oak / ash / field maple)

Before planting any surface vegetation within 10cm of the plant is to be removed by screefing. Plants are to be upright and positioned centrally within the pit at the correct height, so that the root-collar is left at ground level.

Each plant is to be held at the base of the stem and gently shaken up and down during the backfilling operation to ensure good soil to root contact. Finally, soil is to be firmed around the base of each tree to ensure good soil contact but without causing compaction. Notch planting will not be accepted.

6.3 Bad Weather

No planting to be undertaken when the ground is frozen, waterlogged, exceptionally dry or during windy conditions. The contractor is to be liable for any losses arising from down time associated with a suspension in work due to bad weather.

7. INDIVIDUAL PROTECTION AND MATERIALS

The appropriate spiral/shelter is to be fitted to all new planting immediately after planting in line with the ***Plant Table 2.*** Any browsing damage resulting from absence of protection after planting will be replaced.

A) Trees - Acorn Spiral Shelter 75cm tall, clear, minimum 50mm diameter, supported with a 1.2m x 22/24lb bamboo cane. Not perforated. All canes to be driven a minimum of 30cm into the ground, thick end down, upright, firm and of uniform height. Canes are to extend no more than 5 cm above the top of the spiral guard when driven to full extent. Any section of canes extending above 5cm is to be removed with large tree loppers with no damage to the plant.

B) Holly, Willow & Shrubs - Tubex Standard shelter, 75cm tall, green, fixed with a 900mm x 32mm x 32mm, minimum two-way point, pressure treated pointed softwood stake. The stake to be driven vertically into the ground so that the stake top is approximately 50mm above the top tie of the shelter. The stake is to be driven below the top of the shelter in all cases. The stake should be on the side of the guard facing the prevailing wind. The base of all shelters must be pushed/buried at least 2cm below soil level.

C) Standards - 2No. 1.5m x 75mm softwood stakes driven 1m deep either side of the tree 25cm from the stem and in line. 2No. expanding rubber belts each 25mm wide x approx 70cm long, each to be wrapped around 1 of the stakes and the stem, to stop it moving in either direction. Belts to be secured to posts with clout nails. Belts to sit flat against posts and tree stem. Base of tree wrapped with a 75cm x 50mm spiral. Stakes to be pressure treated to current British Standard.

Alternative or similar protection may be considered. All proposed substitutions are to be agreed in advance.

8. AFTERCARE AND MAINTENANCE

8.1 Weed Control

Bands 1m width (spots on supplementary planting) to be maintained a minimum 85% weed free for the full term of this contract in woodland planting rows, supplementary planting and the western boundary hedgerow. The Contractor is to allow for all applications of approved herbicide, which may be required to achieve this required level of weed control.

Weed control to be invoiced at the end of each calendar quarter, provided the 85% weed free result has been achieved throughout that quarter. The following minimum programme of weed control is suggested:

Years 1 - 3:

(Calendar Year's 2010 - 2012): Spring (April/May) and summer (July/August) application of approved herbicide such as glyphosate or similar approved. Winter application of approved residual herbicide mixture in December. A suggested mix is propyzamide with pendimethalin.

Years 4 & 5: (Provisional)

(Calendar Years 2013 - 2014): Spring (April/May) and summer (July/August) application of approved herbicide such as glyphosate or similar approved.

The weed control strategy will be adjusted throughout the maintenance period as required, but will be flexible to achieve the 85% weed free result.

8.2 Selective Weed Control

If required the following treatments will be applied to control noxious weeds

- Application of Dow Shield (or similar approved product of clopyralid) at recommended rates to achieve control of annual and perennial dicotyledons in the inter-row space.
- Application of Timbrel (or similar approved product of triclopyr) at recommended rates to achieve control of perennial dicotyledons, docks and nettle in the inter-row space.

8.3 Inter-row Mowing (Provisional)

If required flail mulch mowing of grass in the inter row space will be undertaken during the summer months

8.4 Strimming (Provisional)

If required strimming will be undertaken to tackle broadleaf weed and grass management where this cannot be done by other means.

8.5 Open Ground Mowing (Provisional)

If required grass growth within the open ground area of the new plantations will be cut using flail mulch mowing up to three times per year, with exact timing to be agreed dependant on site requirements:-

	Period	Operation
1)	10th to 24th May	Cut all paths to a minimum of 3m width to a maximum, even, cut height of 50mm
2)	10th to 24th July	Cut all paths to a minimum of 3m width to a maximum, even, cut height of 100mm
3)	1st to 14th Sept	Cut all paths, glades and open space to their full width to a maximum, even, cut height of 100mm.

8.6 Beat Up (Replacement of Failures)

All planting areas will be beaten -up to 100% stocking in January of Calendar Year's 2011 to 2013 for Phase 1 planting and Calendar Year's 2012 to 2014 for Phase 2

planting. A beat-up assessment of all failures will be undertaken during September and all failures will be marked with a small green paint spot on the guard. Replacement plants and planting practice to comply with Sections 5 and 6 above. Vandalism damage will be monitored and damaged plants replaced or reinstated as required.

8.7 General Maintenance & Protection of Natural Regeneration

Routine plantation maintenance will also be undertaken for the full period to Cpts 1a – f, This will cover, in particular:-

- Protection of any newly regenerating seedlings in Cpts 1a & b as they arise in Spring of each year, using a 75cm tree shelter and 90cm stake.
- Straightening and replacement of protective materials as required (including brittle and degraded spirals).
- Firming in of loose trees and shrubs.
- Pruning back to healthy tissue of any broken, diseased or dead branches or shoots.
- Removal of dead, dying or diseased trees, shrubs and transplants.
- Removing from site rubbish arising from the above operations.
- Checking for vandalism and/or vermin damage and reporting any findings

8.8 Formative Pruning

In February of Calendar Year 2013 for Cpt 1c and Calendar Year 2014 for Cpt 1d form pruning is to be undertaken to planted oak, ash and field maple as described in paragraph 3.2 above. It is anticipated that the trees be split into 3 classes:

a) straight and requiring no pruning,

b) with some double leadering which can be addressed by 2-3 cuts

c) very poor form and requiring too many cuts to rectify

All class b) trees should be pruned which is anticipated at 1/3 of the crop.

9. TIMING

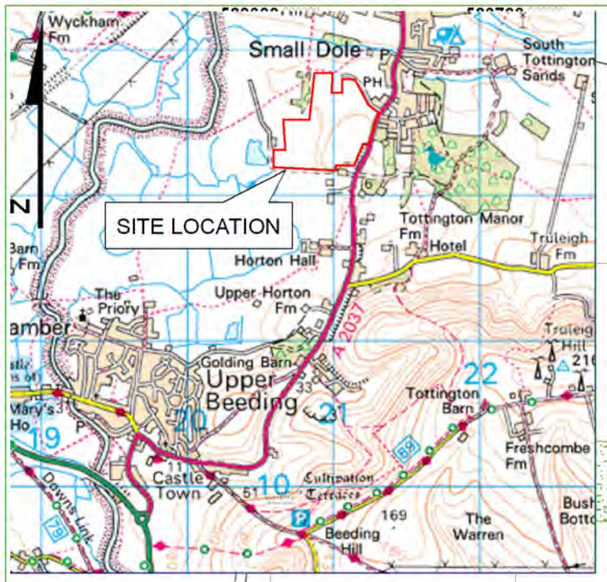
Planting is to be undertaken in the 2009/2010 planting season and commenced following completion of written contracting agreements. All planting work is to be completed no later than 31st March 2011.

10. PROTECTED SPECIES

No protected species such as GCN, badgers, bats or nesting birds are to be disturbed in carrying out the work detailed above.

APPENDIX 1: 2010 – 2014 WOODLAND PLANTING SPECIFICATION PLAN

Ref: 09-2905



520800 520900 521000 521100 521200 521300

112500 112400 112300 112200

1b 0.18ha

1f 1.00ha

HORTON WOOD (ASNW)

ACCESS GATE

1a 0.33ha

NGR: TQ207 125

WESTERN HEDGEROW (100m)

OWNERSHIP TO BE CONFIRMED BEFORE STARTING TREE SURGERY WORKS

OPERATIONAL LANDFILL SITE

PROPOSED NEW HEDGEROWS (INDICATIVE LOCATION)

HORTON LANDFILL SITE
HENFIELD RD
SMALL DOLE
BN5 9XH

SITE OFFICE

LEAVE UNPLANTED 10M WIDTH ADJACENT TO BOUNDARY FOR VEHICLE ACCESS

1d 2.07ha

CURVI-LINEAR ROW LAYOUT (INDICATIVE)

1c 3.86ha

1e 0.90ha

A2037 HENFIELD ROAD

NGR: TQ211 121

10m ACCESS STRIP

0 25 50 100 Meters

LOCKHART GARRATT
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8 MELBOURNE HOUSE: CORBYGATE BUSINESS PARK:
WELDON: CORBY: NORTHANTS: NN17 5JG
TEL: 01536 408840 FAX: 01536 408860

TITLE: 2010 - 2014 WOODLAND PLANTING SPECIFICATION

PROJECT/SITE: HORTON LANDFILL

CLIENT: VIRIDOR

MAP REF: 3204/D11/M09 2905 REVISION: 4

SCALE: 1:2,500 @ A3

DATE: 14/01/10

Produced by: SM Approved by: RWT

Revisions:

Amended with Site Boundary Line 150210
Amend planting areas 170210
Amend natural regeneration & hedge planting 27/08/10
Amend 18/05/11

- AREA UNDER VIRIDOR'S CONTROL
- NEW WOODLAND PLANTING FEB-MAR 2010
- OPEN GROUND
- NEW WOODLAND PLANTING DEC 2010 - MAR 2011
- NATURAL REGENERATION/ SUPPLEMENTARY PLANTING
- ROADSIDE WOODLAND BELT
- EXISTING YOUNG WOODLAND
- OTHER LAND
- NEW HEDGEROW PLANTING
- OPEN GROUND CORRIDORS - 7M WIDTH (INDICATIVE LOCATION)
- OPEN GROUND CORRIDORS - 10M WIDTH (INDICATIVE LOCATION)
- WOODLAND SUB-COMPARTMENT
- WATERBODIES

KARL BRYDON (VIRIDOR)
07764174937 01903 879544
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APPENDIX 2: EWGS CONTRACT

Ref: 20563

09- 1698

ewgs

RECEIVED
16 MAR 2010
24676

English Woodland Grant Scheme Contract for Horton Landfill

Case Reference Number 20563

RECEIVED
23 APR 2010
24957

RECEIVED
- 4 [illegible] 2010

Date last amended	N/A 6/5/2010
Forestry Commission Contact	FORESTRY COMMISSION SOUTH EAST ENGLAND REGION ALICE HOLT WRECCLESHAM FARNHAM SURREY GU10 4LF Tel 01420 23337 Fax 01420 22988 email southeast.fce@forestry.gsi.gov.uk

English Woodland Grant Scheme contract for Horton Landfill

Case Reference Number 20563

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This Contract contains the following sections

Terms & Conditions	For details see page	3 to 7
Parties	For details see page	8
Agent Details	For details see page	9
Payment Details	For details see page	10
General Details	For details see page	11

Grant Details

Woodland Creation Grant	For details see page	12 to 14
Work Schedule	For details see page	15

There is no felling permission associated with this contract. If you wish to undertake tree felling which will require a Felling Licence please contact your FC Area Office

Maps	For details see page	16
Additional Pages	For details see page	

EWGS Terms & Conditions

Introductory Statement
This contract defines the work, grant aid and permissions that have been agreed by Forestry Commission England and the Applicant as part of the English Woodland Grant Scheme.

1. Parties to this Contract
This contract is made between the Forestry Commissioners (in all parts of this contract called "us" or "we") and the person or persons listed in the contract (in all parts of the contract called "you" or "the applicant").

2. Signing this contract
By signing this contract you agree to be bound by these conditions. We also agree to be bound by the conditions.

3. Permission for Felling Areas
Where you have proposed felling trees as part of the contract, the Forestry Commission has considered the felling proposals as a Felling Licence Application. By signing this contract, you agree to carry out any restocking which the Forestry Commission may specify in the contract as a condition of the Felling Licence. The Felling Licence will become active when you approve the contract on-line or receive a paper copy approved and signed by the Forestry Commission on behalf of the Forestry Commissioners.

If the Felling Licence relates to trees that are covered by a Tree Preservation Order (TPO) and the existence of the TPO was not declared by you, then the Felling Licence will not cover the felling of these trees and you may commit an offence by felling them.

4. Information
Any general information that you need to give the Forestry Commissioners under this Contract can be given either in writing (and be delivered or sent by post), or by electronic communication to the Forestry Commission at the regional Grants & Regulations offices or National Office Cambridge.

If the Forestry Commissioners need to give you general information we will send it either in writing or by electronic communication to you. Unless the Forestry Commissioners have agreed otherwise, they will send it to your address(es) set out in this contract, or to the first of the Applicants named in this contract at the address given for that person.

5. Notice
Any formal notice that you need to give to the Forestry Commissioners under this Contract must be given in writing (and be delivered or sent by post, or via electronic means) to the Forestry Commission at the regional Grants & Regulations offices or National Office Cambridge.

If the Forestry Commissioners need to give you formal notice, they will send it in writing to you. Unless the Forestry Commissioners have agreed otherwise, they will send it to your address(es) or via electronic means as set out in this Contract, or to the first of the Applicants named in the Contract at the address given for that person.

6. Entire Agreement
It is accepted by us and by you that no statement or representation of any nature made prior to the Approval Date, as defined in paragraph 12, will form a term or condition of this contract unless set out in writing in this contract.

By signing this contract, you agree to abide by the conditions and undertakings required to comply with the Rural Development Programme for England, as approved by the European Commission or any EC legislation, in particular Council Regulation 1698/2005.

General conditions and other permissions
7. Restrictions on the land
You must tell us if there are any legal or other restrictions affecting the land, which could prevent you from completing the work or maintaining the work. It is your responsibility to find out whether any such restrictions exist and to obtain any necessary approvals or consents.

If you do not tell us about any restriction that may affect the work proposals then we may terminate the contract, pay no further grants and may reclaim grants paid for work already carried out.

8. Funding from other sources
You must tell us if any other public body (including the Heritage Lottery Fund and the European Union) has agreed to fund the work or maintenance or if you are claiming funding from any such body for other work on the land covered by this contract. All grant applications and claims will be "Cross Checked" against other publicly funded grant payments. Where incompatible payments are identified on an area of land, the grant payment or area may be reduced to prevent incompatible payments being made to you. If this happens we will contact you to explain the reasons for any reduction.

9. Historic and Archaeological sites
The work you do must not damage or destroy sites identified in the contract as being of historic or archaeological importance. This contract only provides permission to carry out the operations specified in the Plan on sites of historic or archaeological importance.

There is additional protection for Scheduled Ancient Monuments. If English Heritage have identified the need for Scheduled Monument Consent for certain operations in the contract, or you wish to carry out other operations not specified in the contract, you must secure consent from English Heritage before starting any work.

10. Sites of Special Scientific Interest, National Nature Reserves, Special Protection Areas, Special Areas of Conservation
You must only carry out operations on these sites that we have agreed in the plan. If you want to carry out other operations that are not agreed in the plan then you must get the necessary permission from Natural England.

11. Public access
You must protect all public rights of way over the land. Unless we have agreed otherwise, or the land is "access land" within the meaning of the Countryside and Rights of Way Act 2000, you need not provide any other public access.

Timescale for the contract

12. "Approval Period" to carry out the work

The approval period is the period when work can be carried out. It starts when we sign the contract (the "Approval Date") and expires 5 years after the Approval Date. In order to claim grant, you must carry out our grant-aided work as agreed and submit your claim form to us for that work, together with a map of the area by 31st March of the claim year agreed in the Work Details.

The approval period to carry out tree felling work starts when we sign the contract (the "Approval Date") and expires five years after the Approval Date. Felling permission is granted for ten years from approval date where it is part of an FC approved woodland management plan. Woodland cover must have been re-established within 10 years of tree felling. If you wish to receive any grants that are associated with the felling and restocking approval, you must adhere to the approved financial years for grant payment as set out in the Work Details.

For Woodland Management Grant, operations are approved for the 5 calendar years in which the grant instalments are paid i.e. 1st January to 31st December each year.

