GOLDTHORPE PHASE 3 & NEW PARK SPRINGS ECOLOGICAL MANAGEMENT AND MONITORING PLAN AND CEMP (BIODIVERISTY)

Biodiversity Off-Setting Scheme for Goldthorpe 3 Residential Development on behalf of Gleeson Development

Prepared for The Land Trust Limited

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Author(s)	Gary Oliver, Principal Ecologist SLR Consulting

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1.0 INTRODUCTION

1.1 Terms of Reference

SLR Consulting Ltd was commissioned by The Land Trust to produce an Ecological Management and Monitoring Plan for New Park Springs, the enhancement of which shall deliver the required number of 'habitat units' to offset a consented development located to the west of Moor Croft Road, Goldthorpe, South Yorkshire, known as 'Goldthorpe 3', which is being constructed by Gleeson Development Limited.

As set out in a Supplementary Ecological Information (SEI) report[1], the development of Goldthorpe 3 is predicted to result in the loss of 11.44 habitat units, from a baseline of 13.98 units to a post-development value of 2.54 units. This shortfall shall be delivered in New Park Springs, which shall be enhanced from a baseline value of 7.75 habitat units to 19.30 units, generating a gain of 11.55 habitat units, equivalent to a 0.77% increase in habitat units overall.

Hedgerow units shall increase by 0.78, from a baseline of 2.82 units to 3.59 units, equivalent to a 27.57% rise.

This report describes the measures that shall be taken to deliver the prescribed ecological enhancements at New Park Springs, as well as the steps that shall be taken to deliver the 2.54 units within Goldthorpe 3 itself.

It sets out those habitats that shall be created, and how they shall be managed; it also describes the monitoring shall be undertaken over the course of the first 30 years.

In addition it provides information on the steps that shall be taken to safeguard protected species and sensitive habitats during site clearance and construction works.

1.2 Consented Site (Goldthorpe 3)

Goldthorpe 3 consists of a single disused field, approximately 2.15ha in size, enclosed by approximately 570 metres of hedgerow, mostly species-poor native in character (Drawing 1).

The field itself supports a mix of dense bramble scrub and scattered scrub, tall ruderals, and small patches of open flower-rich and more extensive (less flower-rich) coarse grass-dominated swards. A small area of marshy grassland occurs at the southern end of the Site, supporting *circa* 250 marsh orchids (*Dactylorhiza* spp. and smaller numbers of common spotted orchids (*Dactylorhiza fuchsia;* Plate 1).

Marsh orchids are perennial plants and will grow back each year over the lifetime of the plant after dying back during the winter[2]. They are well suited to wet conditions hence the name but can also colonize drier areas and will often spread to waste ground. They range significantly in size from 5-70cm (or up to a meter in some hybrids), depending on the exact species or hybrid involved[3], so care will need to be taken in ensuring that as many specimens as possible are found.

[1] SLR Consulting, September 2022. SEI including BNG assessment of land within New Park Springs (424.03044.00237)

[2] Common spotted orchid - (britishorchids.co.uk)

[3] Southern Marsh Orchid - Norfolk Wildlife Trust

Plate 1: Patch of marsh orchids within the consented site (June 2021)

The BNG baseline value of the consented site (i.e. Goldthorpe 3) is detailed within the table below:

Habitat	Area (ha)	Distinctiveness	Condition	Habitat Units
Bramble scrub	0.40	Medium	Poor	1.84
Sparsely vegetated land (ruderal/ ephemeral)	1.00	Low	Fairly Good	5.75
Other neutral grassland (poor semi-improved))	0.50	Medium	Fairly Poor	3.45
Other neutral grassland (without orchids)	0.14	Medium	Good	1.93
Other neutral grassy (marshy, with orchids)	0.11	Medium	Moderate	1.01
				13.98

The number of hedgerow units within and bordering the consented site has been calculated, and equates to 2.82 units, comprising:

