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LANDSCAPE ARCHITECTS

Haunton Farmers' Solar Project

Landscape and Ecological Management Plan

Prepared for Haunton Farmers' Solar Ltd

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1.0 INTRODUCTION

1.1 Background and Context

- 1.1.1 This report presents a Landscape and Ecological Management Plan for the landscape areas associated with the development of a solar energy site at Haunton, Staffordshire.
- 1.1.2 The management responsibility will be with the site owners. Areas are to be managed in accordance with this Management Plan in perpetuity, formally commencing at the time of completion of the contractor's defects liability period but starting as soon as the site becomes available for management operations to begin.
- 1.1.3 The following document provides guidelines for works that can be done concurrently with the building works and includes an initial period of establishment maintenance, with recommendations for on-going management. This report sets out in broad terms the landscape aspirations for the site, both in the short and longer term and provides practical means by which these aims may be translated to well-managed results on the ground.

2. INSTRUCTION AND LIMITATIONS

2.1 Instruction

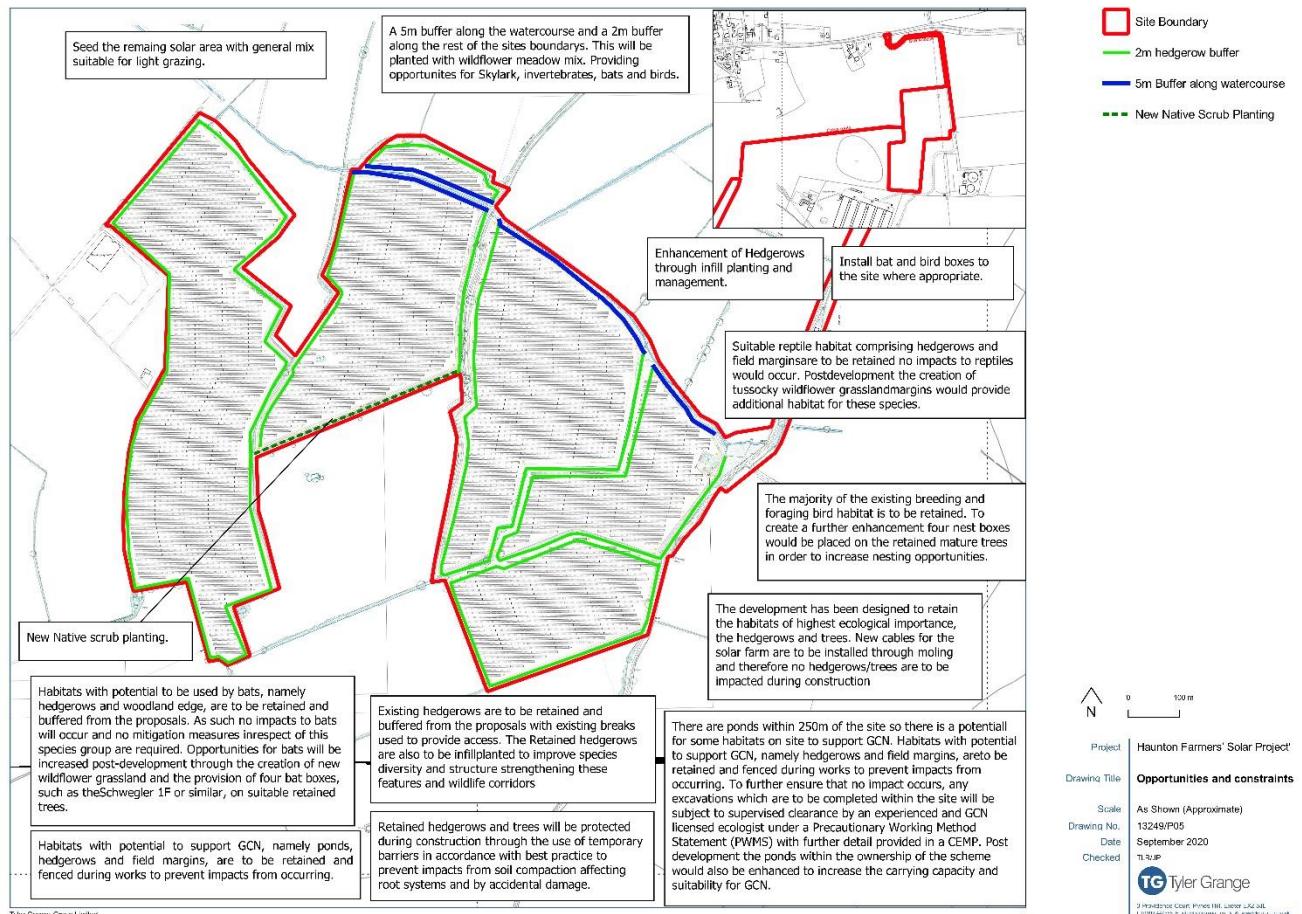
- 2.1.1 Richard Sneesby Landscape Architects has been instructed by Savills to produce landscape proposals in support of a full planning application.
- 2.1.2 Recommendations for management of existing vegetation which will be retained, are covered in the *Ecological Impact Assessment Report* produced by Tyler Grange consultants (October 2020). Reference to this report will therefore be made in the planting proposals documents.