13. "Contract Period"

The "Contract Period" is the period of maintenance that you must carry out to meet the conditions of this contract. It starts on the date each grant is paid or, if the grant is to be made in several payments, on the date when the first of those payments is made. The "Contract Period" ends after the following periods, or on such earlier or later date as we may notify to you following an inspection or review of the work to which the payments made under this contract relate.

* *Woodland Creation Grants* (for new planting and natural colonisation) - 10 years from the date a first instalment is paid;
* *Additional Contributions to Woodland Creation Grants expressly for Public Access* - 30 years from the date a first instalment is paid;
* *Farm Woodland Payments*
  a) For work areas awarded 10 annual payments (new woodland comprising 50% or less by area of broad-leaved trees) - 20 years
  b) For work areas awarded 15 annual payments (for creating new woodland comprising more than 50% by area of broad-leaved trees) - 30 years;
* *Woodland Regeneration Grant* (for restocking by planting or natural regeneration) in respect of each payment - 10 years from the date the payment is made;
* *Woodland Improvement Grant*
  a) Where the contract includes Woodland Improvement Grant payments for public access and the total of these is less than or equal to £10,000 - 10 Years
  b) Where the contract includes Woodland Improvement Grant payments for public access and the total of these exceeds £10,000 but is less than or equal to £20,000 - 20 Years
  c) Where the contract includes Woodland Improvement Grant payments for public access and the total of these exceeds £20,000 - 30 Years
  d) All other Woodland Improvement Grant payments - 5 years;
* *Woodland Management Grant* (five annual instalments) - 5 years from the contract Approval Date.

Claiming Grant

14. Woodland Management Grant

For contracts that include Woodland Management Grant, we take signing this contract as your claim for all 5 instalments of Woodland Management Grant. There will be no need to claim for the grant using a claim form. Each year you may need to declare, by 15th May at the latest, continued compliance with the Woodland Management Grant conditions to ensure ongoing payment.

15. Standards of work expected and maintenance

All work must be done in accordance with this contract. If essential operations i.e. work vital for achieving the stated outcomes of the contract, are not completed in accordance with the Plan then we may withhold grants for other operations or terminate the contract.

You must carry out the operations specified in the contract and all subsequent maintenance to achieve the expected or desired outcomes with due care, skill and diligence in line with advice given in our current best practice guidelines and the UK Forestry Standard published at the time that the work was approved by us. You must ensure that the work carried out is maintained to the end of the "Contract Period".

It will be your responsibility to carry out any necessary maintenance to ensure that the work specified in the contract is successful.

We will not be held liable for any advice that may be given to you (other than that given by us) in this respect during the period of the contract.

We will not be liable for the effects of adverse weather, fire, pests or acts of God. It is your responsibility to utilise suitable skills and resources to complete the operations agreed in the contract.

16. Rates of grant to be paid

Subject to Conditions 22-27 and to your compliance with the remaining conditions, we will pay you grants of the types specified in this contract, so long as the work is done to our reasonable satisfaction. We will work out the payments using the rates quoted in this contract, except:

* In the case of Farm Woodland Payments where the rate payable will be that which is current at the time of each payment. On set-aside land the Farm Woodland Payment rate will be reduced by an amount equal to the set-aside payment rate;
* For Farm Woodland Payments, non-farmers will be capped at a maximum payment of €150 per hectare per year, based on the sterling-euro exchange rate on the 31st December each year;
* The area over which grant may be paid could be adjusted either up or down to account for more accurate land measurement such as Rural Land Register updates.

17. Who will be paid grant

Any grants we decide to pay you will be paid to you or your agent via BACS, as set out in the Paying Grants section of this contract.

18. Area over which we will pay grant

The area over which we will pay grant will be based on the area we measure when we receive your grant claim, provided the claim is on land approved in the contract and the area does not exceed that approved in the contract.

19. Date by which you must claim grants
You must carry out the work agreed in the Work Details and submit your claim form to us for that work, together with a map of the area by 31st March of the claim year agreed in the Work Details, unless we agree a change to this contract. If you do not submit your claim by this date, no right to payment will arise under this contract and we will only pay grant at our absolute discretion.

20. Changes to the work
You cannot change the work approved in this contract unless we agree and approve the change with you in advance, in writing or by e-mail. Approval of any requested changes to the approved contract is at our discretion.

21. Inspection
You must let us, our officers, Rural Payments Agency officers or other persons authorised by us to enter the land at all reasonable times during the Contract Period to check that you are keeping to this contract. Failure to allow or obstructing an inspection may result in refusal to pay grant or reclaim of grants already paid with interest.

Termination of the Contract
22. Terminating the contract - general grounds
We may terminate this contract immediately if:

* You do not keep to any Condition of this contract;
* You have not repaid any grant within three months of a written demand;
* Any material information you gave us when you made this contract is false, misleading or incomplete;
* Any material information you gave us when you make your claim for grant is false, misleading or incomplete;
* You are declared bankrupt or make a composition or arrangements with, or grant a trust deed for your creditors, or go into liquidation (other than a members voluntary liquidation).

Before we terminate the contract or ask you to repay grant, we will give you notice of the reasons for termination of your contract. If we consider that the situation can be put right, we will give you the opportunity to put the situation right, within the time that we specify.

It will be possible to terminate the contract at other times by mutual agreement. If you wish to terminate the contract during the contract period described in paragraph 13 but the work you have done will not achieve the purpose for which it was grant aided, we may, before we agree to termination, require you to repay part or all of the grant paid to you together with interest at the rate set from time to time by HM Treasury.

23. Stopping occupying the land
You must inform us if you stop occupying the land, or any part of it to which the contract applies. This contract may not be assigned to a subsequent owner (or anyone else) without our permission.

New occupiers must notify their interest to take on the contract within three months of purchase. After that, agreement to take on the contract is at our discretion and we reserve the right to alter the work details and contract conditions with the new occupier.

In the event that the contract conditions are not fulfilled, we will reclaim grant with interest from the grant recipient, irrespective of whether they occupy the land or not. We recommend outgoing occupiers set up private agreements to transfer liabilities during land sale.

24. Terminating the contract if the approved work will have an adverse effect on the environment
If, following the Approval Date, we become aware of information or there is a change of circumstances as a result of which it appears to us that any work, which has not been completed, should no longer be approved for the purposes of this contract because:

* the work is not permitted by, or would only be permitted if formally approved under environmental law; or
* giving a grant towards the carrying out of the work would not be consistent with our statutory duties with regard to the environment,

and we notify you accordingly; then the contract shall apply, with any necessary adaptation, only to the work completed at the date of their notice.

If we give you the option of either making changes to the work or maintenance or terminating the contract, we shall notify you of the changes we are asking you to make. We will provide you with details of how future grant payments would be calculated if you choose to make the changes requested. We will tell you the amount of grant that will be paid to you in respect of works already carried out if you choose to terminate the contract.

If you do not notify us that you either wish to carry out the specified changes or to terminate the contract within 28 days of our notification to you of the information described in the preceding paragraph, we may terminate the contract with immediate effect.

In accordance with this Condition, if either you or us terminate the contract, grant will be paid to you in respect of work carried out before the date of termination but no further payments will be made under this contract.

If the work does not meet the conditions of the contract
25. Withholding grant payment
If you do not carry out the work or maintenance to the standards and timescale set out in Conditions 15 and 19, we may withhold payment of grant. Where we withhold the grant, we will explain our reasons for doing so and give you an opportunity to put it right (where reasonable to do so) before re-submitting the grant claim.

26. Repayment of grant
Where you do not carry out the work or maintenance to the standards and time scale set out in Conditions 15 and 19 and cannot or have not put the situation right, we will require you to repay grant with interest for areas that have not been successful. The interest will be charged from the date the problem was first identified to the date the repayment invoice is raised.

If you are asked to repay grant, we may deduct this amount from any grants you are due now or in the future under this or any other agreement or contract with us.

27. Repayment of grant on termination
If this contract is terminated we will not pay any more grant to you under this contract.

If the contract is terminated because you stop occupying the land or any part of it for any reason, and the work is not successful for what would have been the rest of the contract period, you will be liable to repay any grant you have received together with interest at the rate set from time to time by HM Treasury. The interest will be charged from the date the payable order was issued until the date that we write to seek reclaim unless we agree otherwise.

Liability for grant repayment remains with the grant recipient until the end of the contract period, even if they no longer have an interest in the land.

28. Withholding grant against other RDPE Schemes
If you are required to repay grants under any other grant scheme within the Rural Development Plan for England, part or all of your EWGS grant claim may not be paid to you but may be used to repay what you owe to the Rural Payments Agency.

Similarly, if you have to repay grant under this contract, it may be collected via other grant schemes under the Rural Development Plan for England.

29. Penalties
In addition to the withholding or repayment of grant under conditions 25 to 28, a penalty may be applied in the following circumstances:

* Intentional false declaration during the application or grant claim - will result in exclusion from support under the EAFRD and any grants paid under the scheme will be recovered;
* Over-claiming grants by <3% of the correct amount - the grant payment will be reduced by the difference between the amount claimed and the correct amount;
* Over-claiming grants by 3-20% of the correct amount - the verified amount of grant due will be reduced by twice the difference between the claim and the correct amount;
* Over-claiming grants by >20% of the correct area - no grant payment will be made for grants due that year under this contract.

You can correct an obvious error in the application or claim at any time after submission. The obvious error must be recognised as such by us and will be detected from information given in the application or claim form. Cases that meet these criteria will not result in a reduction of payment. Errors discovered after notification of an inspection or during an inspection will not be treated as obvious errors.

30. Cross Compliance
Breaches of cross-compliance requirements as set out in the Cross Compliance Handbook may result in a reduction of Farm Woodland Payment and / or Woodland Management Grant, even if the breach occurs on another part of the holding. The level of reduction will depend on the severity, extent and permanence of the breach as set out in the cross compliance regulations.

31. Order in which penalties will be applied
Penalties will be applied in the following order, with each successive reduction being based on the amount resulting from the previous reduction:

* Over-claiming land area;
* Non-respect of eligibility criteria;
* Cross compliance.

Grants for Public Access
32. Public Access
If grants are paid for public access you must, from the date of payment of that grant let the general public, free of charge, have access to walk between dawn and dusk over the part of the land the grant is paid for. This access must be permitted for the following periods, dependant on the type and value of grant paid:

(a) Public access Additional Contribution under the Woodland Creation Grant - 30 years;

(b) Woodland Improvement Grant for public access:

* Up to and including £10,000 - 10 years;
* Up to and including £20,000 - 20 years;
* Over £20,000 - 30 years.

Appropriate signage must be provided and/or maintained to ensure that members of the public are aware of this access permission. The public can only be excluded in circumstances agreed in the Plan of Operations.

Details of the public access agreed may be published in written or electronic form by the FC, or anyone we approve to do so.

General Contract Clauses
33. Compliance with Rural Development Regulations
The English Woodland Grant Scheme is partly funded by European Agricultural Fund for Rural Development (EAFRD) as part of the Rural Development Plan 2007-2013 and is therefore subject to the associated EU regulations including Cross-Compliance.

The regulations may change during the life of this contract. If any changes affect you, we will contact you and let you know what you need to do. If changes to the regulations are not acceptable to you, then you have the right to terminate the contract subject to you informing us within 28 days of the notification. If you terminate you must meet all your obligations in respect of grant aid received to date, and any felling licence conditions included within the contract.

34. Disputes
If we disagree with you about whether or not you have kept to the contract, or about the standard or extent of the work done, either party may ask for the matter to be decided by an arbitrator chosen from a panel of arbitrators agreed jointly by you, us and the Institute of Chartered Foresters. You or we must give notice of this action to the other party. If you and us cannot agree to a suitable person within one month after notice, the President of the Institute of Chartered Foresters will appoint the arbitrator. Any other dispute shall be submitted to the courts in accordance with clause 37.

35. Force Majeure

You must tell us within 10 days of an incident if, as a result of: an act of war, terrorism, an epidemic, a disease affecting woodlands or catastrophic weather (which could not reasonably have been expected to take place during the period of the contract), you are unable to complete or maintain the work set out in the contract. We will then discuss and agree with you certain measures such as:

* a longer period in which to complete the work;
* a reinstatement plan where this is possible;
* acceptance by us of a lower standard of work.

We will not seek repayment of grants for work that was carried out satisfactorily but which is subsequently adversely affected by events described above, providing that you have made a reasonable effort to minimise the impact or make good the damage.

Where the events described above mean that we are unable to pay grants, we reserve the right to reschedule the years in which grants can be claimed.

If the event that storms, fire or disease have a significant impact on the woodland(s) covered by the Plan, we reserve the right to review the Plan with you and to modify or remove operations that are no longer appropriate.

36. Disclosure of information and publicity

Defra is the data controller in respect of any personal data that you provide to the Rural Payments Agency. Your personal information will be protected in line with the Data Protection Act 1998. The information will be used mainly to support the application to which it relates. The information may also be used in line with the Data Protection Act, for other purposes as explained in scheme guidance and on the Access to Information pages on the RPA website. If you have any questions please contact the Customer Service Centre.

EC legislation (Council Regulation (EC) No. 1290/2005 and Commission Regulation (EC) No. 259/2008) requires the UK to publish details of recipients of CAP subsidy payments on a single website containing:

* trading title (ie the name in which the claim is made);
* payments for the year broken down into SPS and related payments, and Rural Development Programme payments, local town and the first three or four digits of the recipient's postcode.

You agree that all information about participation in the English Woodland Grant Scheme and this Contract, including information in your application and grant claims and any other relevant information may be made public.

A list of all the beneficiaries receiving EU grant aid will be published annually. The list will include the name and address of the beneficiary, the operations supported and the amount of grant received.

Any promotional information you produce must acknowledge the grant aid received from the Forestry Commission.

Contracts with a total value over £30,000 for all grants except Farm Woodland Payments and Woodland Management Grant must have plaques erected on site. The plaques will acknowledge the grant aid received from the Forestry Commission via English Woodland Grant Scheme and acknowledge that the EU and Defra provide the funding. We will provide the plaques and agree where they must be located.

Contracts with a total value over £250,000 for all grants except Farm Woodland Payments and Woodland Management Grant must have a board of minimum size A2 erected on site. The board must include details of the scheme, acknowledge the grant aid received from the Forestry Commission via English Woodland Grant Scheme and acknowledge that the EU and Defra provide the funding. We will agree the design and location of the board before it is produced and erected.

37. Governing law

This contract will be governed by the Law of England and subject to the jurisdiction of the courts of England.

operty Name Horton Landfill

f 20563

PARTIES TO THE CONTRACT

Applicant(s)

		Roles in this contract
Person	Mr Karl Brydon	
Organisation	Viridor Ltd	Owner
Address	Horton Landfill Site Henfield Road Small Dole West Sussex BN5 9XH	Main Applicant
Phone	01903 879544	
E-mail	kbrydon@viridor.co.uk	
Forestry Commission to send Documents by	Letter	

The agent on this case is permitted to carry out the following actions on this contract :-

Claim Grants	~~No~~ YES X
Apply for and agree amendments to contract	~~No~~ YES Y
Agree changes to payee details	~~No~~ YES X

gned X ..... Date X 28/4/10

6/5/2010

P.C.STEPHENS

SIGNED ON BEHALF OF

THE COMMISSIONERS

Property Name Horton Landfill

Ref 20563

AGENT DETAILS

Managing Agent

Person	Mr John Lockhart
Organisation	Lockhart Garratt Ltd
Address	Melbourne House 7 Corbygate Business Park Weldon, Corby Northamptonshire NN17 5JG
Phone	01536 408840
E-mail	john.lockhart@lockhart-garratt.co.uk
Forestry Commission to send documents by	Letter

Roles in this contract

Agent

Primary Contact

Property Name Horton Landfill

Ref 20563

PAYMENT DETAILS

Payee

Person .....

Organisation .....

Address .....

Phone .....

E-mail .....

Documents by .....

Paying Agency Information

Single Business Identifier .....

These are the payment details for this contract

Name on Account .....

Sort Code .....

Account Number .....