Hedgerow reference	Length (metres)	Distinctiveness	Condition	Hedgerow Units
H1 (native species-rich)	52	Medium	Moderate	0.48
H2 (native)	180	Low	Moderate	0.83
H3 (native)	90	Low	Moderate	0.41
H4 (native)	165	Low	Moderate	0.76
H5 (native)	70	Low	Moderate	0.32
H6 (ornamental, non-native)	13	Very Low	Poor	0.01
	570			**2.82**

1.3 Ecological Offsetting Site (New Park Springs)

New Park Springs, also known as Grimethorpe Nature Reserve, is a 56 hectare public space on the site of one of the principle spoil heaps of the former Grimethorpe Colliery. It is located off Clayburn Road, Grimethorpe, South Yorkshire, S72 7LQ (OS grid reference se 41416 07718). The spoil heap was remediated with funds from the Homes and Communities Agency's National Coalfield Programme in 2006, and the site now supports a mixture of woodland (mostly conifer plantation) and open grassland, along with a range of walking routes and viewpoints.

The required number of habitat units shall be delivered within New Park Springs via a combination of conifer clearance and re-planting with species-rich scrubby woodland, and the introduction of orchids from Goldthorpe 3.

Those parts of New Park Springs that shall be enhanced currently support the following habitats, with the stated BNG baseline value:

Habitat	Area (ha)	Distinctiveness	Condition	Habitat Units
Conifer plantation	1.097	Low	Poor	2.52
Other neutral grassland	0.35	Medium	Moderate	3.22
Other neutral grassland	0.44	Medium	Poor	2.01
	2.04			**8.10**

The populated Metric 3.1 spreadsheet demonstrates how 11.55 habitat units, equivalent to a 0.77% increase in habitat units overall, shall be delivered (Appendix 2).

2.0 HABITAT CREATION

2.1 Consented Site (Goldthorpe 3)

Habitats to be created in Goldthorpe 3 shall comprise 28 small 'urban trees', involving both native and non-native species (with a combined footprint of 0.11ha) and 0.968ha of vegetated garden; the remainder shall comprise 'developed land/ sealed surface'.

A summary of the biodiversity value of the site itself, post-development, is summarised below:

Habitats on site post-development	Area (ha)	Distinctiveness	Condition	Biodiversity Units
Urban trees (28 in total)	0.11	Medium	Moderate	0.39
Vegetated garden	0.97	Low	Poor	2.15
Buildings, roads and other sealed surfaces	1.18	Very Low	N/A	0.00
				2.54

The urban trees shall take 27 years to reach their target moderate condition, whilst the vegetated gardens will take just one year to reach their target condition.

The detailed Landscape Proposals (Appendix 1) demonstrate that four of the hedgerows shall be extended, whilst only one (Hedgerow H4) will be shortened by 40 metres. In addition, the extended sections of H1-H3 shall be species-rich.

The 126m of new hedgerow that shall be planted to extend the length of Hedgerows H1, H2 and H3 will comprise field maple (*Acer campestre*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), blackthorn (*Prunus spinosa*), goat willow (*Salix caprea*) and guelder rose (*Vibirnum opulus*). Whilst Hedgerow H6, a non-native cypress hedgerow, shall be extended by 12 metres using non-native species.

A summary of the value of the on-site hedgerows, both retained and created, is summarised below:

Hedgerow Post-Development	Length (metres)	Distinctiveness	Condition	Hedgerow Units
H1	68 (+16 metres)	Medium	Moderate	0.60
H2	250 (+70 metres)	Low	Moderate	1.37
H3	130 (+40 metres)	Low	Moderate	0.72
H4	120 (-45 metres)	Low	Moderate	0.55
H5	70 (unchanged)	Low	Moderate	0.32
H6	25 (+12 metres)	Very Low	Poor	0.02
	663			**3.58**

The species-rich hedgerow planting (H1-H3) shall take 5 years to reach their target moderate condition, whilst the non-native planting that shall extend the length of Hedgerow H6 shall just take a single year to reach target condition.