2.2 Limitations

- 2.2.1 This plan is a response to a specific instruction for a specific end use and specific site layout regarding the proposed development. It is prepared for the sole use of Haunton Farmers' Solar Ltd and their appointed consultants.
- 2.2.2 For the avoidance of doubt, any duty of care to any other end users or third parties is specifically excluded. If a period of one year passes prior to commencing site operations, a further survey will be required to ensure compliance with the statutory legal responsibility of the developers. The findings will require a re-assessment in the case of any change of boundaries, plans, location of amenity areas or buildings, planting schemes, changes of use of the wider area or buildings and/or end use to ensure its fitness for purpose. The assessment is based on the development plans presented at the time of the assessment.



Block Plan Proposal (Savills October 2020)



Ecological Opportunities and Constraints Plan (Tyler Grange October 2020)

Key ecological outcomes informing the LEMP:

The proposals could potentially cause adverse impacts on boundary hedgerows and watercourses. Measures would therefore be adopted pre and post construction to ensure that no impacts occur to these important ecological features.

The proposals therefore have been designed to retain and protect all hedgerows, trees and watercourses which are the most ecologically important habitats on site and are to be buffered from the proposals. A Landscape and Ecological Management Plan (LEMP) would ensure retained and created habitats are managed favourably to maximise their benefit to wildlife and to provide continued opportunities for the species recorded utilising the site.

Proposed hedgerow enhancement along with creation of wildflower rich margins and native scrub planting will compensate for the loss of arable (which is of negligible importance) and installation of PV panels and substation. In addition, bat and bird boxes will be provided on retained trees. Together, these will result in biodiversity net gains by creating more important habitats and enhanced opportunities for UK and local Priority Species.

With the implementation of the mitigation and enhancement strategy described, the proposed development would be in conformity with relevant planning policy and legislation, as set out at Appendix 1(Ecological Impact Assessment Report). The strategy could be controlled by appropriately worded planning controls.

3.0 CONSTRUCTION EXCLUSION ZONES (CEZ)

3.1 Exclusion zone

- 3.1.1 A 2m Buffer Zone adjacent to all hedgerows, and a 5m Buffer Zone adjacent to all watercourses, is shown on Savills Block Plan Proposals drawing (Drawing No: 20.10_301 dated 2.10.20). No formal Construction Exclusion Plan (CEP) has been produced at this stage, but areas requiring protection are shown on the proposal's drawings.
- 3.1.3 No development work will be undertaken within the Buffer Zone and no materials, machinery, chemicals etc. will be stored within these zones.

4.0 MANAGEMENT AIMS AND OBJECTIVES

4.1 Aims and Objectives

- 4.1.1 The primary landscape objective for the landscape areas subject to this Management Plan is to create and maintain a functional, attractive and sustainable space, to increase the sense of site unity and to increase the visual appeal and emphasise the site's characteristics. The main aim of the Management Plan is to set mechanisms in place which ensure that the integral parts of the Site are well managed, for the benefit of site visitors and public footpath users so they do not become degraded through neglect, inappropriate management or misuse.

- 4.1.2 The principle aims for managing the site are as follows:

- to introduce strong management policies which will enhance the visual appeal of the site, maximise the screening function for the new development.
- to ensure that the long-term health and vigour of the new planting is optimised in the future.
- Prevent ingress and further colonization of competitive invasive plant species within the woodland and semi-natural grassland areas to maintain the *status quo*.