GENERAL DETAILS

See Appendix for exact planting mix of Mixed Native Broadleaves and Woody Shrubs

Property Name **Horton Landfill**

Ref **20563**

GRANT DETAILS

Woodland Creation Grant

Native woodland - rate per hectare for Broadleaves of £1800 and for Conifers is £1200. 80% on completion of planting and 20% five years later

SubCpt	Area (Ha)	P Year	10/11	11/12	12/13	13/14	14/15	15/16	16/17
1a	0.22	2011	£316.80	£0.00	£0.00	£0.00	£0.00	£79.20	£0.00
1b	0.05	2011	£72.00	£0.00	£0.00	£0.00	£0.00	£18.00	£0.00

Conditions will be created to encourage natural regeneration of locally native species.
On the area concerned the species mix consisting of native broadleaves will be encouraged to establish at least 1100 trees per hectare spread across the site within no more then 10 years of payment of the grant.
Gapping up by planting may be required if natural regeneration fails to take place in sufficient quantity by year 10.

Species Mix SubCompartment - 1A, 30% Ash, 20% Field Maple, 15% Mixed Native Broadleaves, 25% Pedunculate Oak, 10% Woody Shrubs

SubCompartment - 1B, 30% Ash, 20% Field Maple, 15% Mixed Native Broadleaves, 25% Pedunculate Oak, 10% Woody Shrubs

Property Name **Horton Landfill**

Ref 20563

Woodland Creation Grant

Native woodland - rate per hectare for Broadleaves of £1800 and for Conifers is £1200. 80% on completion of planting and 20% five years later

SubCpt	Area (Ha)	P Year	10/11	11/12	12/13	13/14	14/15	15/16	16/17
1c	3.84	2010	£5529.60	£0.00	£0.00	£0.00	£0.00	£1382.40	£0.00

The species mix outlined will be planted at varied spacing following the principles for the creation of new native woodland in Forestry Commission Bulletin 112 - Creating New Native Woodlands (Rodwell & Patterson)to achieve at least 1600 established trees per hectare within no more than 5 years of payment of the first instalment of grant. The varied spacing will create a more natural woodland structure to mimic natural colonisation. Species will be matched to the appropriate National Vegetation Classification taking account of local site factors such as soil type, soil moisture level and exposure.

All the trees will be suitably protected against herbivores either individually or collectively and this protection will be maintained throughout the contract period.

Species Mix SubCompartment - 1C, 22% Ash, 12% Common Alder, 14% Field Maple, 7% Hazel, 15% Mixed Native Broadleaves, 22% Pedunculate Oak, 8% Woody Shrubs

Property Name **Horton Landfill**

Ref **20563**

Woodland Creation Grant

Native woodland - rate per hectare for Broadleaves of £1800 and for Conifers is £1200. 80% on completion of planting and 20% five years later

SubCpt	Area (Ha)	P Year	10/11	11/12	12/13	13/14	14/15	15/16	16/17
1d	2.06	2010	£2966.40	£0.00	£0.00	£0.00	£0.00	£741.60	£0.00

The species mix outlined will be planted at varied spacing following the principles for the creation of new native woodland in Forestry Commission Bulletin 112 - Creating New Native Woodlands (Rodwell & Patterson)to achieve at least 1600 established trees per hectare within no more than 5 years of payment of the first instalment of grant. The varied spacing will create a more natural woodland structure to mimic natural colonisation. Species will be matched to the appropriate National Vegetation Classification taking account of local site factors such as soil type, soil moisture level and exposure.

All the trees will be suitably protected against herbivores either individually or collectively and this protection will be maintained throughout the contract period.

Species Mix SubCompartment - 1D, 25% Ash, 5% Common Alder, 15% Field Maple, 7% Hazel, 15% Mixed Native Broadleaves, 25% Pedunculate Oak, 8% Woody Shrubs

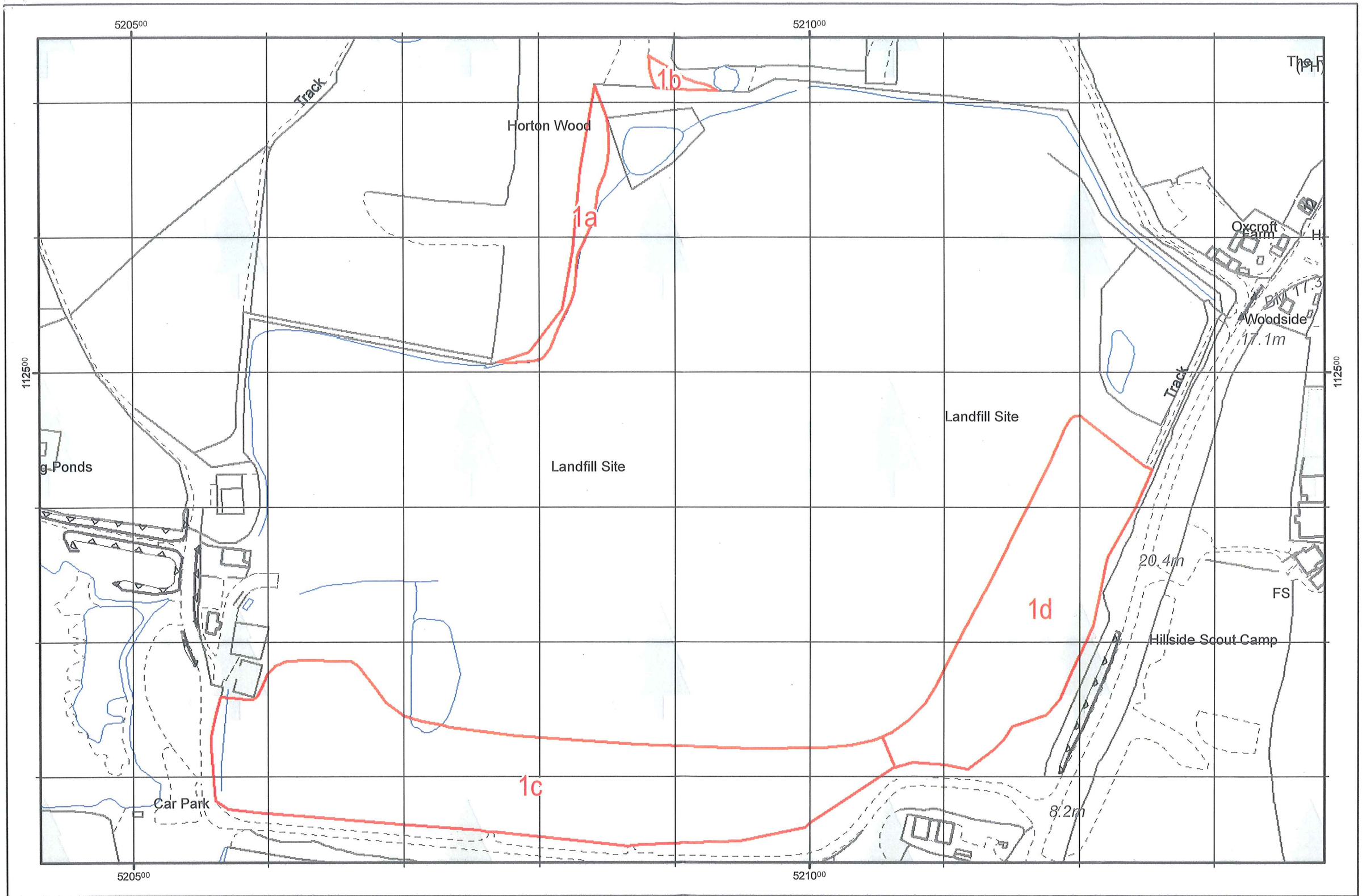
Property Name: Horton Landfill

Ref: 20563

WORK SCHEDULE

Only the first seven years of grants will be shown but totals will be correct.

Fund	Work Item Desc.	SubCpt	Parcel Ref	Payment	10/11	11/12	12/13	13/14	14/15	15/16	Total
Woodland Creation Grant	Native woodland	1a		80/20 P Year= 2011	£316.80	£0.00	£0.00	£0.00	£0.00	£79.20	**396.00**
		1b		80/20 P Year= 2011	£72.00	£0.00	£0.00	£0.00	£0.00	£18.00	**90.00**
		1c		80/20 P Year= 2010	£5529.60	£0.00	£0.00	£0.00	£0.00	£1382.40	**6912.00**
		1d		80/20 P Year= 2010	£2966.40	£0.00	£0.00	£0.00	£0.00	£741.60	**3708.00**
Annual Totals					**8884.80**	**0.00**	**0.00**	**0.00**	**0.00**	**2221.20**	**11106.00**



Case Ref: 20563, Horton Landfill

Map 1/1

TQ209124

0 10 20 40 60 80 Meters

Scale 1:2,500 on A3 paper

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APPENDIX 3: PLANTS & PROTECTION TABLE 2

Ref: 09-2889

VIRIDOR WASTE MANAGEMENTLTD - HORTON LANDFILL			Size (cm)	Minimum Spec	Minimum Root Collar (mm)	Protection Method	FEB-MAR 2010 PLANTING												Nov 2010 -Mar 2011 PLANTING		Total
PLANTS & PROTECTION - TABLE 2							Cpt 1a/1b		Cpt 1c (Southern Section) Feb 2010		Cpt 1e (Roadside Belt) Feb 2010		Cpt 1f (NE Plantation) Feb 2010		Western Hedgerow - Mar 2010		Internal Hederows 1300m, note 1)		Cpt 1d (Eastern Section)		
REF: 09-2889 V4							200		2.14	Ha net	-	-	-	-	100	No.	6500	No.	1.58	Ha net	
							No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
MAJOR TREES	Pedunculate oak	*Quercus robur*	45 - 60	1yr	8.5	A (Spiral) for new woodland planting, B for supplementary planting in Cpts 1e and 1f	80	40%	963	20%	30	30%	50	50%					818	23%	1861
	Ash	*Fraxinus excelsior*	45 - 60	1yr	10		80	40%	963	20%	30	30%	50	50%					853	24%	1896
	Field maple	*Acer campestre*	45 - 60	1yr	9		200	10%	626	13%									462	13%	1088
	Alder	*Alnus glutinosa*	45 - 60	1yr	10				578	12%									178	5%	756
MINOR TREES	Wild cherry	*Prunus avium*	45 - 60	1yr	9				48	1%									36	1%	84
	Small leaved lime	*Tilia cordata*	60 - 80	1yr	8				96	2%									71	2%	167
	Hornbeam	*Carpinus betulina*	45 - 60	1yr	9				144	3%									107	3%	251
	Aspen	*Populus tremula*	90 - 120	1yr	12				96	2%									71	2%	167
	Whitebeam	*Sorbus aria*	45 - 60	1yr	9.5				48	1%									36	1%	84
	Silver birch	*Betula pendula*	60 - 80	1yr	7				48	1%									36	1%	84
	Holly	*Ilex aquifolium*	20 - 30	P9 pot	8	B (Shelter)			48	1%									36	1%	84
	White willow	*Salix alba*	90 - 120	Rooted cuttings	12	B			96	2%									71	2%	167
	Grey Sallow	*Salix cinerea*	90 - 120		12	B			96	2%									71	2%	167
SHRUBS	Hazel	*Corylus avellana*	45 - 60	1yr	10	B for woodland, A for hedgerow	20	10%	337	7%	40	40%			25	25%	325	5%	249	7%	651
	Hawthorn	*Crataegus monogyn*	45 - 60	1yr	7				96	2%					55	55%	5200	80%	71	2%	222
	Guelder rose	*Viburnum opulus*	45 - 60	1yr	9				48	1%					20	20%	325	5%	36	1%	104
	Wild privet	*Ligustrum vulgare*	45 - 60	1yr	9				48	1%							325	5%	36	1%	84
	Wayfaring Tree	*Viburnum lantana*	45 - 60	1yr	8				144	3%									107	3%	251
	Dogwood	*Cornus sanguinea*	45 - 60	1yr	7				48	1%							325	5%	36	1%	84
STANDARDS	Pedunculate oak	*Quercus robur*	2.5 m tall, 1.8cm diameter at 1.5m height (bare root)		30	C (2 Stakes & 2 Belts)			96	2%									71	2%	167
	Ash	*Fraxinus excelsior*			30				96	2%									71	2%	167
	Field maple	*Acer campestre*			30				48	1%									36	1%	84
	TOTAL						**380**	**100%**	**4815**	**100%**	**100**	**100%**	**100**	**100%**	**100**	**100%**	**6500**	**100%**	**3555**	**100%**	**8670**

Note 1

- Western Hedge = 100m
- Internal Hedgerow (dividing field parcels = 955m
- SSSI Hedge = 240m

APPENDIX C

HORTON LANDFILL WOODLAND
DRAFT
Management Plan

Date (dd/mm/yyyy)	31/08/2010	To	01/09/2030
Date of last review [1](2.1.3)	None		
Owner / ~~tenant~~	Viridor		
~~Agent~~ / contact	John Lockhart, Lockhart Garratt Ltd		
Signed declaration of tenure rights and agreement to public availability of the plan[2] (UKWAS 1.1.3/1.1.5/2.1.2)			

1. Background information

1.1 Location

Nearest town, village or feature	Small Dole, Sussex
Grid reference	TQ210124
Total area (ha)	11.48

1.2 Description of the woodland(s) in the landscape

The areas comprised within this application include a series of mature broadleaved woodland blocks which separate the existing landfill site from agricultural fields to the west and the A2037 to the east. These woods form an integral part of the landscape complementing Tottington Wood (a Local Nature Reserve) to the east and also include a small area of wet woodland to the south.

In addition to the areas of mature woodland, the woodland estate encompasses several mature plantations. These features, as well as several newly planted areas have been established in conjunction with the recent quarrying and subsequent land filling operations on the adjacent Horton landfill. The site will be fully restored over the next five years (a copy of the Restoration Masterplan for the site is presented in **Appendix 2**).

In addition to the new plantations there are areas of scrub woodland that have established on non-operational ground in the vicinity of the landfill site. These are dominated by hawthorn scrub.

[1] The plan must be reviewed every five years.

[2] As owner, tenant or manager, you have the right to manage the wood in accordance with this plan. At least a summary of the management plan must be made publicly available on request.

1.3 History of management

Very little work has been undertaken in the mature woodland areas over the past 20-30yrs.

Since 2009 a series of woodland operations have been carried out in the majority of the woodland compartments. Operations undertaken include coppicing, pruning and small amounts of supplementary planting particularly within Cpts 3 and 4e.

The only other work associated with the site has revolved around activities associated with the mineral and waste management operations, principally clearance of access routes, site monitoring etc.

This management plan aims to bring together the current proposals which will be brought forward in association with the restoration and long term aftercare of the site.

2. Woodland information

2.1 Areas and features

2.1.1 Designated areas	In woodland	Adjacent to woodland	Map
Special Areas for Conservation (SACs)	-	-	Constraints Plan
Special Protection Areas (SPAs)	-	-	Constraints Plan
Ramsar Sites (**see note on Guidance)**	-	-	Constraints Plan
National Nature Reserves (NNRs)	-	-	Constraints Plan
Sites of Special Scientific Interest (SSSIs)	-	Y	Constraints Plan
Other designations e.g.: National Parks (NPs), Areas of Outstanding Natural Beauty (AONBs), Local Nature Reserves (LNRs)	-	Y	Constraints Plan

Details

SSSI – Horton Clay Pit (Geological SSSI) / Ref: 1000358

This relatively small site (0.38ha) is located in the extreme north-eastern corner of the study area. The site was designated due to the presence of a significant layer of Lower Gault clay combined with several notable fossil groups.

LNR – Tottington Wood

The wood is located approximately 450m east of the site and comprises semi-natural woodland at the foot of the chalk escarpment.

2.1.2 Rare and important species	In woodland	Adjacent to woodland	Map
Red Data Book or BAP species	-	Y	Constraints Plan
Rare, threatened, EPS or SAP species	-	Y	Constraints Plan

Details

BAP (records of 2km accuracy or smaller covered below) – See Appendix 1e

The local Biodiversity Action Plan lists more than 500 species, which is beyond the scope of this management plan. A sample of results for a range of BAP species is presented below.

Barn owl - This species has been noted in the local landscape in recent years (3km north-east, 2009)

Brown hare – This species has been recorded several times within close proximity to the study area including in fields directly to the north.

Duke of Burgundy - Butterfly – This species has been recorded in mature woodland (Shaves Wood) 5km to the east and like many other invertebrates is generally under recorded. This species is dependent upon Primrose and has declined in recent years due to a reduction in coppicing activity.