The planting of urban trees, and the retention of existing and planting of additional hedgerows shall be undertaken by Gleeson Development Limited, or they appointed contractors.

2.2 Offsetting Site (New Park Springs)

Orchids from the area of marshy grassland within the consented site (Goldthorpe 3) will be translocated to four areas within New Park Springs, as described below, and illustrated in Drawing 2.

Orchids enjoy poor quality soils and whilst *Dactylorhiza* spp. can grow well in wet conditions they may also survive and thrive on drier sites where conditions are appropriate. Sites with poor soils, as occurs in parts of New Park Springs may be colonised naturally[4], so it is expected that the translocated orchids will spread, if favourable conditions are maintained.

Orchid Receptor Area 1 lies at OS grid reference SE 41468 07781, and measures 0.40ha in extent (Plate 2). It currently comprises a damp grassy slope, temporarily fed by a blockage within a ditch which forces runoff to overflow a footpath and seep down the adjacent slope (Plate 3). This shall be 'formalised' and made more permanent by hard-blocking the ditch at this point and taking the water through a pipe, beneath the footpath, allowing it to seep down the slope in the same way as it does at present, but allowing the path to remain dry and fully accessible, as well as delivering a more permanent supply of water to the orchids, ensuring that the ground remains damp and highly suitable. Assuming that Goldthorpe 3 is found to support 250 orchids at the time of the translocation (the number recorded in 2021), a total of 100 of these marsh orchids shall be placed within Receptor Area 1. The vegetation within Receptor Area 1 is relatively sparse, and therefore no preparatory strimming, or other means of preparing the ground, is considered necessary.

Orchid Receptor Area 2 is centred at OS grid reference SE 41189 07908, and measures 0.10ha in extent (Plate 4). It is positioned at a bend in the path relatively close to one of the main entrance points into New Park Springs, making it visible by users of the park, from both directions. The common spotted orchids from Goldthorpe 3 shall be placed here. Shortly before the translocation, the area due to receive the orchids shall be strimmed, or cut using a pedestrian or compact tractor flail mower, to a height of no more than 5cm. Arisings shall be raked and removed, or mechanically removed at the time of cutting.

Orchid Receptor Area 3 is centred at OS grid reference SE 41364 07942 and measures 0.25ha (Plate 5). This area contains a small ditch which flows west before entering a culver that leads into the adjacent quarry. A small bund shall be created at the western end of the ditch, causing ground water levels to the east to rise by up to one metre, making the area more suitable for marsh orchids; in the order of 75 marsh orchids shall be placed here. While marsh orchids can tolerate and colonise drier conditions, as the name suggests, damp areas are preferred[5]. Areas due to receive the orchids shall be strimmed, or cut using a pedestrian or compact tractor flail mower, to a height of no more than 5cm, with the resulting material being removed to create an open sward, prior to the movement of the orchids.

Orchid Receptor Area 4 consists of a 2 metres wide x 180 metre long damp/ wet channel on relatively flat ground, centred at OS grid reference SE 41483 07582 (Plate 6), as well as a shallow depression that extends in a south-westerly direction from the northern end of this ditch (Plate 7). This area shall receive the remainder of the marsh orchids, expected to be approximately 75 spikes. The vegetation within Receptor Area 4 is relatively sparse, and therefore no preparatory strimming, or other ground preparation, is considered necessary.

[4] Plants list | Online Atlas of the British and Irish Flora (brc.ac.uk)

[5] Southern marsh orchid | The Wildlife Trusts

To help with cross-pollination, and to assist with future monitoring, the translocated orchids shall be placed in groups of five plants, with each plant being approximately 30cm apart.