- Timing of strimming and/or mowing should be recognise breeding, nesting and hibernation periods for other living things on the site.
- Manage the semi-natural grassland habitat to check and reduce colonization by woody species and noxious weed species, especially bramble, but also species such as dock, thistle, nettle and ragwort.
- Manage the shrub and woodland edge which surrounds the site, and is present as pockets within the site, to improve its appearance and to ensure healthy future growth. This could involve removing dead and dying trees and shrubs, pruning unsightly hanging branches and the removal of invasive ground cover woody species, especially brambles.
- Illustrate, to the local community and visitors, good management of semi-natural vegetation.

4.1.3 Short and medium-term management should focus upon the area's visual amenity when viewed from the surrounding footpaths with a recognition of existing wildlife habitats.

5.0 MANAGEMENT PLAN

5.1 Works Programme

- 5.1.1 The following routine maintenance and longer-term management operations are recommended in the areas of Landscape to be maintained by the owner in perpetuity.
- 5.1.2 It should be noted that the recommended annual timing of operations in the following Works Programme are flexible and it is anticipated that the exact programme of works will be influenced by seasonal weather conditions and factors such as variability in growth rates.
- 5.1.3 In the management schedules set out below, the timing of operations (by season or month) is only given where this is critical, either in terms of achieving optimum results or minimising potential disturbance to wildlife. In general terms pruning or other works to established hedgerows, shrubs and trees, which may contain breeding birds, must avoid the bird breeding season. In most years this is from February to July.

5.2 Legal Constraints

- 5.2.1 Any future inhabitation by statutorily protected species will need to be given due consideration with respect to management operations in the affected areas. The owner must inform the local authority as soon as possible, works must be stopped until suitably qualified ecologist has carried out an appropriate survey, mitigation works if necessary, must be carried out in association with Lichfield District Council.

5.3 Management of Existing Mature Trees, Boundary and Scrub Management

Report by Tyler Grange

- 5.3.1 A comprehensive Ecological Impact Assessment Report has been produced by Tyler Grange consultants. This summarises opportunities and constraints and recommends retention of all boundary planting.

5.4 Boundary management

- 5.4.1 Boundary hedgerows surrounding the host fields are characterised by mature mixed native species.
- 5.4.2 These boundaries have an important role in visually filtering the proposal from the development and form an important continuity with the existing landscape pattern and texture. Gaps in the screening cover will be planted with the same species mix.
- 5.4.4 All hedgerows vegetation will be allowed to establish naturally, including natural succession of species. These hedgerows provide good habitat for reptiles, invertebrates and small mammals, as well providing a visual buffer to and from the site.

5.5 Control of invasive woody weeds - principally brambles (*Rubus fruticosus*)

- 5.5.1 As the site becomes operational and moves into a regime of managing natural habitats (as opposed to more intensive farmland), the boundaries may become colonised with invasive species, especially brambles. These need to be managed to reduce their spread, but with an approach that recognises their existing role as habitat and potential as protection for reptiles.
- 5.5.2 The most likely method of management will be strimming and/or mowing with the arisings raked and burned.
- 5.5.3 However, clearance operations will need a combination of work by machine and by

hand to allow plants identified for retention not to be harmed.

- 5.5.4 No clearance work shall take place during hibernation periods, in cold weather, or early in the day when reptiles may not be active
- 5.5.5 Clearance should take place in strips, approximately 2m wide, with a period of 4 weeks between strips to allow resident reptiles and invertebrates to move into unmanaged areas. Before strip clearance, the area should be walked to encourage animals to move out of the area. Initial cutting of brambles should be at higher levels using a reciprocating hedge cutter so that operators can get a clear view to ground level. Ground level strimming should be carried out carefully using a mulching blade in small areas constantly checking for the presence of animals. Arisings should then be raked and cleared to a tip or burned on site.
- 5.5.6 Following initial clearance, the site can be maintained by strimming/mowing operations which will need to be carried out 2-3 times/year to keep the site looking well-managed and to prevent the spread of invasive woody species. Good management practice should continue to involve the careful timing of these operations to ensure that habitats are not, inadvertently, compromised. For example: after the nesting season, after reptile hibernation and after beneficial plant species have developed viable seed. To further prevent the spread of noxious species, individual plants may need to be killed using spot treatments of herbicide.
- 5.5.7 The scale of operations need not be especially onerous. However, to ensure good management practice for this area, a maintenance calendar should be produced to safeguard the site as wildlife habitat and to make sure that any work has the least detrimental impact and produces the greatest benefit.
- 5.5.8 In addition, and as part of good management practice, operations should be carried out in small areas, leaving time in between to allow resident species to move into neighbouring unmanaged areas. This is especially important for strimming and mowing regimes.
- 5.5.9 No artificial inputs, such as artificial pesticides and fertilisers, will be applied on site to help to maintain the floristic diversity of the site. Control of weeds and grasses must be undertaken mechanically or by hand.