Glow worm – This species has been recorded in woodland 1.2km north-east of the study area. Management recommendations for this species include timing works outside of the peak breeding season (June-Mid-August) and grass cutting at a height of approximately 20cm or above.

Song thrush – The search identified numerous records of this species in the local area. Woodland clearance and other management activities likely to affect the nesting habitat of this species (mature trees, woodland edge & scrub) should be timed outside the bird breeding season.

Water Vole – A single record (dated 1969) was identified for this species associated with a watercourse to the north (Woods Mill). As the existing waterbodies on site are isolated and show poor connectivity to suitable water vole habitat to the north, it is not considered likely that this species is present. As part of the ongoing management onsite staff & contractors will be asked to remain vigilant and report any signs of this species during the course of the proposed works.

EPS (records of 2km accuracy or smaller covered below) – See Appendix 1e

No sand lizard, smooth snake, dormouse records within 2km.

Great crested newts - GCN have been recorded locally but the distribution maps show these to be in association with Hoe Wood to the north east and Bramber to the south-west. Nonetheless, FC guidance on felling and thinning within 100m of the pond within Cpt 2b will be followed.

Bats – Several different bat species have been recorded within 1-2km. It is assumed however that bats could be present in mature trees on site (i.e. Horton Wood) and FC guidance on thinning and felling will be followed.

Otters – Otter have been recorded in the local landscape. As the closest watercourse likely to suitable for otter is located more than 250m to the north of the woodland encompassed under this plan the risk of operations conflicting with this EPS are considered to be low.

2.1.3 Habitats	In woodland	Adjacent to woodland	Map
Ancient semi-natural woodland (ASNW)	Y	Y	Constraints Plan
Other semi-natural woodland	N	Y	Constraints Plan
Plantations on ancient woodland sites (PAWS)	N	N	
Semi-natural features in PAWS	N	N	
Woodland margins and hedges	Y	N	Constraints Plan
Veteran and other notable trees	N	N	
Breeding sites	N	N	
Habitats of notable species or subject to HAPs	N	N	
Unimproved grassland	N	N	
Rides and open ground	Y	Y	Constraints Plan
Valuable wildlife communities	N	N	
Feeding areas	N	N	
Lowland heath	N	N	
Peatlands	N	N	
Others	N	N	

Details

ANSW: Horton Wood (south eastern boundary of the wood is within ownership of Viridor) – Mixed broadleaved (NVC W8). Longlands Wood – Approx. 500m east of the site. Broadleaved woodland.

Other semi-natural woodland: Tottington Wood LNR – 450m east of the site.

Woodland margins and hedges: Several of the compartments are mature native hedgerow.

2.1.4 Water	In woodland	Adjacent to woodland	Map
Watercourses	N	N	Constraints Plan
Lakes	N	N	Constraints Plan
Ponds	N	Y	Constraints Plan
Wetland habitats	N	Y	Constraints Plan

Details

Ponds:

A pond is located in Cpt 2b. With other waterbodies located in the centre of the works area to the north, east & south of the woodland.

Wetland Habitats:

A small area of dense goat and grey willow scrub is located adjacent to the western boundary of the site (Cpt 2b – Wet Woodland). This habitat is generally uniform in structure and contains an area of standing water in the form of eutrophic pond.

2.1.5 Landscape	In woodland	Adjacent to woodland	Map
Landscape designated areas	N	N	
Landscape features	N	N	
Rock exposures	N	N	
Historic landscapes	N	N	
Areas of the woodland prominent from roads	Y		Constraints Plan
Areas of the woodland prominent from settlements	Y		Constraints Plan

Details

Areas of the woodland prominent from roads:

Cpts 4a, 4b, 4c and 4d – are clearly visible from A2037

Areas of the woodland prominent from settlements:

Cpts 3, 4a & 1d– Once mature glimpsed views of this feature will be apparent from Oxcroft Farm, and the southern reaches of Small Dole.

2.1.6 Cultural features	In woodland	Adjacent to woodland	Map
Public rights of way	N	Y	Constraints Plan
Prominent viewing points	N	Y	Constraints Plan
Permissive footpaths	N	N	
Areas managed with traditional management systems	N	N	

Details

PRoW – A public footpath intersects with the north-western corner of Horton Wood (north of Cpt 2a).

Prominent viewing points – Edburton Hill (154m AOD) located at the edge of Fulking escarpment approximately 2.4km south-east of the site.

2.1.7 Archaeological features	In woodland	Adjacent to woodland	Map

Scheduled monument	N	N	
Historical features	N	Y	Constraints Plan

Details

There are no scheduled monuments or historical features (besides Horton Pit (Geological SSSI) – discussed in section 2.1.1 within or adjacent to the woodland).

2.2 Woodland resource characteristics

The woods can be divided into the following six types (as shown on the Crop Type Map Ref: M10-0945). See the Compartment Schedule at Appendix 2 for a fuller description of each woodland area:

1. SCRUB WOODLAND CPTS 2C, 4B, 5 (Total 1.87 ha)

These woodlands comprise mature hawthorn scrub and are largely centred on the fishing pond to the south west, and the eastern boundary of Horton Wood to the north. In both locations the scrub has formed a dense, low closed canopy. The density of the overlying canopy is restricting the ground layer and is limiting regeneration of shrubs and trees in these areas.

2. MATURE WOODLAND CPTS 2A, 4A, 4D (Total 1ha)

These compartments comprise a mixture of ancient woodland (Horton Wood) and several belts of mature trees close to the site entrance. Horton Wood is populated by widely spaced mature oak with hazel coppice and maturing ash beneath. The other stands form screening belts against existing access roads and contain an even mixture of mature oak and ash underlain by dense a layer of thorn scrub.

3. SEMI-MATURE BROADLEAF WOODLAND CPTS 4C, 4E (Total 1.15 ha)

These stands act as screening belts and are located close to the site entrance. Willow are the dominant species within these stands, with goat, grey and crack willow particularly prominent. Many of the more mature specimens have been pollarded in recent times (especially within 4e), with all the Cpts undergoing enrichment planting with oak and ash in 2009.

4. YOUNG BROADLEAVED PLANTATION CPT 3 (Total 0.86 ha)

This block is located in the north-east corner of the site and has been planted with a mixture of broadleaved trees many of which have established and are growing well (poplar reaching approximately 7m in height). Recent works have focused on increasing the proportion of oak within this compartment.

5. WET WOODLAND CPT 2B (Total 0.17 ha)

This compartment comprises the southern reaches of Horton Wood and is a by product of an alteration in the existing water table over the last 20 yrs. This area is characterised by an area of standing water surrounded by willow scrub. The water body also contains several valuable standing dead oaks, with remnant areas of ancient woodland including several notable mature ash located to the east and north.

6. NEW WOODLAND CREATION CPTS 1A & B, 1C, 1D (Total 6.43 ha)

The majority of Cpt 1c has already been planted (as of August 2010) with a mixture of broadleaves and is showing reasonable levels of establishment (75% yr 1). Of the other areas, Cpt 1A & B will be established through natural regeneration following scrub

clearance with Cpt 1d to be planted in winter 2010-2011.

2.3 Site description

Access (see M09-2938)
Cpts 1-3 are currently accessible using existing access routes around the perimeter of the land fill site. Cpts 4 & 5 are accessible from the site access road. Cpts 4a-4c are the most difficult to access as the A2037 opposite is a relatively fast road and the main access point is located opposite the northern boundary of Cpt 4a.

Windspeed (http://www.berr.gov.uk/windspeed-database)
Average wind speed at 10m agl (above ground level) is 4.5m/s, this increases to 5.3 m/s at 25m agl. The newly planted areas of woodland are generally in good condition considering the level of exposure.

Annual Rainfall (Met Office Statistics – 1960-1990)
Average rainfall is approximately 720mm per year.

Soil Types (www.landis.org.uk/soilscapes)
Generally the underlying soil type is highly variable as the balance of the newly planted woodland has been established on recently restored ground largely comprising a mixture of reclaimed soils. The mature woodland (Horton Wood) is underlain by slowly permeable, slightly acid but base-rich loamy and clayey soils.

Topography
All of the Cpts are relatively low lying (peak AOD of approximately 20m). The cpts along the eastern boundary have an easterly aspect, with those to the south facing in the same direction. The newly planted cpts to the south and east are established on a slope but the slope is not sufficiently steep to preclude machinery access.

Bedrock (British Geological Map 1:625000)
As described above the balance of the newly planted areas have been established on top of restored ground, with the remainder underlain by Gault Formation – Mudstone. Generally poorly draining.

2.4 Significant hazards, constraints and threats

Sporting Rights
As part of an operational landfill site none of the woodlands are shot.

Wildlife Conservation
Badgers are known to be present within Cpt 4c and it is possible that they may use the other stands of mature woodland listed under this plan. Guidance as detailed in Forestry Practice Note 9, 'Forestry Operations & Badgers', should be followed during works close to badger setts and in areas of high activity.

The existing stands of mature woodland support trees & habitats attractive to bats. Mature trees should be checked prior to felling following guidance detailed in 'Woodland Management for Bats' (Forestry Commission, 2005).

The site also has the potential to provide foraging and nesting opportunities for a range of woodland & open ground bird species. The timings of the works proposed in the management plan will be sensitive to breeding bird species and will follow best practice, e.g. 'Forests and Birds' (Forestry Commission 1997).

NOTE: Amendments to the Habitat Regulations (as of April 2010 – The Conservation of

Habitats and Species Regulations 2010) came into force on 21 August 2007 and with specific reference to forestry and agricultural operations, it is now an offence to:

- Deliberately capture, kill or injure a European Protected Species (EPS) (e.g. hazel dormouse, great crested newts, sand lizard, smooth snake, otter and all 17 species of bat)
- Deliberately pick, cut or destroy any EPS plants
- Deliberately take or destroy the eggs of those EPS
- Deliberately disturb EPS, therefore affecting their ability to survey, breed, rear or nurture young (which could in turn affect the local distribution or abundance of that species
- Damage or destroy the breeding site or resting place of an EPS

In response to this charge, the Forestry Commission has produced Interim Guidance on how to conduct forestry operations in the presence or possible presence of EPS. In all cases, Forestry Commission guidance will be followed for forestry operations covered under this plan. This guidance includes risk assessment, operational tolerances and assessment for licences, which is required are awarded by Natural England and issued via the Forestry Commission.

Public Access
There is currently no public access as the site is still an active landfill.

There are several monitoring route paths that cross the woodlands on the property. These are regularly accessed by site staff and contractors monitoring landfill gas & water quality in association with the historic landfill. Although these accesses are not open to the public they are regularly used and will need to be maintained going forward.

Future opportunities for public access will be explored following completion of operational activity on the site.

Wildlife Management
Deer are not prevalent in the area with the low density of woodland in the surrounding landscape. However, the position will be kept under review.

Rabbits are prevalent on site and have lead to some reduction in sown grass cover in Cpt 1c. Planting and coppicing works will consider this species with areas fenced or protected to ensure that they are able to develop satisfactory. An active programme of control is currently being considered, although the use of firearms is restricted by the existing gas infrastructure present across the site.

Grey squirrels also pose a threat to the developing broadleaf crops due to bark stripping. A programme of active squirrel control will be undertaken if required.

Woodland soils
In order to protect woodland soils, forestry operations will be conducted in accordance with industry best practice as set out in the Forestry Commission's Forests and soil conservation guidelines (1998).

3. Long term vision, management objectives and strategy

3.1 Long term vision

The long-term vision for the woodlands is to create attractive, diverse mixed broadleaf woodland which is in keeping with the local landscape and forms an effective screen for the site as part of its long term restoration and aftercare.

The woodland will be managed to create a varied age class and structure, produce a sustainable timber yield, and at the same time developed into a valuable habitat for wildlife.

3.2 Management objectives

No.	Objective
1	To enhance the local landscape setting by complementing existing woodland features and through the establishment of an effective screen around the landfill site
2	To enhance the woods' biodiversity value as evidenced through the continued presence of declining woodland birds, species rich ponds & enhanced ground flora
3	To maintain and enhance the structural value of the woodland through sound siviculture
4	To manage the woods on a sustainable basis through the production of quality timber & firewood

3.3 Strategy

The strategy for management of the woodland will involve additional planting coupled with the re-introduction of effective woodland management.

Additional planting of a mixture of native broadleaved species is considered necessary to effectively screen the site as part of its ongoing restoration and to restore and enhance linkages and corridors between existing woodland blocks.

The reintroduction of active silvicultural practices as best suits each type of woodland and their specific location, will ensure that a diverse woodland structure is maintained and the management objectives, including landscape security and enhancement are secured.

All operations will be undertaken in accordance with Forestry Commission published guidance and industry best practice.

3.4 Woodfuel initiative

Would you be interested in receiving information on funding opportunities for the purchase of harvesting machinery or wood fuel boilers?

Yes / ~~No~~ (delete as appropriate)

4. Management prescriptions / operations

4.1 Silvicultural systems

4.1.1 Harvesting

Harvesting within the woodlands will generally be restricted to thinning within Cpt 2a. Harvesting will focus on the selection of the best tree stems to favour the development of the best oak and ash maidens.

Harvested material will be marketed as timber or firewood in to local markets. Trees will be harvested by either motor manual or mechanised means, as best suits the operation at

the time of its execution.

4.1.2 Phased felling and restructuring of plantations

No phased plantation felling is required under this plan.

However, it is proposed that several areas of dense scrub will be restructured through coppicing. Areas to be coppiced include historic coppice in Cpt 2a (30%), willow in Cpts 3, 4c, 4e & 5 to favour the development of oak and ask (Cpt 3) and provide gaps in the canopy (Cpt 4c, 4e, 5) to facilitate the planting and establishment of a mixture of higher canopy broadleaved species.

This programme for Cpts 3-5 would then be monitored and reviewed so as to gradually re-structure these areas fully over a 20 year cycle.

Other areas (Cpts 4a, 4b, 4d) will be continue to be managed as scrub with occasional freestanding trees to ensure that an unbroken visual screen is maintained in these areas.

4.1.3 Establishment, restocking and regeneration

Establishment and restocking areas have been identified in association with existing areas of natural regeneration and scattered scrub located within Cpts 1a &b and 2c. Works in these areas will include the removal of existing scrub, ground preparation & guarding of naturally regenerating seedlings, with supplementary planted completed as required.

All restocking will be guarded or in the larger areas fenced from the prevailing vermin threats and will be maintained through beat up and weeding until fully established.

Where appropriate tree species will be formatively and high pruned to promote good form.

4.2 New planting

New planting on the site is detailed in the approved EWGS contract Ref 20563. The first phase of planting within Cpt 1c was completed in March 2010. It is proposed that the balance of the planting within Cpt 1c and 1d and the supplementary planting in Cpt 1a and 1b will be completed in the 2010/11 planting season.

Planting will aim to reflect NVC W8 ‘Ash-Field Maple-Dogs Mercury’ woodland as this is in keeping with the site and the locality. The planting will be protected from rabbit and hare browsing by 75cm tree shelters (as deer are uncommon on the site).

4.3 Other operations

1) Within the existing plantations and as part of ongoing management of newly planted areas a programme of formative pruning will be undertaken to improve form and encourage vertical growth.

2) Contricting guards will be removed from trees within established plantations. Trees will be monitored for rabbit damage and protection measures put in place as required.

3) Trees adjacent to the public highway and internal access routes will be regularly inspected for health & safety purposes and remedial work undertaken as required.

4) A series of small scale operations are proposed for Cpt 2b (these are detailed in full in **Appendix 2**), these are primarily aimed at enhancing the ecological value of these features. Planned operations include coppicing, and scrub removal, small scale supplementary planting of specialist species (e.g. native black poplar) and the erection of a series of wildlife habitat boxes for bats, small birds and owls.

5) Several of the screening belts along the site access road will also require siding up using a tractor mounted hedge cutter to maintain access for works vehicles.

4.4 Protection and maintenance

4.4.1 Pest and disease management

Rabbit Control
The rabbit population around the perimeter of the site is relatively high and some damage has been noted in relation to the recently sown areas of grassland. To offset this threat trees guards have, and will be continued to be used with the option for active control (trapping/ferreting) discussed with onsite staff.