The orchids shall be moved when in leaf, but still relatively small, and not in flower. Care will be taken on the timing of translocation as flower stalks appear from late May and are likely to break in transit and thus not produce any flowers that year[6]. They shall be dug up individually using a bulb planter or similar, and placed in the ground, again, using a bulb planter of the same size, at a depth of approximately 15cm, ensuring that each orchid plug fits neatly into the ground, achieving good contact with the surrounding soil and preventing the spread of annual weeds that might otherwise arise with the generation of large amounts of exposed earth.

Cores taken from the receptor site, in which the individual orchid plugs shall be placed, shall be mounded in piles away from the orchid areas or completely removed from site.

Preparation works to Receptor Areas 1 and 3 shall be carried out during March or April 2023, whilst strimming or cutting using a pedestrian or tractor mounted flail mower, within Receptor Areas 2 and 3 shall take place in late April; the orchid spikes themselves shall be transferred during May 2023. No preparation works or strimming are associated with Receptor Area 4.

Strimming or flail mowing shall reduce the sward to a height of 5cm or less, and then the ground raked hard afterwards to 'scuff' up the surface and create patches of bare ground to increase the chances of orchid seeds germinating once they have been shed by translocated parent plants during the summer of 2023. If flail mowing alone creates the desired conditions, no subsequent raking shall be required.

Future management will be heavily influenced by the outcomes of ongoing monitoring, and some experimental trials, the exact nature of which shall be determined by the Land Trust, as part of their ongoing management regime.

The donor site (Goldthorpe 3) has essentially remained unmanaged for several years, yet the orchids continue to do well here. It may therefore be that no, or very little, management is necessary at New Park Springs, and that the orchids will simply spread and do well on the relatively thin soils. In this instance it may only be necessary to remove invading scrub and/or saplings from areas supporting orchids, on an occasional basis.

Conversely, if orchids in certain receptor sites are not establishing well, then more intensive forms of management may be considered, the precise forms of which will depend upon the reasons why the orchids are not performing well. Additional actions may involve, but may not be limited to: mowing after the orchids have flowered and set seed followed by the removal of arisings; further raising of water levels in specific areas; and the movement of adult orchids from less favourable areas, into areas where they are likely to establish better.

Given that orchids produce small, light seeds that are readily dispersed on the wind, the whole of the New Park Springs reserve shall be searched for orchids as part of a programme of ongoing monitoring, as orchids may establish themselves in areas away from the earmarked receptor sites. Should this be the case, additional areas of colonisation shall be mapped and their areas measured.

Further information on general management for orchids is provided in Section 3.2 of this report.

[6] Southern marsh orchid - (britishorchids.co.uk)

The works described above will result in the enhancement of 0.79ha of grassland, from a sward of poor or moderate condition to one of good condition, resulting in the delivery of 3.47 biodiversity units, from a baseline of 5.23 units to one of 8.70 units. It is predicted that it will take 10 years for moderate condition grassland to reach good condition, and 15 years for grassland in poor condition to attain good condition.

Plate 2: View of Orchid Receptor Area 1 (0.4ha), due to receive 100 marsh orchids.

Plate 3: View of overflow feeding Orchid Receptor Area 1, due to be 'formalised' and made permanent.

Plate 4: View of Receptor Area 2 (to the right of the footpath; 0.1ha), due to receive common spotted orchids.

Plate 5: View of Receptor Area 3 (0.25ha), due to receive 75 marsh orchids.

Plate 6: Receptor Area 4, a 180 metre long ditch and adjacent shallow depression (0.036ha) on fairly level ground, due to receive circa 75 marsh orchids.

Plate 7: Shallow depression extending from the northern end of the ditch pictured above, in a south-easterly direction (to also receive some of the estimated 75 marsh orchids)

The remaining biodiversity units, required to off-set the shortfall within Goldthorpe 3, shall be achieved by clearing an area of relatively dense but young coniferous woodland in 'poor' condition (as illustrated in Plate 8), and replacing this with mixed, native species-rich scrub.