6 MANAGEMENT OPERATION FOR NEW PLANTING

This section outlines short, medium and long-term management of all planting areas including new planting which is outlined on the Planting Proposals Plan.

6.1 Aims and Objectives

- 6.1.1 The following management operations will commence following Practical Completion of the new planting.
- 6.1.2 It should be noted that the proposed timing of operations in the following Works Programme are flexible, the exact programme of works will be influenced by seasonal weather conditions and factors such as variability in growth rates
- 6.1.3 In the maintenance schedules set out below, the timing of operations (e.g. by season or month) is only given where this is critical, either in terms of achieving optimum results or minimising potential disturbance to wildlife. In general terms pruning of mature shrubs as well as operations to mature trees, which may contain breeding birds, must avoid the bird breeding season. In most years this is from February to July.

6.2 Operation 1: Native Hedgerow Mix

- 6.2.1 *Objective:* promote early growth of new footpath hedgerows to create well-structured and healthy, dense habitat. The hedge is to be managed to create a dense visual screen and to provide a variety of wildlife habitats.
- 6.2.2 *Locations:* Four areas of new hedgerow planting are proposed, three of which are gap filling within existing hedgerows to maximise the screening effect of these hedges and connect biodiversity corridors. A linear hedge is proposed along the south side of a new proposed access track which runs east-west at the southern end of the central part of the site.
- 6.2.2 Establishment maintenance of newly planted hedgerow transplants is necessary for the first three years after planting to ensure rapid early growth. Visits shall be undertaken at least monthly between April and September, with two visits during the

dormant season, to ensure that the following maintenance requirements are satisfactorily undertaken:

- Watering must be carried out to ensure healthy growth, particularly in Years 1 and 2. All trees are to be visited weekly in periods of dry weather and sufficient water to be applied to eliminate drought related stress.
- All hedgerow transplants to be treated with an annual application of an approved slow-release fertiliser (e.g. Osmocote) at the manufacturer's recommended rates in April of Years 1,2 and 3.
- Weed control is required to keep all planting areas free of grass and weed growth. This weed control must be by hand in Year 1, with chemical control, using Glyphosate, permitted only in 1.0m squares around clear-stemmed trees in Years 2 and 3.
- Hedgerow plants to be kept free of pests and diseases; regular monitoring to be undertaken.
- General pruning to be carried out to remove straggling stems, over-vigorous shoots, suckers and dead, misshapen, broken or otherwise unhealthy branches.
- Planting areas to be kept free of litter and leaf fall and grass edges to be kept regularly trimmed and tidy.
- Where mulch is used as a top dressing, this to be regularly topped up to 100mm, to ensure a minimum depth of 75mm. Mulch to be kept cleared off adjacent grass, paved areas etc.
- All arisings to be removed from site and the site to be left clean and tidy at all times.

6.2.3 An inspection is to be made in August each year. Any losses of hedgerow plants, whether by natural means or vandalism and any other plants that have failed to thrive, to be replaced in the planting season following the loss. Replacement trees are to be of the same species and size of the plants they replace, allowing for any growth since implementation.

6.3 Operation 2: Short grass management

- 6.3.1 *Objective:* Areas of short mown grass are to be managed by grazing or strimming. It is not intended to create a close-cut amenity sward.
- 6.3.2 This is a specialist agricultural management regime and will need to be agreed with the farmer or those responsible for animal husbandry.
- 6.3.3 In the absence of any regular grazing, the short grass shall be managed by strimming.