Squirrel Control and Management
As planted and naturally regenerating broadleaves develop over the plan period, they will become more vulnerable to bark stripping by grey squirrels. The opportunity for active squirrel control will be discussed with onsite staff and where feasible best practice as discussed in FC Practice Note 'Controlling Grey Squirrel Damage to Woodlands' applied.

4.4.2 Fire plan

Due to the low levels of public access near to the woodland, the risk of fire is considered low.

All site staff & neighbours will be asked to dial 999 and ask for the fire brigade in the event of a woodland fire. Fire control and management will be included in all forestry contract documents.

Whilst the site is operational and during the gas monitoring phase of the aftercare the site is subject to a detailed fire plan.

4.4.3 Waste disposal and pollution

Forestry operations will be carried out in accordance with current best practice to minimise the creation of waste. Any such waste generated will be disposed of in a way so as to minimise any negative environmental impact, for example:

- Chemical containers will be returned to suppliers where possible, or disposed of as per label recommendations
- Plant bags will be re-used where possible
- Tree shelters will be re-used where possible.

Following formal closure of the adjacent operational landfill site; no waste will be tipped within the site, but disposed of at a suitable facility if it cannot be re-used.

4.4.4 Protection from unauthorised activities

There is evidence of fly tipping along the southern fringe of Cpt 4d. To resolve this issue ownership will be confirmed, waste material removed and the boundary against the

property opposite will be reinforced.

The landfill and corresponding fishing pond to the south-west are kept secure with boundary fencing. All sites will be monitored and unauthorised access controlled as required.

4.4.5 Protection of other identified services and values (4.1.1)
Given the woodlands very close proximity to a landfill site there a number of constraints that exist, the most notable of which is the extensive network of pipes which cross the balance of the landfill sites surface. Buried at varying depths and subject to regular monitoring and maintenance the location and sensitivity of these features will need to be fully considered as part of ongoing forestry management operations. In addition the woodland will need to be managed in accordance with agreed requirements of West Sussex County Council Mineral Planning Authority as part of the long term restoration and management of the historic landfill.

4.5 Game management

The site is not used for sport and therefore no specific provisions are required.

4.6 Protecting and enhancing landscape, biodiversity and special features

4.6.1 Management of designated areas
None of the woodlands are established on designated land or features. One feature which will need to be considered is Horton Clay Pit (Geological SSSI) located immediately to the north of Cpt 1d. Works in close proximity to this feature will need to keep ground disturbance to a minimum, and be completed with care owing to the steepness of the existing slope.

4.6.2 Measures to enhance biodiversity and other special features (2.1.1k and 6.1.1)
Management of woodland corridors Woodland corridor management under two and three zone cutting regime should be introduced where suitable and in line with monitoring access requirements **Deadwood** Although management is intended to increase the harvesting potential of the woods, existing deadwood should be left *in-situ* and additional deadwood should be developed where appropriate in all areas of established woodland. This deadwood should include standing (limbs and whole trees), possible created through ring barking as well as fallen and stacked deadwood, ideally in damp and shady areas and in contact with existing deadwood features. **Wet Woodland – Cpt 2b** See 4.3.4 – for work details. These works will enhance the existing standing water habitat, provide new ecological niches in the form of broadleaved species in close proximity to ponds & create roosting and nesting opportunities for a range of bat and bird species which are currently in decline.

4.6.3 Special measures for ASNW and SNW
No specific measures over and above those detailed at Section 5 above.

4.6.4 Special measures for PAWS
None present

4.6.5 Measures to mitigate impacts on landscape and neighbouring land (3.1.2)
Given the site's location and close proximity to the existing settlement at Small Dole all work will be carefully structured so as to minimise the landscape impact. Felling and scrub clearance will be undertaken in accordance with principles of Forestry Commission Lowland Landscape Design Guidelines. One of the key objectives (3.2.1) is to enhance and build on the existing screening function of the woodland to enhance the local landscape.

4.7 Management of social and cultural values

4.7.1 Archaeology and sites of cultural interest
Horton Clay Pit SSSI – Works in close proximity to this feature will be managed so as not to conflict with the long term condition of this feature. Woodland management will be conducted in accordance with best practice (FC Forests and Archaeology Guidelines).

4.7.2 Public access and impacts on local people
Currently no PROWs cross the site for health and safety reasons. A series of monitoring routes are distributed around the landfill site as these affect the woodland. These will be kept clear of obstruction from fallen trees, branches and other debris. Woodland contractors will be made aware of access and monitoring routes prior to commencing works and will erect appropriate signage and barriers. As detailed above a tree safety survey will be undertaken as required to maintain reasonable public safety, with remedial tree surgery carried out as appropriate.

5. Consultation

Organisation/individual	Date received	Comment	Response/action
Forestry Commission	Management of consent and grant documents including FC Grant Contract Ref: 20563		Continued communications and information will be passed to the Forestry Commission with regard to all ongoing work. Grant

		opportunities will be explored.
WSCC	Various discussions and consents in relation to the operation of the quarry & landfill site. This management plan will be incorporated within the Restoration, Aftercare & Management Plan for the site.	Continued communications and information passed to WSCC with regard to all ongoing work.
Natural England	Ongoing discussions with Environmental Planning Advisor regarding the restoration and after care management plan (RAMP) for the site.	Continued communication and information passed to NE as part of ongoing work.

6. Monitoring plan summary

Objective number, issue or UKWAS Requirement	Indicator	Method of assessment	Monitoring period	Responsibility	How will information be used?
Landscape	Prominence in the landscape	Fixed point photography from prominent viewpoint	Every 10 years	Owner/Agent	Feedback into felling, thinning & planning
Structural diversity	Structure & regeneration following harvesting, enhancement and restructuring	Fixed point photography Walkover survey	Every 5yrs Annual	Owner/Agent	Feedback into planning of harvesting and need for additional regeneration and planting
Damage through pests	Rabbit & possible squirrel	Survey damage noting areas most affected. Record number culled	Annually in spring or summer	Owner/Agent	Feedback into planning for control levels.
To enhance the woods' biodiversity value as evidenced through the continued presence of declining woodland birds, species rich ponds & enhanced ground flora	Diversification of existing pond/presence of BAP species	Fixed point photography Bat and bird box checks	Every 5 yrs Every 5 yrs	Owner/Agent	Feedback into measures to enhance biodiversity (e.g. additional scrub removal/targeted planting

(Amendments to guidance – replicable to allow comparison over time 2.3.2b and required scope of monitoring activities 2.3.2c plus annual monitoring related to effectiveness of measures for special areas 2.3.5)

7. Work programmes

7.1 Outline long-term work programme (2015 to 2029)

Compartment or area	Activity	Year		
		6-10	11-15	16-20
2a	Thinning		✓	✓
4c, 3, 5, 2a, 2b	Coppicing	✓	✓	✓
4e, 4c	Replanting/restocking	✓	✓	✓
5	Replanting/restocking	✓	✓	

7.2 Short-term work programme (2010 to 2014)

Compartment or area	Activity	Year				
		1	2	3	4	5
1c, 1d	Planting	✓	✓			
2a	Thinning			✓		
3	Coppicing			✓		
4c	Coppicing					✓
1a, 1b, 2c	Establishment/Natural Regen & Supp. planting	✓				
2b	Coppicing	✓				
5	Coppicing				✓	
2b	Replanting/restocking	✓				
5	Replanting/restocking				✓	

8. Costings (2.2.1)

Over the long term the aim will be that the woods should be managed on a self-financing basis through the sustained and sustainable production of timber and firewood, although ongoing delivery of association public benefits will always be subject to public funding.

Over the short to medium term, there is planting and woodland restricting work to be completed to put the existing woods in to a good condition in accordance with the management objectives. During this period, funding shortfalls will be addressed through a combination of grant assistance for public benefit and owner investment.

9. Maps

List all maps here and append to plan.

Map No./Title	Description
M10-0883	Compartment & Crop Map
M10-1083	Constraints Plan
HL04/SLR	Restoration Masterplan

10. Thinning, felling and restocking proposals

Applicants seeking funding through the wood fuel initiative for harvesting machinery or wood fuel boilers must indicate the total volume that is to be thinned and felled during the period of this plan, **by completing Table A.**

This section **should not be completed** for any other applications.

All applicants **must** complete **Table B**. where harvesting work is to be undertaken.

Table A.

Species	Total estimated volume to be harvested during plan period (m^3)
Broadleaves	N/A
Conifers	N/A

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Table B.

This section must be completed if you wish to gain felling licence approval from the Forestry Commission. The work detailed below should match the proposals set out in the plan.

For details on how to complete the table, please refer to EWGS 4 Woodland Regeneration Grant Guide (PDF 84kb).

Cpt/sub cpt	Area	Area to be worked	Type of felling	% of felled area comprising		Type of licence	Change in woodland type	Preferred claim year	Restock species %	Establishment by natural regeneration %	Standard proposals	Notes
				BL	CON							
1a	0.33	50%	No consent required – Natural Regen						200no MB & WSH	80		Covered under existing EWGS Contract: 20563. Areas to be amended
1b	0.18	50%	No consent required – Natural Regen									
1c	3.85	100%	No consent required - Planting									
1d	2.07	100%	No consent required - Planting									
2a	0.40	50%	T	100		U						Horton Wood ASNW
		50%	T	100		U						2nd 5yr period
		30%	FC	100		U						Hazel coppice (Yr 2)
		30%	FC	100		U						Hazel coppice – 2nd 5yr
2b	0.17	20%	CF/RP	100		C		2011/2012	10 no. Native Black POP 5 no. Osier 5 no. Alder 5 no. White Willow	-		Clearance of 350m^2 of scrub & replacement with native broadleaves
		30%	FC	100		C		2011/2012				First 1/3rd of willow to coppice
		30%	FC	100		C		2017/2018				Second 1/3rd of willow to coppice
2c	0.34	100%	No consent required – Natural Regen									
3	0.86	30%	FC	100		C		2011/2012				Willow coppice for nurse
		30%	FC	100		C		2014/2015				2nd 3yr cycle
		30%	FC	100		C		2017/2018				3rd 3yr cycle
4a	0.22	N/A	No consent required – Minimal intervention									Screening belt – flail only
4b	0.10	N/A	No consent required – Minimal intervention									Screening belt – flail only
4c	0.57	10%	FC/RP	100		C		2011/2012	20% Oak 20% Ash 20% Hornbeam 20% Hazel			Willow coppice (5-10m sections)

DRAFT

		10%	FC/RP	100		C		2021/2012	20% Oak 20% Ash 20% Hornbeam 20% Hazel			Willow coppice (5-10m sections)
4d	0.38	N/A	No consent required – Minimal Intervention									Screening belt – flail only
4e	0.58	10%	FC/RP	100		C		2011/2012	25% Oak 25% Ash 25% Hornbeam 25% Hazel			Minor restructuring
	0.58	10%	FC/RP	100		C		2021/2022	25% Oak 25% Ash 25% Hornbeam 25% Hazel			Minor restructuring
5	1.43	20%	FC/RP	100		C		2013/2014	20% Oak 20% Ash 20% Hornbeam 20% Hazel 10% Birch 10% Willow 10% Alder			Reduction in scrub in favour of mature trees

APPENDIX 1

Documentation to Support Section 2 'Woodland Information (Designations etc)'

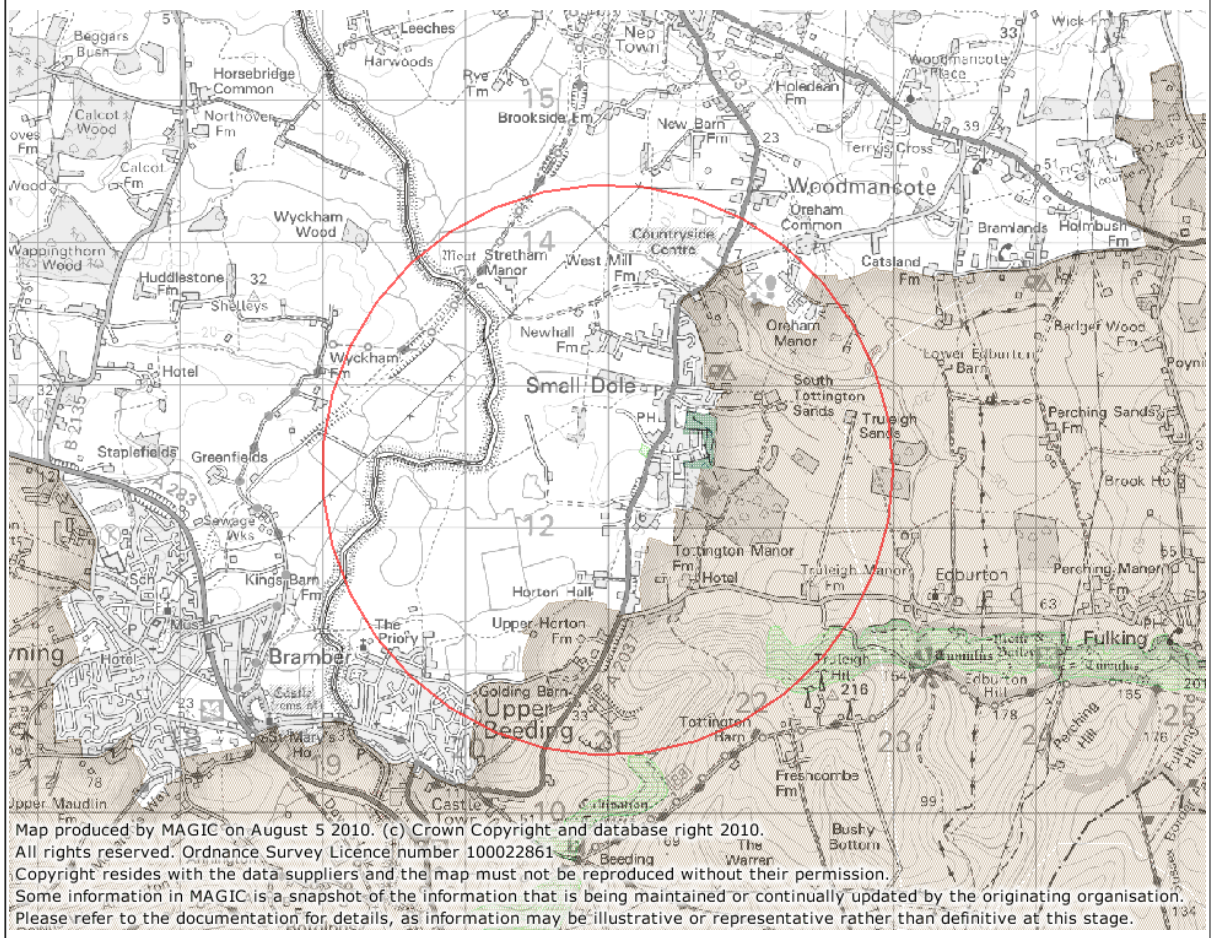
a) 2.1.1 Designated Areas and Site Check Report 'Designated Areas'
Local Nature Reserve and SSSI Information

b) 2.1.3 Habitats and Site Check Report

c) 2.1.4 to 2.1.6 Water & Cultural Features

d) 2.1.7 Landscape & Archaeological Features including Site Check Report

e) European Protected Species & Biodiversity Action Plan Species Search Records



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Please refer to the documentation for details, as information may be illustrative or representative rather than definitive at this stage.

MAGIC



2.1.1 Designated Areas - Viridor Horton, Sussex

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Special Protection Areas (England)
- Special Areas of Conservation (England)
- Sites of Special Scientific Interest (England)
- Areas of Outstanding Natural Beauty (England)
- National Parks (England)

Site Check Report

Report generated on August 5 2010.

You clicked on the point:
Grid Ref: TQ210124
Full Grid Ref: 521000 , 112400

The following features have been found within 2,000 metres of your search point:

Counties, Metropolitan Districts and Unitary Authorities (GB)

Geographic Level	Name
COUNTY	WEST SUSSEX

NUTS1 - Government Office Regions (GB)

Hotlink	Name	Reference
http://www.statistics.gov.uk/geography/nuts_se.asp	SOUTH EAST	UKJ

Local Nature Reserves (England)

Name	Reference
TOTTINGTON WOOD	1009207

National Nature Reserves (England)

There are no features within your search area.

Ramsar Sites (England)

There are no features within your search area.

Special Protection Areas (England)

There are no features within your search area.