Plate 8: Young conifer plantation, 1.25ha of which shall be removed and replaced with mixed scrubby woodland

This will require the removal of 1.097ha of coniferous woodland, in two blocks, as illustrated in Drawing 2. The mixed scrub shall comprise hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), dog rose (*Rosa canina*), hazel (*Corylus avellana*), guelder rose (*Viburnum opulus*) and elder (*Sambucus nigra*), along with pedunculate oak (*Quercus robur*), which shall comprise 10% of the overall mix. Planting shall take place at 3m centres, but there will be some variation on this and the planting will have a crenulated, rather than a straight, edge to create more naturalistic conditions, and a greater amount of 'edge habitat'.

Any existing broad-leaved trees scattered within this 1.097ha conifer blocks shall be retained. The smaller branches and needles from the felled conifer trees would be chipped on site, whereas some of the larger sections of log would be used to create log piles, some with voids in their centre with access points at ground level. These log piles would be suitable for invertebrates and provide refuges for species such as hedgehog (refer to Plate 9). However, log piles will not be created in areas where there is a perceived risk of vandalism and/ or to mitigate fire risk. If not all of the logs are used to create habitat piles on site, efforts will be made to use them for habitat creation elsewhere, or as a source of biofuel. Logs will not be landfilled.

Following the removal of the conifers and planting up, the mixed scrubby woodland shall take 10 years to reach good target condition. This shall deliver 8.08 habitat units, from a baseline of 2.52 habitat units, to 10.6 units, following the enhancement works.

The translocation of the orchids from Goldthorpe 3 to New Park Springs, and of the felling of coniferous woodland, use of logs to create log piles, and of the planting of scrubby woodland, shall be undertaken by The Land Trust, or contractors appointed on their behalf.

Plate 9: The trunks from a proportion of the felled conifers shall be used to create log piles, the core of which shall have a void suitable for hibernating hedgehog (as illustrated above)

2.3 Summary of Habitat Creation and Timescales

A summary of the actions to be taken to create the habitats within Goldthorpe 3 and within New Park Springs, is summarised in the table below, along with the length of time it is predicted shall be required to reach the target condition for each specified habitat type, within each area:

Task	Timescale
Goldthorpe 3	
Site strip (other than orchid area)	February 2023
Strip of orchid area, following translocation of orchids to New Park Springs	May 2023
Creation of residential gardens	December 2025
Target Condition (1 year)	December 2026
Planting of 12m of non-native hedge	December 2025
Target Condition (1 year)	December 2026
Planting of 126m of native species-rich hedge	December 2025
Target Condition (5 years)	December 2030
Planting of 28 small urban trees	December 2025
Target Condition (27 years)	December 2052
New Park Springs	
Orchid Receptor Area 1	
Installation of pipe beneath path	April 2023
Plug planting of circa 100 marsh orchids	May 2023
Target Condition (15 years)	2038
Orchid Receptor Area 2	
Cutting to a height of <5cm, heavy raking	Late April 2023
Plug planting of common spotted orchids	May 2023
Target Condition (10 years)	2033
Orchid Receptor Area 3	
Creation of bund at western end of ditch	March 2023
Cutting to a height of <5cm; hard raking	Late April 2023
Plug planting of circa 75 marsh orchids	May 2023
Target Condition (10 years)	2033
Orchid Receptor Area 4	
Plug planting of circa 75 marsh orchids	May 2023
Target Condition (15 years)	2038
Felling of 1.25 ha of conifer woodland (retaining any broad-leaved trees and creating log piles for hedgehog and other wildlife)	September-October 2023
Planting of 1.25ha of scrubby woodland	November 2023
Target Condition (10 years)	2033

3.0 HABITAT MANAGEMENT AND MONITORING

The steps that will be taken to create the desired habitats, and the level and (where relevant) form of monitoring within Goldthorpe 3, and New Park Springs, is set out below.

3.1 Goldthorpe 3

Vegetated Gardens

Residential gardens do not require any specified management, or ongoing monitoring.