6.4 Operation 3: Areas of longer grass/open herb layer

- 6.4.1 *Objective:* to provide attractive habitat rich areas, capable of providing habitat for ground living organisms, as well as providing informal recreational space. Areas of longer grass/open herb layer are proposed within the southern area beyond the short grass management.
- 6.4.2 A sympathetic regime of grass cutting management will be adopted for the areas of longer grass and to encourage taller herbs to colonise. In Years 1 and 2 after the invasive brambles have been cleared and following initial selective spraying, scarification and over-seeding of the sward can take place.
- 6.4.3 Over-seeding can be done with a wildflower-rich semi-shaded hedgerow mix such as Emorsgate EH1 'Hedgerow mix'. This has an attractive appearance and can be simply managed using agricultural techniques such as a tractor and topper, set high to protect perennials, with cuttings raked-off and removed for composting.
- 6.4.4 Once the last wild-flowers to flower have faded and set seed (likely to be late July/August), 50% of the grass should be cut to 50mm. Arisings to be collected and removed from site. The remaining 50% of the grassland are to be left uncut to provide over-wintering habitat for invertebrates and cover for birds and small mammals. This regime to be rotated every other year. The areas to be defined on site, in consultation with South-West Seeds and the ecological consultant. It may also be considered advantageous in biodiversity terms, to retain some areas uncut in the longer term and in these areas to allow a mosaic habitat of scattered scrub and long grass to become

established.

- 6.4.5 The floristic diversity of the sward to be monitored on an annual basis in early June each year. If there is a decline in species diversity and/or ingress of dock, nettle, thistle or other undesirable ruderal species, a programme of remedial action to be taken. Spot treatment of undesirable ruderal species to be carried out between May and September, as necessary, using glyphosate, to ensure that the growth of these species is restricted to less than approximately 5-10% of the sward coverage. There should be no use of selective herbicides.
- 6.4.6 Refer also to the specification from Emorsgate Seeds at the end of this report.

MANAGEMENT SCHEDULE: PRE-CONSTRUCTION PHASE AND ESTABLISHMENT PHASE

ITEM	DESCRIPTION	VISITS/YEAR	YEAR
1.0	SETTING-OUT		
	Mark-out The Buffer Zones (exclusion zones) Install high visibility tape along line of the buffer zone.	1	0
2.0	CLEARANCE OF ACCESS TRACK		
	All access tracks to be carefully stripped of topsoil and vegetation. Where possible, re-spread any species rich grass or verge areas adjacent to the track within areas which are missing ground level vegetation.	1	0
3.0	CLEARANCE OF BRAMBLES AND INVASIVE SPECIES PRIOR TO PLANTING HEDGEROWS OR FOR THE PURPOSE OF MAINTAINING HEDGEROWS		
	Undertake during winter months only		
	Walk site and clear fauna from the area prior to any clearance in accordance with ecologists' recommendations.	As required to complete task	0
	Clear invasive vegetation by machine or by hand. Clear by hand only around existing trees and shrubs to be retained. Mechanical clearance by strimming/mulching and/or flail mowing. Rake arisings and clear off-site or to compost area. Carry-out clearance in 2m strips, constantly checking for the presence of animals, leaving a time delay (ideally 4 weeks) between strips to allow resident reptiles to move into unmanaged areas. Repeat walking site to clear animals for each strip in turn.	As required to complete task	0
4.0	TREE FELLING		
	No trees have been identified for felling. Any which are not shown on survey drawings, or which have been missed during site surveys shall be drawn to the attention of the landscape architect and/or ecologist before any work is carried out in this area.	As required to complete task	0-1
5.0	SELECTIVE PRUNING		
	No trees have been identified for pruning. Any which are found to interfere with construction works shall be drawn to the attention of the	As required to complete task	0-1

	landscape architect and/or ecologist before any work is carried out in this area.		
8.0	MANAGEMENT OF NEW HEDGEROW PLANTING		
	Prior to any work taking place, undertake ecological checks of any mature trees undergoing management.	1	0 onwards
	Carry out management of existing mature trees and shrubs in accordance with the described clauses.	As required to complete task	0 onwards
9.0	AREAS OF LONGER GRASS/OPEN HERB LAYER		
	Following clearance of invasive woody species, selectively spray, or continuously mow the area to prevent re-invasion. This may involve a sequence of spraying and fallow periods to allow weed species within the seed bank to germinate before being killed-off.	As required to complete task	0-1
	Once the weeds have been eradicated, scarify the area and over-seed using a wildflower mix which favours locally occurring native species. Such as South-West Seeds 'Heritage Hay Meadow and Wildflower Grass Seed Mix'.	As required to complete task	0-1