Special Areas of Conservation (England)

There are no features within your search area.

Sites of Special Scientific Interest (England)

Citation	Name	Reference
1000590	HORTON CLAY PIT	1000358
1000374	BEEDING HILL TO NEWTIMBER HILL	1000231

Areas of Outstanding Natural Beauty (England)

There are no features within your search area.

National Parks (England)

Reference	Date of Confirmation Order	Hotlink	Name
10	Sun, 1 Dec 2002 00:00:00 UTC	HTTP://WWW.NATURALENGLAND.ORG.UK/OURWORK/CONSERVATION/DESIGNATEDAREAS/NEW/SOUTHDOWNS/DEFAULT.ASPX	SOUTH DOWNS

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COUNTY: WEST SUSSEX SITE NAME: HORTON CLAY PIT

DISTRICT: HORSHAM

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: HORSHAM DISTRICT COUNCIL

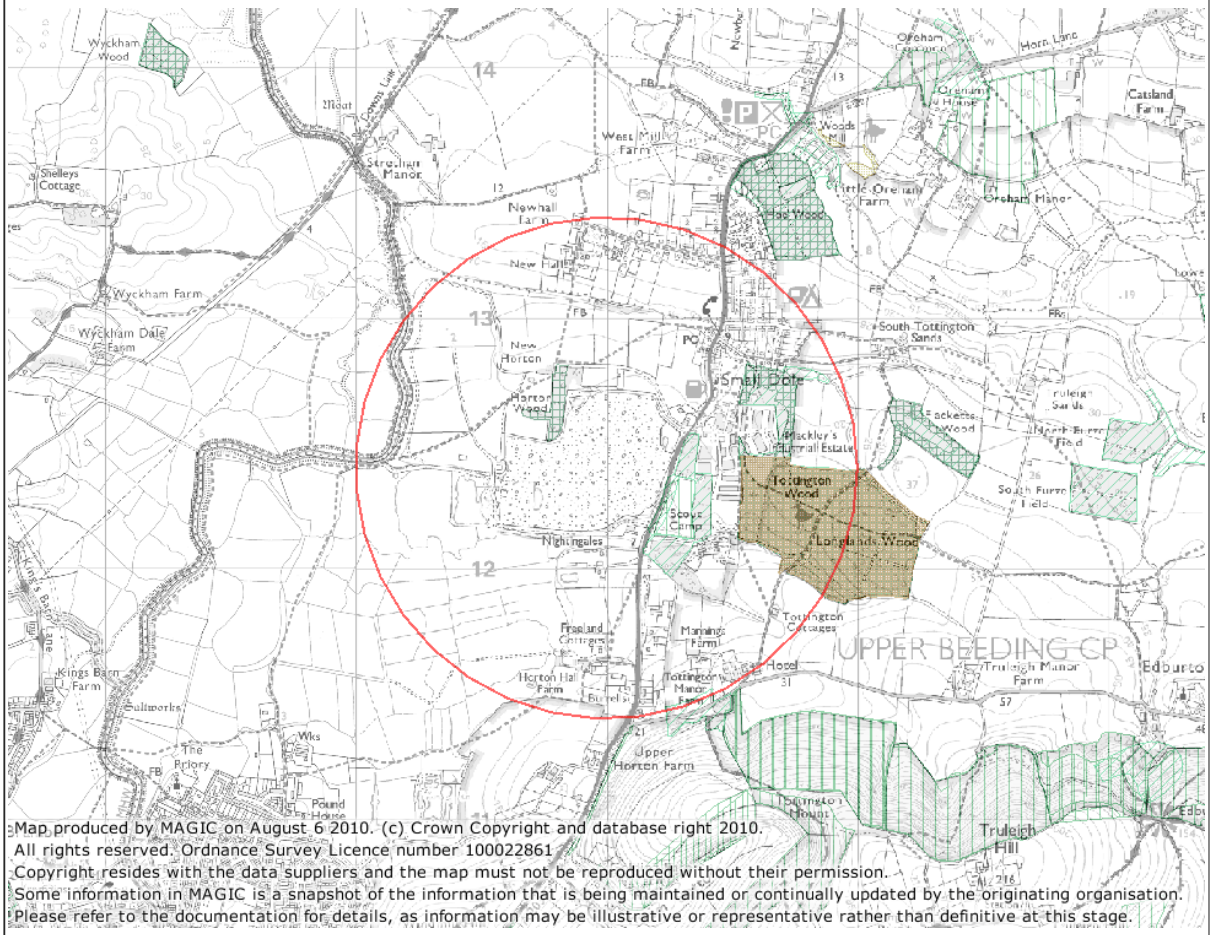
National Grid Reference: TQ 209124 Area: 0.38 (ha.) 0.94 (ac.)

Ordnance Survey Sheet 1:50,000: 198 1:10,000: TQ 21 SW

Date Notified (Under 1981 Act): 1991

Other Information:
This is a new site and is to be included in 'A Geological Conservation Review'.

Reasons for Notification:
This pit shows the thickest and the stratigraphically most important Lower Gault sequence in the country and is a vital collecting ground for the *eodentatus* to *daviesi* Subzone faunas. The quarry is also the type locality of the Horton Wood Clay of *regularis* Subzone age which is a local and unusual development of the upper Folkestone Beds. The lithological and stratigraphic evidence from Horton is important in showing the sedimentary evidence of a major structural basin which controlled Lower and Middle Albion sedimentation in the Western Weald.


Wyckham Wood
Shelleys Cottage
Wyckham Farm
Wyckham Dale Farm
Kings Barn Farm
Saltworks
The Priory
Pound House
Wks
Stroglian Manor
Newhall Farm
New Hall
New Horton
Horton Wood
Horton Hall Farm
Upper Horton Farm
Small Dole
Nightingales
Stove Camp
Frasland Cottages
Manning's Farm
Tottington Manor Farm
Tottington Cottages
Tottington Wood
Longlands Wood
Blackbury Camp
Tottington Mount
Hoad Wood
Woods Mill
West Mill Farm
Little Orestalls Farm
Orestalls
Orsham Manor
Horn Lane
Catsland Farm
South Tottington Sands
Blackbury Hill Estate
Blackness Wood
South Furze Field
Truleigh Manor Farm
UPPER BEEDING CP
Truleigh Hill
Edburton
Hoad
Hoad
Hoad

Site Check Report

Report generated on August 6 2010.

You clicked on the point:
Grid Ref: TQ210124
Full Grid Ref: 521000 , 112400

The following features have been found within 1,000 metres of your search point:

Counties, Metropolitan Districts and Unitary Authorities (GB)

Geographic Level	Name
COUNTY	WEST SUSSEX

NUTS1 - Government Office Regions (GB)

Hotlink	Name	Reference
http://www.statistics.gov.uk/geography/nuts_se.asp	SOUTH EAST	UKJ

Woodland Trust Sites (England)

There are no features within your search area.

Woodland Grant Schemes (England)

Contract End Date	Forestry Commission Conservancy	Name
Tue, 20 Jan 2009 00:00:00 UTC	SOUTH EAST ENGLAND	TOTTINGTON WOOD

Ancient Woodland (England)

Grid Reference	Wood Name	Theme ID	Theme Name
tq208126	HORTON WOOD	1118011	ANCIENT & SEMI-NATURAL WOODLAND
tq217122	LONGLANDS WOOD	1121669	ANCIENT & SEMI-NATURAL WOODLAND
tq219121	LONGLANDS WOOD	1121669	ANCIENT & SEMI-NATURAL WOODLAND

National Inventory of Woodland and Trees (England)

Feature type	Reference date	Update type
BROADLEAVED	310395	
BROADLEAVED	310395	
BROADLEAVED	310395	
BROADLEAVED	310395	
BROADLEAVED	310395	

Upland Experiment Areas (England)

There are no features within your search area.

Undetermined Grassland (England)

Habitat definition version	Polygon id	Reliability of interpretation	Feature note	Priority qualifier	Determination comment	Priority habitat
	1125	Medium (4)		Priority grassland may be present but data is insufficient to determine presenc	Most ESD surveys are older than 10 years and Phase 2	Undetermined grassland

Purple Moor Grass and Rush Pasture (England)

There are no features within your search area.

Lowland Heathland (England)

There are no features within your search area.

Lowland Dry Acid Grassland (England)
There are no features within your search area.

Lowland Calcareous Grassland (England)
There are no features within your search area.

Lowland Meadows (England)
There are no features within your search area.

Upland Heathland (England)
There are no features within your search area.

Reedbeds (England)
There are no features within your search area.

Upland Hay Meadows (England)
There are no features within your search area.

Upland Calcareous Grassland (England)
There are no features within your search area.

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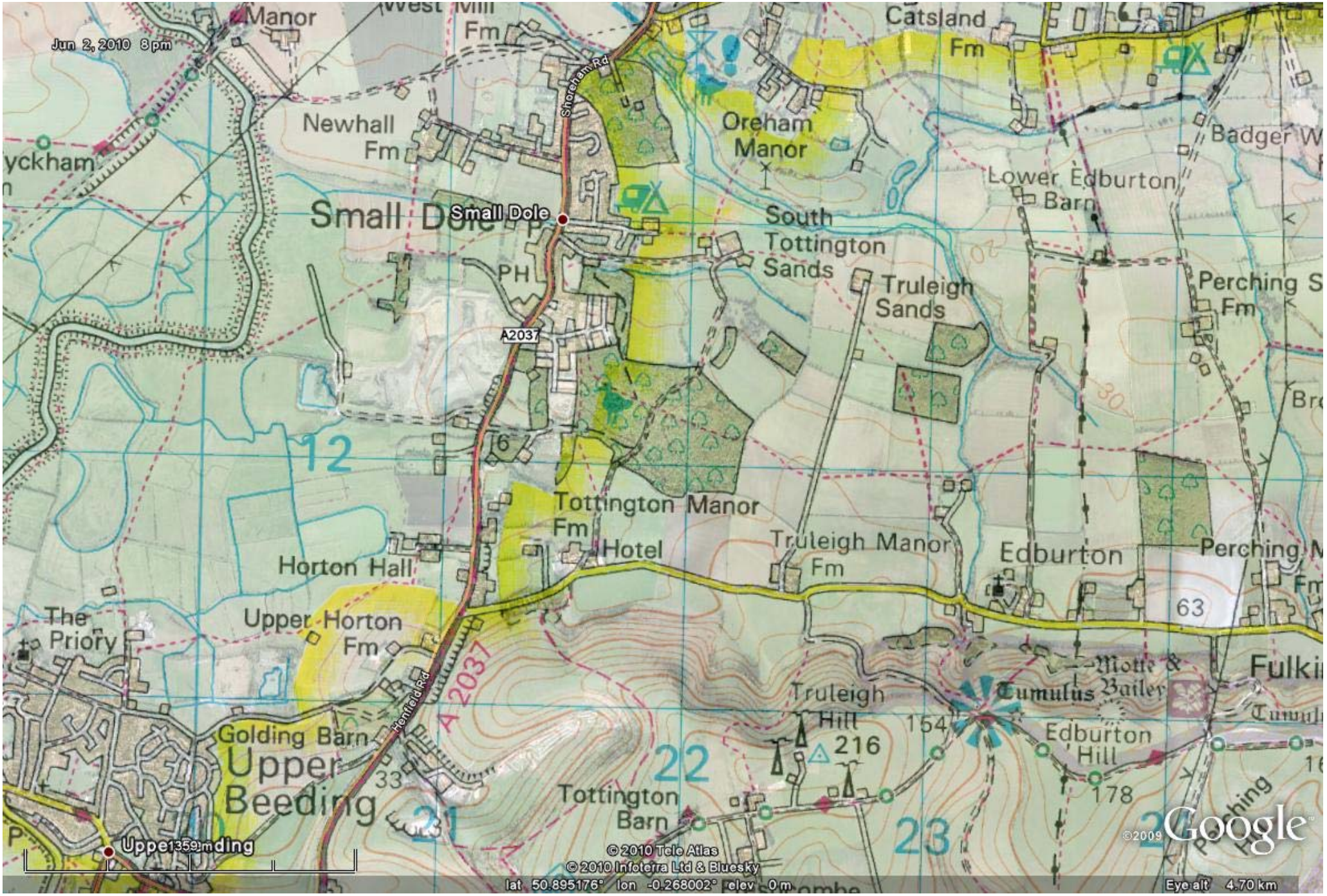
Jun 2, 2010 8pm
Manor
West Mill Fm
Catsland Fm
Shoreham Rd
Newhall Fm
Oreham Manor
Badger W
Lower Edburton Barn
Small Dole
Small Dole
South Tottington Sands
PH
Truleigh Sands
Perching S Fm
A2037
12
6
30
Tottington Manor Fm
Hotel
Truleigh Manor Fm
Edburton
Perching
Horton Hall
The Priory
Upper Horton Fm
63
Motte & Bailey Tumulus
Fulki
Truleigh Hill 216
154
Edburton Hill 178
Golding Barn
Upper Beeding
Henfield Rd
A 2037
33
22
21
23
Tottington Barn
Upper Beeding
© 2010 Tele Atlas
© 2010 Infoterra Ltd & Bluesky
lat 50.895176° lon -0.268002° elev 0 m
©2009 Google
Eye alt 4.70 km

Site Check Report

Report generated on August 6 2010.

You clicked on the point:
Grid Ref: TQ210124
Full Grid Ref: 521000 , 112400

The following features have been found within 1,000 metres of your search point:

Counties, Metropolitan Districts and Unitary Authorities (GB)

There are no features within your search area.

NUTS1 - Government Office Regions (GB)

Hotlink	Name	Reference
http://www.statistics.gov.uk/geography/nuts_se.asp	SOUTH EAST	UKJ

Registered Parks and Gardens (England)

There are no features within your search area.

Scheduled Monuments (England)

There are no features within your search area.

Registered Battlefields (England)

There are no features within your search area.

Protected Wreck Sites (England)

There are no features within your search area.

