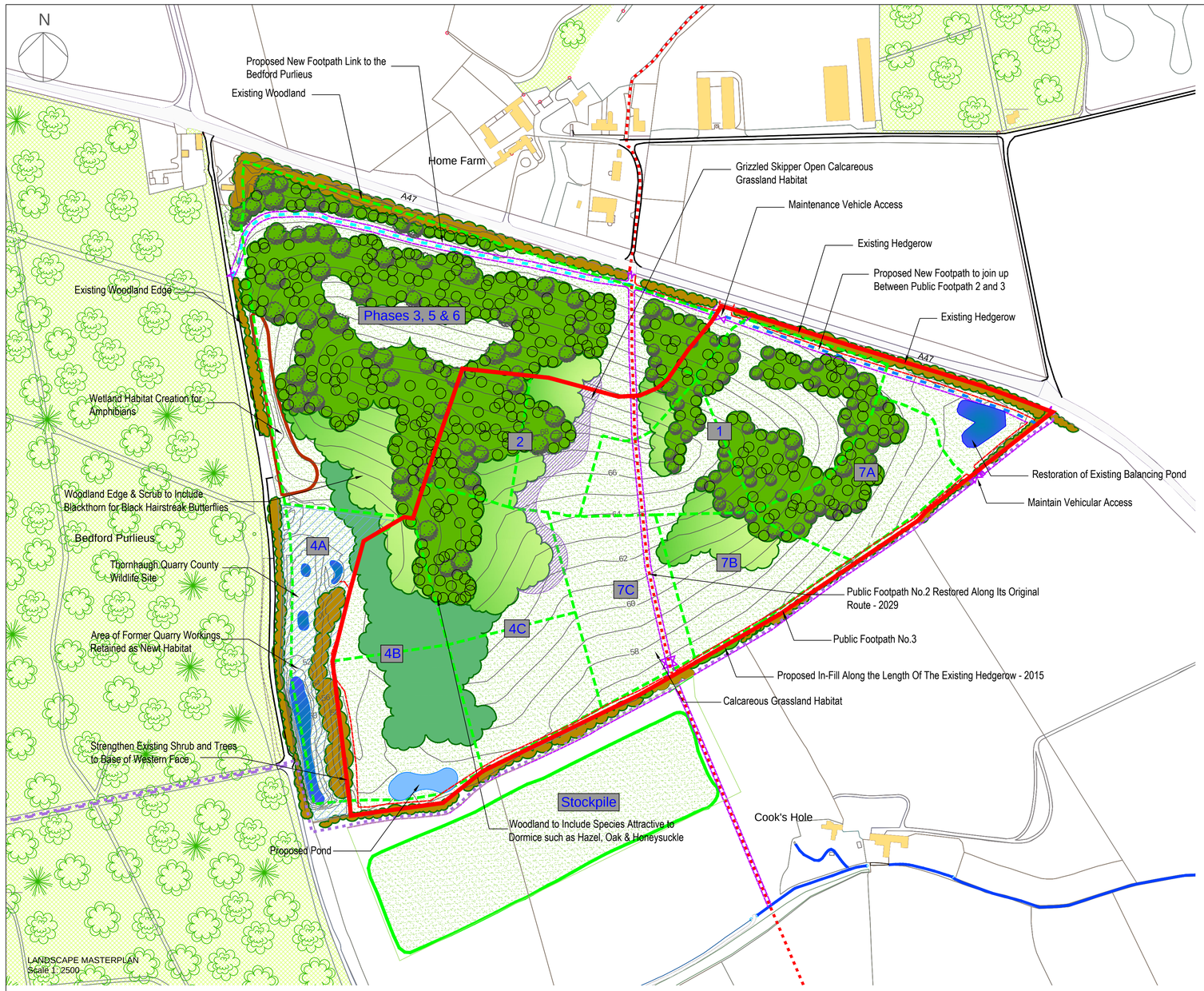
APPENDIX ES1.2

APPROVED RESTORATION SCHEME FOR THORNHAUGH LANDFILL SITE (DRAWING NUMBER TLS6)