MANAGEMENT SCHEDULE: ROUTINE AND ANNUAL MAINTENANCE AND MANAGEMENT

ITEM	DESCRIPTION	VISITS/YEAR	YEAR
10.0	REGULAR MAINTENANCE VISITS		
	Regular maintenance visits should be made at monthly intervals between April and September with at least two visits during the dormant season each year. It will be necessary to undertake general 'tidying' e.g. removal and replacement of dead plants, litter and leaf fall clearance, topping up, raking and sweeping of mulch to provide a tidy appearance etc.	6	1-5
11.0	MAINTENANCE OF TREES AND SHRUBS		
	Manage the scrub and hedgerow edges should focus upon allowing these to grow naturally to provide further screening of the development from the surrounding area, Operations should also ensure healthy future growth. This could involve removing dead and dying trees and shrubs, pruning unsightly hanging branches and	2	1-5

	<p>the removal of invasive ground cover woody species, especially brambles</p> <p>Plants to be kept free of pests and diseases, regular monitoring to be undertaken</p> <p>In general terms operations to hedge row plants, which may contain breeding birds, must avoid the bird breeding season. In most years this is from February to July.</p> <p>Pruning to be carried out to remove straggling stems, over-vigorous shoots, suckers and dead, misshapen, broken or otherwise unhealthy branches.</p>		
12.0	MAINTENANCE TO PREVENT INVASION OF WOODY WEED SPECIES AT SITE BOUNDARIES		
	<p>Following initial clearance, the site can be maintained by strimming/mowing operations which will need to be carried out 2-3 times/year to prevent the spread of invasive woody species.</p> <p>Good management practice should continue to involve the careful timing of these operations to ensure that habitats are not, inadvertently, compromised. For example: after the nesting season, after reptile hibernation and after beneficial plant species have developed viable seed. To further prevent the spread of noxious species, individual plants may need to be killed using spot treatments of herbicide.</p> <p>No mechanical maintenance shall be undertaken within areas which include native species which are intended to be present for their ornamental, horticultural or ecological benefits. (See Section 13.0)</p>	2-3	1-5
13.0	MANAGEMENT OF AREAS OF LONGER GRASS/OPEN HERB LAYER		
	<p>Timing of strimming and/or mowing should be recognise breeding, nesting and hibernation periods for other living things on the site</p>		
	<p>Manage the semi-natural grassland habitat to check and reduce colonization by woody species and noxious weed species, especially bramble, but also species such as dock, thistle, nettle and ragwort</p>	2-3	1-5
	<p>Once the last wildflowers to flower have faded and set seed (likely to be late July/August), 50% of the grass should be cut to 50mm. Arisings to be collected and removed from site. The remaining 50% of the grassland are to be left uncut to provide over-wintering habitat for invertebrates</p>	1-2	1-5

	and cover for birds and small mammals. This regime to be rotated every other year. The areas to be defined on site, in consultation with South-West Seeds and the ecological consultant. It may also be considered advantageous in biodiversity terms, to retain some areas uncut in the longer term and in these areas to allow a mosaic habitat of scattered scrub and long grass to become established		
	The floristic diversity of the sward to be monitored on an annual basis in early June each year. If there is a decline in species diversity and/or ingress of dock, nettle, thistle or other undesirable ruderal species, a programme of remedial action to be taken. Spot treatment of undesirable ruderal species to be carried out between May and September, as necessary, using glyphosate, to ensure that the growth of these species is restricted to less than approximately 5-10% of the sward coverage. There should be no use of selective herbicides	1	1-5

NEW HEDGEROW PLANTING

Planting recommendations

The planting areas illustrated diagrammatically on the drawings submitted as part of the planning application which show locations for planting:

Savills Block Plan Proposals drawing (Drawing No: 20.10_301 dated 2.10.20)

Ecological Opportunities and Constraints Plan (Tyler Grange, October 2020)

These have been informed by and should be read in conjunction with:

- *Landscape and Visual Impact Assessment (LVIA): Richard Sneesby Landscape Architects, July 2020*
- *Ecological Impact Assessment Report: Tyler Grange, July 2020*

Principles underlying planting recommendations

- Adoption of the recommendations described in The Ecological Impact Assessment Report
- Screening of views into the site from the west identified within the LVIA and from other locations identified on site
- Use of new planting to enhance biodiversity and wildlife corridors within and at the boundaries of the site such that the post-development situation is a significant enhancement of the landscape for local wildlife.
- Development of a set of landscape proposals which has both short term (visual screening) and long term (biodiversity and habit creation) goals.