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APPENDIX 2

Forestry Management Documents

Woodland Compartment & Crop: Ref – M10-0945 Rev 1

Constraints Plan: Ref – M10-1083

Compartment Schedule: Ref - 10-0954 Rev 2

Wet Woodland (Cpt 2b) – File note & Supporting Work Programme Ref – 10-0883 Rev 3

Restoration Masterplan: Ref – HL04-0036.00368.181.HL04 F1 Rest Masterplan

Subcpt	Area (ha)
1a	0.33
1b	0.18
1c	3.85
1d	2.07
2a	0.40
2b	0.17
2c	0.34
3	0.86
4a	0.22
4b	0.10
4c	0.57
4d	0.38
4e	0.58
5a	0.32
5b	1.11

520200 520400 520600 520800 521000 521200

113000 112800 112600 112400 112200 112000

N

2 / 0.91

3 / 0.86

1 / 6.43

5 / 1.43

4 / 1.85

NGR: TQ207 125

0 100 200 400 Meters

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8 MELBOURNE HOUSE: CORBYGATE BUSINESS PARK:
WELDON: CORBY: NORTHANTS: NN17 5JG
TEL: 01536 408840 FAX: 01536 408860

TITLE:
CROP TYPE & COMPARTMENT MAP

PROJECT/SITE:
HORTON LANDFILL

CLIENT:
VIRIDOR

MAP REF: 3204/D11/M10-0945 REVISION: 1

SCALE: 1:4,000 @ A3

DATE: 12/05/10

Produced by: SM Approved by: RWT

Revisions:
Amended 23/08/10 Area 1 and Ownership Boundary

Legend

- Viridor controlled boundary
- Compartment boundary
- Subcompartment boundary
- New woodland creation
- Young broadleaved Plantation
- Mature broadleaf woodland
- Wet woodland
- Scrub woodland
- Semi-mature broadleaved woodland (Screening Plantation)
- Woodland corridors

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TEL: 01536 408840 FAX: 01536 408860

TITLE:
CONSTRAINTS AND OPPORTUNITIES

PROJECT/SITE:
HORTON LANDFILL

CLIENT:
VIRIDOR

MAP REF: 3204/D11/M10-1083 REVISION: 1

SCALE: 1:4,000 @ A3

DATE: 24/08/10

Produced by: SM Approved by: JW

Revisions:
Amended 18/05/11

Legend

- Area under Viridor's control
- New woodland creation
- Young broadleaved Plantation
- Mature broadleaf woodland
- Wet woodland
- Scrub woodland
- Semi-mature broadleaved woodland (Screening Plantation)
- Ancient semi-natural woodland
- Site of special scientific interest
- Waterbodies
- Watercourses
- Woodland corridors
- Public right of way
- Public highway

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VIRIDOR - HORTON LANDFILL
WOODLAND MANAGEMENT PLAN - 2010-2030
CPT SCHEDULE & 10 YEAR WORK PROPOSALS
REF: 10-0954 120810 3204 D11 R

Cpt	Area	P-year	Size / Length	Species & %	Woodland Type	Current Condition & Management	10 Year Management Proposals
1a & b	Horton Wood Extension	-	0.31	5% AH, 80% bramble / tall ruderal	New Woodland Creation (by Natural Regeneration)	2 linear belts of ground on E margin of Horton Wood between chainlink fence and a ditch. Identified in EWGS WCG contract ref 2xxxx for stocking by natural regeneration.	Yr 1 clearance of bramble from 50% of area and surface scarification by compact tractor and power harrow. Installation of genguards every 20m along length on cleared areas approx. 8 total. Guard existing ash seedlings.
1c	Southern Restoration Planting	Jan-10	3.85	23% OK, 22% AH, 13% FM, 12% CAR, 15% MB, 15% WSH	New Woodland Creation (by Planting)	Planted at 2m centres in 75cm guards with 10% standard trees. Showing 75% survival in year 1.	1 ha left to plant on N margin once restoration soils are placed in summer 2011. Establishment to full stocking by year 5. Form pruning of timber broadleaves in yrs 3, 5, 7, 9. Annual ride mow.
1d	Southern Restoration Planting	Jan-11	2.07	25% OK, 26% AH, 14% FM, 5% CAR, 15% MB, 15% WSH	New Woodland Creation (by Planting)	Bare ground, currently being placed with final restoration soils for planting in winter 2010-11.	Establishment to full stocking by year 5. Form pruning of timber broadleaves in yrs 3, 5, 7, 9. Annual ride mow.
2a	Horton Wood	ASNW	0.4	15% OK, 25% AH, 20% FM, 30% HAZ, 10% HTH	Mature Broadleaf Woodland	Widely spaced mature OK with semi-mature / mature overgrown AH coppice over FM and HAZ coppice over bluebell, bramble and bracken. 20-25 years since last coppice intervention and canopy thin. Occupies narrows strip on E side of wood. Shallow ditch feature may form N reach of ownership boundary.	Manage as high forest in continuity with the adjacent ownership. Thin in next 2 years and again in 7-10 years to develop best oak and ash maidens. Retain occassional overgrown coppice stools but re-coppice 30% of understorey at each thinning intervention. Establish ownership boundary and demarcate with posts.
2b	Horton Wood	1985	0.17	70% GREY SALLOW, 30% GOAT WILLOW	Wet Woodland	Seasonally and permanently inundated areas have developed over the past 20 years as a result of changes in adjacent land contour giving rise to dense willow scrub 6-8m high. A central pond is present in which 4 mature dead oaks remain. Some semi-mature AH on E boundary higher ground.	Yr 1 clearance of 0.035 ha of scrub and replanting with Native Black Poplar, Osier, Common Alder and White Willow to develop a higher canopy. Yr 1 coppice 1/3 of remaining willow scrub and allow to regenerate. Cut 1/3 of area on 5 yr rotation. Install 2 bird, 2 bat and 1 owl box for habitat gain.
2c	Horton Wood	1985	0.34	30% HTH, 20% HAZ, 50% OG	Scrub	Shrubby margins of main Ancient Woodland Canopy with a central area of open ground. Heaviloy dominated by bramble and tall ruderal habitat.	Strim 8-10 patches of 3-5m in size , scarify with chain harrow and install genguards to encourage regeneration of longer term species to develop a higher canopy in the longer term.

Cpt	Area	P-year	Size / Length	Species & %	Woodland Type	Current Condition & Management	10 Year Management Proposals
3	NE Corner Woodland	1990	0.86	20% POP, 10% OK, 20% AH, 20% WILL, 30% WSH	Young Broadleaved Plantation	Established at 2m centres at 80% stocking with OK at 3m height and POP to 7m. Recent work undertaken to coppice larger willows, prune oak, brash poplar and supplementary plant with 50 new OK.	Maintain new planting for 5 yrs to full establishment to increase percentage of longer term species. 3 yearly coppice of willow adjacent to OK and AH to act a s nurse species. Annual mow of central 3m ride and coppice shrubs either side every 3 years for edge habitat. 2 yearly form prune of OK and AH.
4a	Henfield Road Woodland	1900	0.22	15% OK, 40% HTH, 40 % BLTH, 10% G.WIL	Mature Broadleaf Woodland	Approx. 8 No. mature oak within a roadside belt of overgrown thorn. Minor cutting back of stems undertaken in 2009 by road edge but otherwise no H&S concerns. OK are smaller grown trees, 1 or 2 from coppice origin. Established hedge planted on W edg with 5 native species.	Minimal intervention, ideal composition of a roadside belt. Manage edges by flail siding every 1-2 years. Consider installation of habitat (e.g. bat) boxes in mature oaks.
4b	-	1900	0.1	30% HTH, 30%, BLTH, 20% PRIV, 20% FM	Scrub	Continuation of hedge planting in Cpt 4a in combination with narrow belt of successional scrub.	Minimal intervention, mowing of adjacent woodland plantation at Cpt 1d will prevent encroachment of scrub onto new wooland planting.
4c	Site Entrace Woodland	1970	0.57	10% AH, 50% G.WILL, 35% SBIR, 5% OK & AH planting	Semi-mature Broadleaf Woodland	Narrow belt of former screening plantation with goat willow dominating but providing a valuable natural screen to the site frontage. Some willow coppice undertaken in 2009 and supplementary planting of 50 longer term broadleaves. No H&S issues. At E end some semi-mature ash and badger set in close proximity. Ownership boundary not fully defined.	Coppice of further small (5-10m length) sections of willow along belt comprising 10% at 5-10 year intervals to allow steady development to longer term species by planting of oak, ash, hornbeam, hazel.
4d	Site Entrace Woodland	1900	0.38	30% AH, 25% OK, 15% HTH, 20% FM, 10% ELD	Mature Broadleaf Woodland	Semi-mature AH and occassional mature oak over other species listed over dense ground ivy. A remnant of the original mature woodland prior to mineral extraction with some large oaks. Some negative interaction from neighbouring land by spill over of waste materials on the boundary.	Minimal intervention. Mature trees providing good roosting / nesting habitat and good mix of native sub-storey species with regenertation of ash evident. Confirm ownership boundary and remove waste materials. Consider installtion of habitat boxes. Monitor for H&S roadside.
4e	Site Entrace Woodland	1975	0.58	40% C.WILL, 30% G.WILL, 30% BLTH	Semi-mature Broadleaf Woodland	Belt of semi-mature crack willow to N of road have been pollarded to 6-8m height in 2009 and good regrowth evident, re-envigorating these trees. Similar to S of road with a planted thorn hedge in the E half which is well established. 50 OK and AH planted in 2009 in existing gaps.	Maintenance of young planting to full establishment within 5 years. 10% clearance of thrn to N of road and replant with mix as detailed for Cpt 4c at 5-10 yr intervals.

Cpt	Area	P-year	Size / Length	Species & %	Woodland Type	Current Condition & Management	10 Year Management Proposals
5	Pondside Scrub	1900	1.43	80% HTH, 10% BLTH, 10% G.WILL	Scrub	Dense low canopy thorn scrub surrounding ponds which are used by a local fishing club. Occassional breaks in the thorn created for fishing stations.	Encourage development towards more diverse canopy. Yr 1 clear 20% of scrub in visually non-sensitive location and replant with full range of locally native broadleaves including wet woodland species (birch, willow, alder). Clear and replant further 20% in year 8. Woods currently provide good separation of the industrial activity from the ponds as a recreational facility and habitat.

FILE NOTE

Client: Viridor - Horton
Date: 05/08/2010

Reference: 10-0883 3204 R3
Consultant: JW/RWT/JAL

Horton Landfill Site, Small Dole
Inspection of southern reaches of Horton Wood

Background:
This inspection was undertaken in response to a meeting conducted in May 2008 with the local county ecologist. The 2008 site visit examined the southern reaches of Horton Wood (TQ 207 125) and in particular a section which had recently formed a substantial pond (35x50m).

Current Condition:
The recent inspection was conducted on the 28th of July, 2010 in good conditions. The wood appears to be in a similar condition to that observed in May 2008. The woodland varies in composition and structure from north to south, with those areas to the south appearing the wettest.

Uniform Willow Scrub – Area A (Plan M1)
Evidence of a permanently high water table in this area. The flora is dominated by goat & grey willow *Salix caprea, S.cinerea* of between 3-4m in height. Aerial rooting was evident on several specimens (approx. 15cm above existing standing water level). The density of the canopy in this area has suppressed vegetation beneath with any interest restricted to the periphery, comprising hard and soft rush *Juncus inflexus, J.effusus*, occasional nettle *Urtica dioica* and common fleabane *Pulicaria dysenterica*).

Standing Water & Scrub – Area B (Plan M1)
The pond itself is currently of moderate ecological value. During the survey the standing water was turbid and coated in a fine film. Floating leaved vegetation was largely absent with a $4m^2$ clump of emergent vegetation in the form of amphibious bistort *Persicaria amphibia* & gypsywort *Lycopus europaeus* to the north-east.

The pond is surrounded by a mosaic of colonising wetland scrub species mixed with remnant sections of ancient woodland. The remnant sections of ancient woodland are confined to the drier ground and are populated by occasional semi-mature oaks surrounded by mature hazel *Corylus avellana* coppice, common hawthorn *Crateagus monogyna* and field maple *Acer campestre*. This area is generally species poor (bareground is dominant) with floral diversity restricted by the overshading vegetation. Ground and aerial deadwood resource was reasonable with some branches & stumps although most were of large diameter.

The waterbody does support two dead oak trees which have lost their bark but are otherwise intact. A large woodpecker hole evident in the one furthest to the north-east (moderate bat potential). A terrestrial search of the area found no evidence of protected species and it is considered that currently the pond is sub-optimal for many species due to a lack of marginal, emergent or submerged vegetation.

***Mature Woodland (Ancient semi-natural) – Area C* (Plan M1)**
The woodland beyond the pond to the north is characterised by abundant ash *Fraxinus excelsior* as over mature coppice, with occasional semi-mature oak *Quercus robur* trees set amongst a dense un-broken understory of hazel coppice stools. Other woody species noted included common and midlands hawthorn *C.laevigata*, field maple (frequent to abundant) and elder *Sambucus nigra* (indicative of a NVC W8 community).

In addition to the dead oak trees in the pond several other dead specimens were noted towards the southern reaches of this habitat. The groundflora beneath the ash rich canopy supported a strong carpet of bluebell *Hyacinthoides non-scripta*, along with several ancient woodland indicators including common twayblade *Listera ovata* and primrose *Primula vulgaris*. Besides bareground and wood meadow grass *Poa nemoralis*, other vegetative species recorded in the habitat included enchanters nightshade *Circaea lutetiana* (Frequent), common nettle (frequent) occasional clumps of sweet violet *Viola odorata* (Occ-Frequent) and red campion *Silene dioica* (Freq).

The survey also located a small concrete walled building, with asbestos roof. The structure is currently surrounded by scrub and no signs of usage by bats or birds was noted.

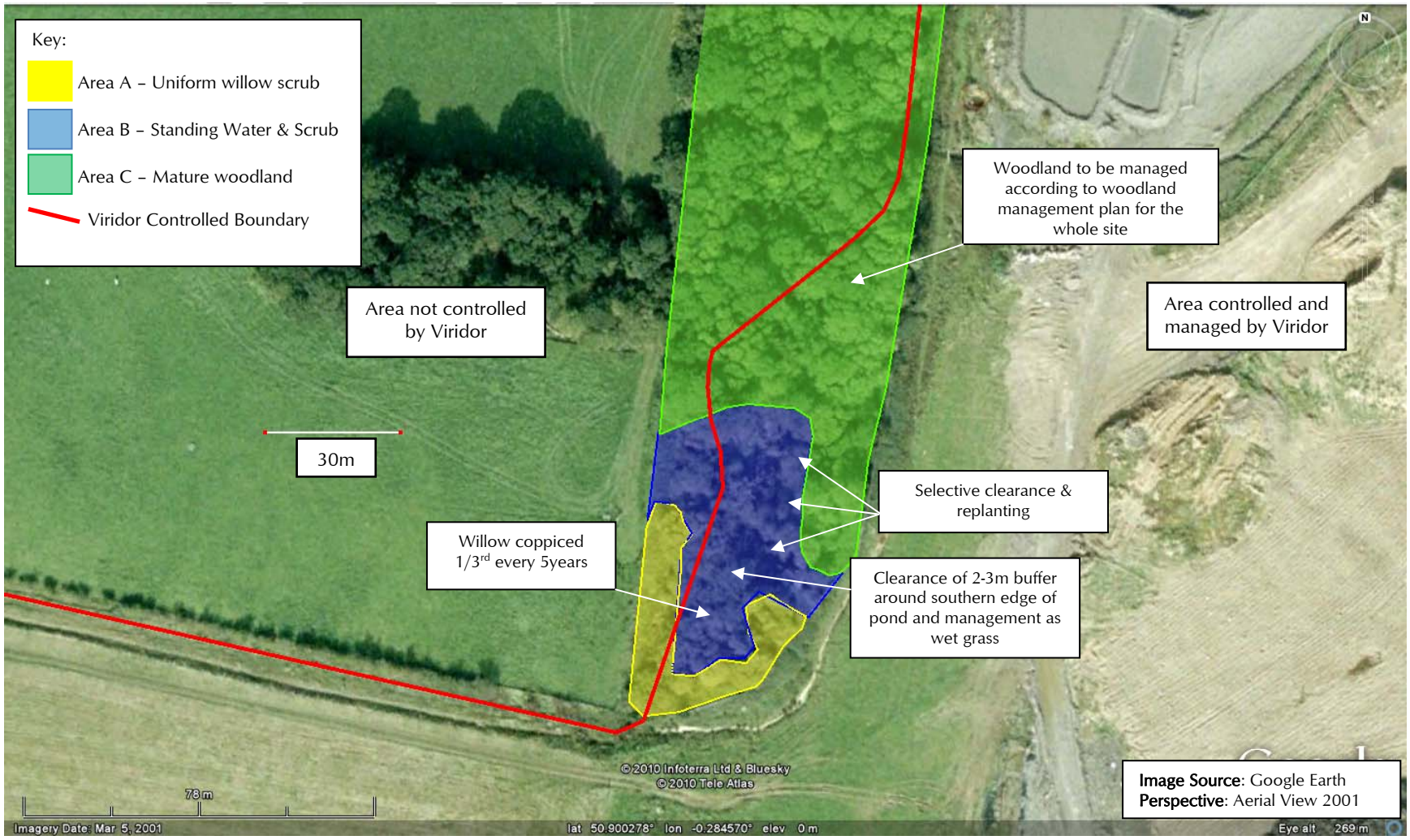
Conclusion

The recent assessment is in agreement with the findings of the survey conducted in May 2008. A new wetland habitat has been created (Local BAP) and is there is an opportunity to increase the existing ecological value of the habitat through targeted management.