Phase					3, 5 & 6	1	2	4B	4C	7A	7B	7C
Species	Common Name	%	Size (cm)	Pot/Bare-Root								
Woodland Planting Mix					48100m²	17408m²	12956m²	766m²	6289m²	7097m²	908m²	0m²
Acer campestre	field maple	10	40-60	B-R	534	193	144	9	70	79	10	
Betula pendula	birch	10	40-60	1L	534	193	144	9	70	79	10	
Coryus avellana	hazel	10	40-60	B-R	534	193	144	9	70	79	10	
Malus sylvestris	crab apple	5	60-80	B-R	267	97	72	4	35	39	5	
Quercus robur	English oak	40	60-80	B-R	2138	774	576	34	280	315	40	
Rhamnus cathartica	purging buckthorn	5	40-60	B-R	267	97	72	4	35	39	5	
Sorbus torminalis	wild service tree	5	60-80	B-R	267	97	72	4	35	39	5	
Tilia cordata	small leaved lime	10	40-60	B-R	534	193	144	9	70	79	10	
Viburnum lantana	wayfaring tree	5	60-80	B-R	267	97	72	4	35	39	5	
Shrub/Scrub Planting Mix					7700m²	1627m²	5092m²	1958m²	6628m²	0m²	4608m²	164m²
Betula pubescens	downy birch	10	40-60	B-R	86	18	57	22	74		51	2
Crataegus monogyna	hawthorn	40	40-60	B-R	342	72	226	87	295		205	7
Coryus avellana	hazel	10	40-60	B-R	86	18	57	22	74		51	2
Malus sylvestris	crab apple	10	60-80	B-R	86	18	57	22	74		51	2
Rosa arvensis	field rose	10	60-80	B-R	86	18	57	22	74		51	2
Rhamnus cathartica	purging buckthorn	10	40-60	B-R	86	18	57	22	74		51	2
Viburnum lantana	wild service tree	10	60-80	B-R	86	18	57	22	74		51	2
Open Shrub/Scrub Planting Mix					1200m²	0m²	0m²	14201m²	3953m²	0m²	0m²	0m²
Betula pubescens	downy birch	10	40-60	B-R	4			45	13			
Crataegus monogyna	hawthorn	40	40-60	B-R	15			178	50			
Coryus avellana	hazel	10	40-60	B-R	4			45	13			
Malus sylvestris	crab apple	10	60-80	B-R	4			45	13			
Rosa arvensis	field rose	10	60-80	B-R	4			45	13			
Rhamnus cathartica	purging buckthorn	10	40-60	B-R	4			45	13			
Viburnum lantana	wild service tree	10	60-80	B-R	4			45	13			
Hedgerow Planting Mix					0m	0m	0m	0m	0m	0m	116m	45m
Crataegus monogyna	hawthorn	70	40-60	B-R							405	156
Coryus avellana	hazel	10	40-60	B-R							58	22
Cornus sanguinea ssp. sanguinea	dogwood	5	40-60	B-R							29	11
Rosa arvensis	field rose	10	60-80	B-R							58	22
Rhamnus cathartica	purging buckthorn	5	40-60	B-R							29	11

Phase	3, 5 & 6	1	2	4B	4C	7A	7B	7C
Calcareous Grassland	30600m²	18611m²	5455m²	12063m²	16298m²	16180m²	11675m²	18805m²
Open Calcareous Grassland	100m²	0m²	2346m²	0m²	1177m²	0m²	0m²	256m²

Aquatic Planting

Pond Zone	Latin name	Common name	Root Condition	Size	% Mix	No
ground level	*Lychnis flos-cucoli*	Ragged robin	RT	110cc	35	115
	Juncus effusus	Soft rush	RT	110cc	30	100
	Filipendula ulmaria	Meadowsweet	RT	110cc	35	115
shallow margins	*Caltha palustris*	Kingcup/Marsh marigold	RT	110cc	20	200
	Lythrum salicaria	Purple loosestrife	RT	110cc	15	100
	Veronica beccabunga	Brooklime	RT	110cc	15	100
	Mentha aquatica	Water mint	RT	110cc	15	100
	Iris pseudacorus	Yellow flag iris	RT	110cc	15	100
	Alisma plantago-aquatica	Water-plantain	RT	110cc	20	200
shallow aquatic zone	*Myosotis scorpioides/ Palustris*	Water (True) forget-me-not	RT	110cc	25	210
	Hippuris vulgaris	Common mare's tail	RT	110cc	25	210
	Sagittaria sagittifolia	Arrowhead	RT	110cc	25	210
	Ranunculus aquatilis	Water-crowfoot	RT	110cc	25	210
deep water zone	*Calitriche stagnalis*	Common water-starwort	RT	110cc	50	75
	Potamogeton natans	Broad leaved pondweed	RT	110cc	50	75