Planting

New planting takes the form of a new line of hedgerow species adjacent to a proposed access track, and boundary gap filling with a mix of tree and hedgerow species. It is envisaged that the hedgerow will be allowed to grow to create an informal hedge. Species selection is based upon locally found species and includes a mix of fast-growing screening species and longer-term hedgerow species.

Hedgerow species

10%	Field maple	<i>Acer campeste</i>
20%	Hazel	<i>Corylus avellana</i>
35%	Hawthorn	<i>Crataegus monogyna</i>
5%	Elder	<i>Sambucus nigra</i>
5%	Holly	<i>Ilex aquifolium</i>
20%	Blackthorn	<i>Prunus spinosa</i>
5%	Dog rose	<i>Rosa canina</i>
100%		

Supplementary tree species

Oak *Quercus robur*

Alder *Alnus glutinosa*

Planting shall be completely carried out within the first available planting season from the date of commencement of the development, or as otherwise extended with the agreement in writing of the Local Planning Authority.

NOTES ON PLANTING

Ground Preparation

Planting shall be into existing topsoil. Where no topsoil is present, all planting areas to receive a minimum depth of 350-400mm topsoil or topsoil above subsoil.

Cultivate to a loose friable tilth suitable for grass seeding or planting. Collect and remove all stones, builder's rubble, and other deleterious material over 50mm in any dimension. Where planting takes place over previously trafficked areas break up the formation level with a single time ripper, driven 450mm deep at 1m centres when ground conditions are dry.

If required, or if there is no availability on site, supply approved imported subsoil to BS 3882:1994 – Economy Grade to make up any deficiency in on-site subsoil. Spread and grade to a depth of 150-200mm for tree and shrub planting areas.

Planting

Tree and shrub planting will be carried out, following construction of the development, during the first dormant planting season November to March inclusive, subject to suitable growing conditions - i.e. when the ground is not frozen or waterlogged. Bare root transplants shall be planted into a notch, larger nursery stock sizes and container grown/containerised plants shall be pit planted. In all cases the planting pit or notch shall be of sufficient size for the roots to fully spread out, or to accommodate rootballs/root plugs without breaking roots.

A slow-release fertiliser shall be added to all tree and shrub pits and incorporated into the backfill mixture.

Planting density - Hedgerows

Plant hedgerow transplants in a double staggered row at 300mm centres with rows 500m apart. First row set 500mm behind planting area boundary/protective fence. Plant in species groups of 3-5 plants to create a random arrangement.

Protection of trees from mammal damage

Young trees and shrubs should be protected from damage from mammals. The proposals show a perimeter stock fence, 2000mm high with rabbit proof netting attached.

Elsewhere, if required, protection should follow the guidance in the Forest Research Best Practice Guidance document BPG Note 12 (2014). Most usually the appropriate method will include one or more of the following dependent upon location and budget: perimeter fencing, treeguards, tree shelters, chemical repellents (such as Aaprotect applied to dormant

trees in mid-November). Protective fencing is fully described in the Forest Research document Forestry Commission Technical Guide 2: Forest fencing (Trout and Pepper, 2006).

EMORSGATE EH1 - HEDGEROW MIXTURE

Composition

EH1 contains wild flowers and grasses that are tolerant of semi-shade and is suitable for sowing beneath newly planted or established hedges and on woodland edges, rides and glades.