Recommendations for Areas A & B

- Proportion of willow and other scrub (Area A & B) to be cleared & diversified by planting higher canopy species:
    - The location and extent of the scrub clearance and subsequent replanting will be agreed on the ground with the contractor. These discussions will need to take into existing elevation, slope and general soil conditions as these areas suffer regular inundation.
    - 60-90cm 2yr forestry transplants with 20l peat free compost, 1m polythene mulch mats & 75cm treeshelters. With replacement of failures to full stocking density in years 1-3.
    - Native stock (stocking number):
        - Black poplar – ssp. *Betulifolia* – (10 - 5 male/5 female)
            - Poplar to be supplied by local supplier (RWT has contact details)
        - White willow *Salix alba* – (5)
        - Osier *Salix viminalis* – (5)
        - Common Alder *Alnus glutinosa* – (5)
- Coppice willow on rotation – RSPB best practice (1/3rd every 5 yrs)
    - Stems to be cut at or as close as possible to ground level, with material stacked in 5-10 deadwood habitat piles on pond surrounds (no stump treatment)
- 3m margin along southern edge of the pond to be cleared of willow and managed as tall grassland habitat cut every 3 years.
- Free standing trees retained (including dead oaks within the body of the pond)
- All standing and fallen deadwood retained on site
- Mature woodland within ownership to be included within Forestry Commission Management Plan for the site.
- Wildlife Boxes – Fixing and positioning of boxes to follow manufacturers guidelines:
    - Bat box installation – 2 x Schwegler 0105 Bird Box (1 on semi-mature ash, 1 x Oak)
    - Bird box installation – 2 x Schwegler 55 Bat Box (2 on free standing oaks)
    - Owl box installation – 1 x Nestbox Company Tawny Owl Box (1 on mature oak)

Plan M10-1416 – Site Inspection of Horton Wood (TQ 207 125)



APPENDIX D

VIRIDOR: HORTON LANDFILL

OUTLINE AFTERCARE PROGRAMME - GRASSLAND

Ref: 10-1082 3204 D11 R

Year	Operation	Timing			
		Q1, 1-3	Q2, 4-6	Q3, 7-9	Q4, 10-12
1	Completion of soil placement			✓	✓
	Soils analysis and testing			✓	
	Liming, fertilising and soil amelioration (including stone picking), if required			✓	
	Agricultural cultivation and seeding with agreed grass mixture			✓	
	Monitor ground and crop conditions			✓	✓
	Monitor slug damage and implement control measures as required			✓	✓
2-5	Monitor ground and crop conditions	✓	✓	✓	✓
	Undertake regrading/reprofiling of severe settlement areas			✓	
	Soil analysis and testing		✓		
	Fertilisation, weed and pest control measures as required		✓	✓	
	Cut grass sward (late hay cut)			✓	
	Undertaken enrichment seeding of margins and buffers with wildflower seed mix			✓	
	Flail mow to maintain maximum sward height into winter of 100mm				✓
	Aftercare report to MPA			✓	
	Site meeting with MPA				✓
6-60	As for 2-5 with the following amendments: • Aftercare report to MPA every 5 years • Review options to reduce nutrient levels (N & P) through reductions in fertiliser application to encourage diversification of existing sward to secure biodiversity gains • Explore opportunities to chain harrow sward to reduce thatch and encourage annual wildflowers • Explore opportunities to carry out low intensity sheep grazing on the sward once established including the provision of stock fencing, water supply and access				

APPENDIX E

VIRIDOR: HORTON LANDFILL

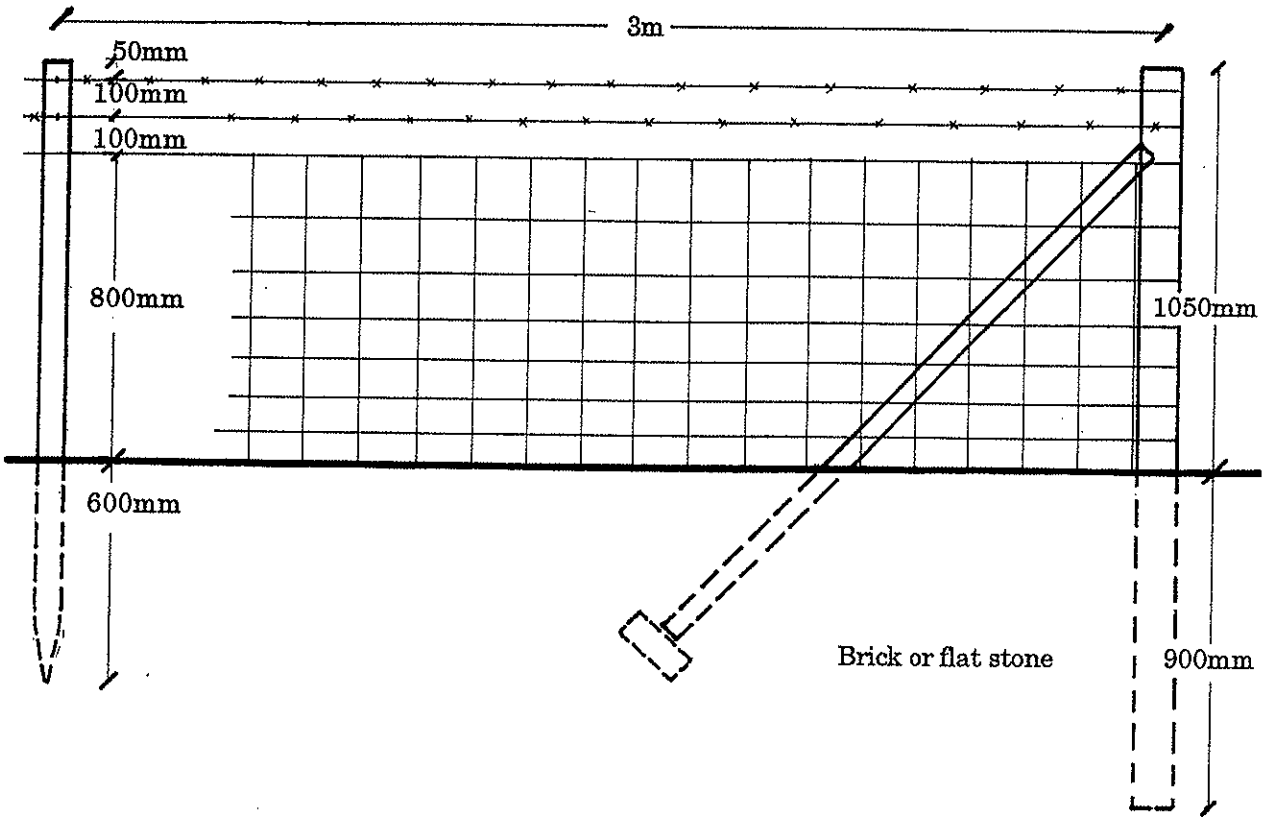
OUTLINE AFTERCARE PROGRAMME - WOODLAND

Ref: 10-1095 3204 D11 R Rev 1

Year	Operation	Timing			
		Q1, 1-3	Q2, 4-6	Q3, 7-9	Q4, 10-12
1 *2010*	Soil placement		✓	✓	✓
	Removal of low lying scrub/scarification/Gen guard installation (Cpts 1a-1b, 2c)			✓	✓
	Supplementary planting (Cpts 1a & b)			✓	✓
	Beat up (Cpt 1c)				✓
	Clearance/replanting & coppicing (Cpt 2b)			✓	✓
	Habitat box installation (Cpt 2b)				✓
	Aftercare report to MPA – ***To be completed annually***			✓	
	Site meeting with MPA – ***To be completed annually***				✓
2 *2011*	Maintenance of new & existing planting (guard removal, beat up, weed control inc. strimming) – ***Informed by annual review***	✓	✓	✓	✓
	Ground preparation/grass seeding/tree planting/herbicide application (Cpt 1d)	✓	✓	✓	✓
	Ground preparation/grass seeding/tree planting /herbicide application (Cpts 1c)		✓	✓	✓
	Aftercare report to MPA – ***To be completed annually***			✓	
	Site meeting with MPA – ***To be completed annually***				✓
3-5 *2012-2014*	Maintenance of new & existing planting (guard removal, beat up, weed control inc. strimming) – ***Informed by annual review***	✓	✓	✓	✓
	Guard installation – Natural Regen– ***To be completed annually***	✓			
	Mow of open ground & grassland corridors– ***To be completed annually***		✓	✓	
	Conservation cut of shrub edge (***Every 3yrs***)/flail cut (***Every 2yrs***)			✓	✓
	Thinning & coppicing – ***Following initial thin & coppice in Year 3 to be completed every 7-10yrs***			✓	
	Formative pruning– ***To be completed every 2 yrs***				✓
	Coppicing– ***To be completed every 3 yrs***			✓	
	Coppice clearance and replanting – ***Following visit in Year 5 to be completed every 5-10yrs***			✓	
	Enrichment seeding of rides and open ground with wildflower seed mix.			✓	
	Health & Safety Inspections– ***To be completed every 2yrs***			✓	
	Aftercare report to MPA – ***To be completed annually***			✓	

	Site meeting with MPA – ***To be completed annually***				✓
6-60 *2015-2070*	As for 3-5 with the following amendments: • Aftercare report to MPA every 5 years • Review options for extension of existing woodland planting, opportunities for public access every 5 years • Mow open ground and rides and remove arisings to assist development of wild flowers.				

APPENDIX F



Timber. Softwood free from worm, beetle, all forms of rot and deadwood with no bark or underind. Preserved after cutting by means of water-borne copper/chrome/arsenic composition to BS 4072. Average net dry salt retention of 5.3 Kg/m^3. Chestnut posts hot dipped in creosote to 300mm above ground level will be accepted as an alternative to pressure treated softwood.

Straining Posts. 1950mm long x 125/150mm top diameter. Placed at each change of direction or marked change of level and at intervals of not more than 40m.

Struts. 1800mm long x 75/100mm top diameter. One end to be set on brick or stone in soil and the other notched into and nailed to straining post with 150mm galvanised nails. One strut to be provided at ends of runs and two struts at all intermediate positions and corners.

Intermediate Posts. 1650mm long x 75/100mm top diameter. To be driven securely into ground at centres not exceeding 3m.

Stock Netting. Galvanised pig netting 800mm high and hinge jointed type C8/80/15 medium, fixed taut to each post with at least 6 No. 40mm galvanised staples, wrapped around each end post and stapled securely.

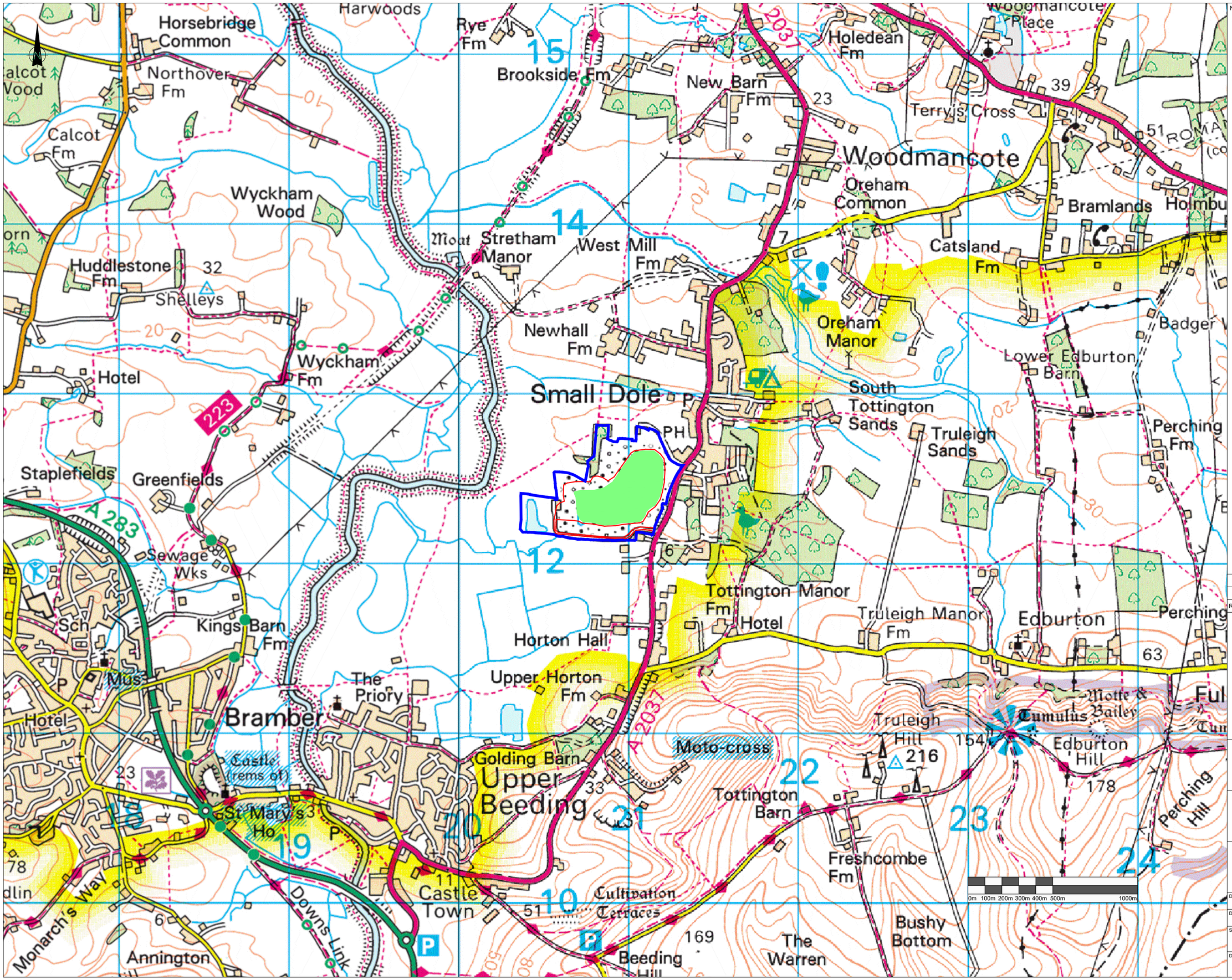
Barbed Wire. Two strands of galvanised double strand two ply four pointed 12.5g mild steel barbed wire to be strained to each straining post and fixed securely. Wires to be fixed to each intermediate post by means of 1 No. 40mm galvanised staple.

NOTE. All wire to be on inside of posts facing field to be fenced unless otherwise stated.

Keith Funnell Associates
Landscape Architecture Landscape Management
18 Broadcloth Cranbrook Kent TN17 3RG
Telephone & Fax (01580) 715291

Title : **STOCKPROOF FENCE (Pig Netting & Barbed Wire)**
Scale : 1:20 Date : 03:12:96
Plan No. FD1 Rev :

Drawing: ECL.9910.D01.001 B – Site Location Plan



Notes

1. Reproduced from the Ordnance Survey Map. With permission of the Crown Copyright Ordnance Survey, License no. AC0000849896.
2. All levels in metres Above Ordnance Datum Newlyn.
3. Do not scale from this drawing.
4. Any anomalies on this drawing should be brought to the attention of Egniol Consulting Ltd.
5. Key.

Site Boundary

Land Ownership Boundary

Potential Energy Development Area

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Rev		By	Chk	App	Date
B	Scale bar added	LE	GR	GR	11.03.24
A	Updated Client Name	LE	GR	GR	15.01.24

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Valencia Energy Limited

Horton Landfill Site
Solar PV

Site Location Plan

Drawn by	Checked by	Approved by
LE	GOJR	GOJR
Date	Date	Date
13.11.2023	13.11.2023	14.11.2023

Status: Draft

Scale @ A1: 1:10,000

Drawing Number: ECL.9910.D01.001

Revision: B

CAD File Ref:P:\9910 Horton LFS - Drafting\CAD & BIM\Drawings\Current Working Drawings\ECL.9910.D01.001.dwg

Drawing: ECL9910.D01.012.A – Permission and Compliance Plan

Notes

1. Survey information provided by Valencia Waste Management Ltd.
2. All levels in metres Above Ordnance Datum Newlyn.
3. Do not scale from this drawing.
4. Any anomalies on this drawing should be brought to the attention of Egniol Consulting Ltd.
5. Key.

- Solar site - DC/24/0374
- Main landfill site - WSCC/088/10/UB
- SSSI area - WSCC/042/19
- Leachate treatment area - WSCC/042/13/UB
- BNG Habitat Area

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Rev	Modification	By	Chk	App	Date
B	BNG Habitat area added	LE	DM	PD	24.02.25
A	Boundaries added	GR	RK	PD	20.02.25

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Valencia Energy Limited

Horton Landfill Site
Solar PV

Permission and Compliance Plan

Drawn by	Checked by	Approved by
GOJR	PD	PD
Date	Date	Date
13.01.2025	13.01.2025	13.01.2025

Status: Final

Scale @ A1: 1:2000

Drawing Number: ECL.9910.D01.012

Revision: B

0m 10m 20m 30m 40m 50m 100m

CAD File Ref:P:\9910 Horton LFS - Drafting\CAD & BIM\Drawings\Current Working Drawings\ECL.9910.D01.012 B.dwg