Calcareous Grassland Seed Mix

EM6: Meadow Mixture for Chalk and Limestone Soils

%	Latin name	Common name
Herbs		
0.5	*Achillea millefolium*	Yarrow
1.5	*Anthyllis vulneraria*	Kidney vetch
1	*Centaurea nigra*	Common knapweed
1	*Centaurea scabiosa*	Greater knapweed
0.5	*Clinopodium vulgare*	Wild basil
1	*Daucus carrote*	Wild carrot
0.5	*Filipendula vulgaris*	Dropwort
1	*Gallium verum*	Lady's bedstraw
1.5	*Knautia arvensis*	Field scabious
0.5	*Leontodon hispidus*	Rough hawkbit
1	*Leucanthemum vulgare*	Oxeye daisy
2	*Lotus corniculatus*	Birdsfoot trefoil
0.5	*Origanum vulgare*	Wild marjoram
0.5	*Pimpinella saxifraga*	Burnet-saxifrage
1	*Plantago media*	Hoary plantain
1	*Primula veris*	Cowslip
1	*Prunella vulgaris*	Selfheal
1	*Ranunculus acris*	Meadow buttercup
0.5	*Reseda lutea*	Wild mignonette
2	*Sanguisorbe minor (Poterium sanguisorba)*	Salad burnet
0.5	*Scabiosa columbaria*	Small scabious
20		
Grasses		
%	Latin name	Common name
1	*Briza media*	Quaking grass (w)
32	*Cynosurus cristatus*	Crested dogstail
22	*Festuca ovina*	Sheep's fescue
16	*Festuca rubra*	Slender-creeping red-fescue
1	*Koeleria macrantha*	Crested hair-grass (w)
5	*Phleum bertolonii*	Smaller cat's-tail
3	*Trisetum flavescens*	Yellow oat-grass (w)
80		

KEY

- Application Boundary
- Footpath No.3
- Footpath No.2 Reinstated
- Proposed Footpath To Join Footpaths No.2 And No.3
- Proposed Footpath To Bedford Purlieus
- Area Of Wetland Habitat Creation
- Phased Restoration Areas
- Proposed Post and Wire Fencing
- Proposed Tree Protection Fencing
- Proposed Field Gate
- Proposed Kissing Gate
- Proposed Stile
- Existing Vegatation
- Proposed Hedgerow Mix
- Proposed Woodland Planting Mix
- Proposed Shrub/Scrub Mix
- Proposed 'Open' Shrub/ Scrub Mix
- Existing Pond
- Proposed Pond
- Calcareous Grassland (BAP Target Contribution)
- Grizzled Skipper Habitat (Open Calcareous Grassland)
- Elevation Contour mAOD

Grass seeding
All grass seeding to be undertaken during spring or autumn and to be sown at 20g/m2 and firmed in by rolling. Areas to receive tree and shrub planting will be sown with the calcareous grassland mix prior to planting.
Open calcareous grassland to be seeded to 70% of the total area with un-seeded areas not to exceed 5m2.
All seeds shall be of British Provenance and are to include provenance certification where applicable to proprietary mixes.
Seeding will occur either in the first Spring (mid April/mid May) or first autumn (mid August/mid September) following placement of the soils.

In advance of undertaking the seeding all areas to be seeded will:

- sampled for soil analysis of pH and nutrient status, not more than one month before seeding, in accordance with Appendix 3 "Sampling for Soil pH, P, K and Mg" of Fertiliser Manual RB209 (2010) published by Defra in order to establish that the substrate is suitable for the wildflower mix;
- be sprayed with translocated herbicide (glyphosate or similar) 14 days before cultivation if weed growth has established between the placement of the soils and the period of seeding;
- be cultivated to a depth of 100mm by disc/harrow to produce a fine tilth free of stones larger than will pass through a 75mm mesh sieve;
- no fertiliser will be applied to the planting areas in order to limit fertility as a means of promoting the wildflower sward and reducing grass growth competition with the trees/shrubs.

Proposed Trees and Shrubs
Native shrub and tree mixes to be notched planted at 3m centres in same species groups of 5 - 9 with a random distribution of species in a random configuration avoiding straight lines and regular geometric patterns.
Open shrub mix to be notched planted at 4m centres, over 50% of the area, in same species groups of 5 - 9 with a random distribution of species in a random configuration avoiding straight lines and regular geometric patterns.
Hedge mix to be notch planted at 350mm centres in a double staggered row 350mm apart. All trees and shrubs to be fitted with 600 mm high Tubex standard tree protector supported by an appropriate wooden stake and fitted as per manufacturers recommendations.
Planting will be undertaken in the period November to March into areas previously seeded with a calcareous grassland seed mix.
A 50 cm diameter weed free area shall be maintained around each planted tree.