Wild Flowers

%	Latin name	Common name
0.5	<i>Achillea millefolium</i>	Yarrow
1.2	<i>Agrimonia eupatoria</i>	Agrimony
1.5	<i>Alliaria petiolata</i>	Garlic Mustard
0.4	<i>Arctium minus</i>	Lesser Burdock
0.5	<i>Betonica officinalis</i> - (<i>Stachys officinalis</i>)	Betony
1.5	<i>Centaurea nigra</i>	Common Knapweed
0.4	<i>Chaerophyllum temulum</i>	Rough Chervil
2	<i>Galium album</i> - (<i>Galium mollugo</i>)	Hedge Bedstraw
1	<i>Galium verum</i>	Lady's Bedstraw
0.3	<i>Geranium pyrenaicum</i>	Hedgerow Crane's-bill
0.6	<i>Hypericum perforatum</i>	Perforate St John's Wort
0.3	<i>Lathyrus sylvestris</i>	Narrow-leaved Everlasting-pea
0.8	<i>Leucanthemum vulgare</i>	Oxeye Daisy - (Moon Daisy)
0.5	<i>Origanum vulgare</i>	Wild Marjoram
0.7	<i>Plantago lanceolata</i>	Ribwort Plantain
1	<i>Primula veris</i>	Cowslip
2.5	<i>Silene dioica</i>	Red Campion
0.5	<i>Silene latifolia</i>	White Campion
2	<i>Torilis japonica</i>	Upright Hedge-parsley
0.5	<i>Verbascum thapsus</i>	Great Mullein
0.5	<i>Vicia cracca</i>	Tufted Vetch

%	Latin name	Common name
0.8	Vicia sativa ssp. segetalis	Common Vetch
20		

Grasses

%	Latin name	Common name
10	Agrostis capillaris	Common Bent
2	Anthoxanthum odoratum	Sweet Vernal-grass (w)
7	Brachypodium sylvaticum	False Brome (w)
20	Cynosurus cristatus	Crested Dogtail
1	Deschampsia cespitosa	Tufted Hair-grass (w)
28	Festuca rubra	Slender-creeping Red-fescue
12	Poa nemoralis	Wood Meadow-grass

80

Sowing Rates

kg/ha	kg/acre	g/m²
40	16	4

Ground preparation

Endeavour to select ground that is not highly fertile and does not have a problem with perennial weeds. Good preparation is essential to success so aim to control weeds and produce a good seed bed before sowing.

Overgrown hedgerows which have been recently cut back or laid sometimes offer up a strip of open bare ground ready for seeding

To prepare a seed bed first remove weeds using repeated cultivation or a herbicide. Cultivation close to established trees and shrubs can be damaging to their root systems so take care not to dig too deep, keeping disturbance to the minimum required to expose fresh soil.

Sowing

Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. The seed must be surface sown and can be applied by machine or broadcast by hand. To get an even distribution and avoid running out, divide the

seed into two or more parts and sow in overlapping sections. Do not incorporate or cover the seed but firm in with a roll, or by treading, to give good soil/seed contact

Aftercare

First year management

Most sown meadow wild flower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed growth is easily controlled by topping or mowing.

Mow newly sown meadows regularly throughout the first year of establishment to a height of 40-60mm, removing cuttings if dense. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers.

Avoid cutting in the spring and early summer if the mixture has been sown with a nurse cover of cornfield annuals, or is autumn sown and contains Yellow Rattle. These sown annuals should be allowed to flower, then in mid-summer cut back and the cut vegetation removed. It is important to cut back cornfield annuals before they die back, set seed or collapse: this cut will reveal the developing meadow mixture and give it the space it needs to develop.

Carefully dig out or spot treat any residual perennial weeds such as docks.

Management once established

Hedgerows, woodland edges, rides, glades and other semi-shaded communities usually sit on the boundary between one habitat type (eg open grassland) and another (eg closed tree canopy). The management requirements of established hedgerow mixtures can be tailored to light levels and to fit in with adjacent vegetation types.

Zoned management of hedgerow margins frequently produces the best diversity of habitat structure: areas closest to the hedge or woodland boundary and those which are more shaded are left uncut in most years. Areas that are further from the margin and more open can be managed as grassland habitat. For example in a 6 metre sown margin the 2-3 metres against the boundary could be left uncut, the next 3-4 metres cut once or twice a year.

Hedgerow vegetation that is not mown or grazed each year will become rough and "tussocky" in character. It can form useful refuge habitat on corners and margins of a site. To control scrub and bramble development these tussocky areas may need cutting every 2-3 years between October and February. For wildlife this cutting is best done on a rotational basis so that no more than half the area is cut in any one year leaving part as a undisturbed refuge.