Existing Shrub and Trees to Western Face
Additional planting to area of existing shrubs and trees to be undertaken where sufficient gaps are present.

Aquatic Planting
The pond planting will use plant materials gained from site (Pond 7 clearance) where possible with off site supplementation where necessary.
Plants to be planted at a rate of 6/m2 spread in groups over 30% of the overall pond area. Plants to be grouped in 3-9 of each species.

Planting Notes
The handling of plants to be in accordance with National Plant Specification 'Handling and Establishing Landscape Plants'.

All plants and planting operations are to comply with the requirements and recommendations of all current relevant British Standard specification including but not limited to:

- BS 3936-1:1992. Nursery stock. Specification for trees and shrubs
- BS 3882: 2007 Specification for topsoil and requirements for use (incorporating Corrigendum No.1)
- BS 4428:1989. Code of practice for general landscape operations (excluding hard surfaces) (AMD 6784)
- BS 5837: 2012 Trees in relation to construction - Recommendations (AMD Corrigendum 15988)
- BS 7370-3:1991. Grounds maintenance. Recommendations for maintenance of amenity and functional turf (other than sports turf)

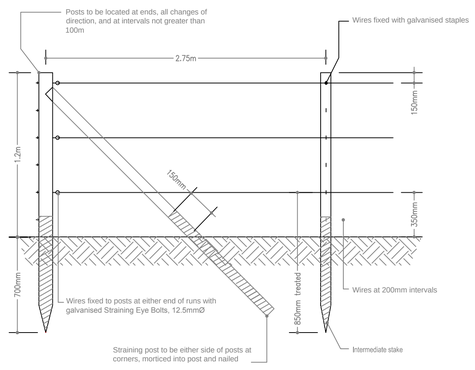
Maintenance

Management operations during the 10 year aftercare period would include;

- monitoring establishment of the grass/wildflower sward
- mowing/strimming of the vegetation between the plants in May and August as required
- spot weeding of unwanted ruderal weeds or noxious weeds;
- maintenance of tree guards or other forms of protection until trees are established;
- maintenance of a 50cm radius around each tree/shrub through herbicide application;
- fertiliser application to the base of plants as required to ensure continued growth;
- maintenance of any stakes and ties;
- removal of guards, stakes and ties at appropriate times;
- carry out replacement planting in the event that losses of greater than 10% of the original planting occur.
- grazing or mowing of the calcareous grassland sward in spring/late summer. (April/May and August/Sept)

Losses of less than 10% of the total numbers of plants will introduce an element of randomness and habitat variation within the planting areas, particularly the scrub, which is desirable.

Note: Phases as shown on figure TLS1



NOTES
1. All timber is to be sweet chestnut or larch, peeled.
2. Straining posts are to be 75mm diameter, approx 1.5m long, and treated with an approved timber preservative to 150mm above ground level.
3. Wires are to be fixed by means of galvanised Straining Eye Bolts through posts at beginnings and ends of runs, and by being fixed to intermediate stakes with galvanised staples.
4. Tree protection fence to be located 2m from the limit of extraction boundary where space allows.

TREE PROTECTION AND POST AND WIRE FENCING
Not to scale

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Revision Details	By / Check	Date	Suffix

NOTES

CONSTRUCTION RISKS	MAINTENANCE / CLEANING RISK	DEMOLITION RISKS

In addition to the hazard/risks normally associated with the types of work detailed on this drawing take note of above. It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

Purpose of issue: PLANNING

Client: Augean PLC

Project Title: THORNHAUGH LANDFILL / COOK'S HOLE QUARRY

Drawing Title: PROPOSED DEVELOPMENT THORNHAUGH LANDFILL SITE ENVIRONMENTAL STATEMENT PHASED RESTORATION SCHEME

Designed	Drawn	Checked	Approved	Date
RC	RC	NW	Approved by	Approved Date

URS Internal Project No. 47047967
Suitability: PLANNING
Scale @ A1: 1:2500
Zone / Mileage: Zone / Mileage

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Drawing Number: TLS6
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Plot Date: 06/02/2015 11:25:30
File Name: L:\2_WASTE_MANAGEMENT\47047299 THORNHAUGH RE ENGINEERING\3.0 TECHNICAL\DRAWINGS\FIGURE TLS\FIGURE TLS6 - CORRECT AREAS