Hedgerow Planting (Native Species-Rich)

The 126m of native species-rich hedgerow that shall be planted, thereby extending Hedgerows H1, H2 and H3 shall attain moderate condition after five years. The 12m of non-native hedgerow H6 shall attain its target condition of poor in a single year. In order to attain moderate condition, four of the following eight attributes shall be met, after five years. In addition, no more than one attribute can be failed in a function group (cannot fail both A1 and A2, for example).

Hedgerow Condition Criteria
A1: >1.5m high
A2: >1.5m wide at the widest point of the canopy
B1: <0.5m gap between the ground and the base of the canopy
B2: Gaps make up <10% of the total length, and no individual gaps are >5m
C1: >1m of undisturbed ground at base of hedge supporting perennial herbaceous vegetation on 1 or both sides
C2: Plant species indicative of nutrient enrichment dominate <20% of the herbaceous vegetation at base of hedge
D1: >90% of hedge and undisturbed ground at base is free of invasive non-native species or neophyte species
D2: >90% of hedgerow is free of damage caused by human activities

In addition to the above, all sections of existing hedgerow, due to be retained, shall also be assessed against the above criteria, in order to ensure that they continue to meet their existing condition, as summarised below:

Hedgerow	Retained Length	Baseline Condition (to be maintained)
H1 (native species-rich hedgerow)	52 metres	Moderate
H2 (native hedgerow)	180 metres	Moderate
H3 (native hedgerow)	90 metres	Moderate
H4 (native hedgerow)	120 metres	Moderate
H5 (native hedgerow)	70 metres	Moderate

It is proposed that hedgerow planting, and all sections of retained hedgerow as detailed above, shall be monitored in Years 1, 3, and 5 (by which time the target condition of planted hedgerows should have been attained) and Years 10, 20 and 30 (to ensure that the attained target condition is being maintained, for the full duration of the management plan). Monitoring reports shall be issued to the local planning authority after each audit. Gleeson Developments, or their appointed contractors, shall be responsible for undertaking the monitoring work, and for any corrective action, if required to meet the target conditions. Corrective actions, if needed, shall be detailed within the relevant monitoring report.

Urban Trees

The 28 urban trees shall attain their target size and condition (Moderate) after 27 years.

In order to achieve moderate condition at least two of the four following criteria should be met, after 27 years.

Urban Tree Condition Criteria
The tree is a native species.
There is little or no evidence of an adverse impact on tree health by anthropogenic activities, such as vandalism or herbicide use; also that there is no regular pruning regime so that trees retain at least 75% of their expected canopy spread for their age range and height
Micro-habitats for birds, mammals and insects are present e.g. the presence of deadwood, cavities, ivy or loose bark.
>20% of the tree canopy area is oversailing vegetation beneath

It is proposed that the trees shall be monitored in Years 1, 3, 5, 10, and 30, by which time the target condition should have been attained and the full duration of the management plan period has lapsed.

Monitoring reports shall be issued to the local authority after each audit. Gleeson Developments, or their appointed maintenance contractor, shall be responsible for commissioning this work, and for carrying out any corrective action, if required to meet the target condition. Corrective actions, if needed, shall be detailed within the relevant monitoring report.

3.2 New Park Springs

Orchid Receptor Areas 1-4

For orchids to propagate they require fungal networks to be present in the ground known as mycorrhizal fungi. These fungi provide nutrients and a nursery for the orchid plants to develop[7]. This is because orchid seeds are extremely small and light (which helps them get washed down to the soil) but means that they have no endosperm which is the part of the seed that provides energy for the initial growth of a plant.

By translocating the already mature orchid plants as relatively large plug plants, it is expected that mycorrhizal fungi will also be transferred within the plug. It should also be noted that the species of orchid being translocated are associate with multiple mycorrhizal fungi[8] and that the fungi in question are also relatively common in the environment and likely to already occur within New Park Springs.

Recommended maintenance is much as a wildflower meadow, with orchids generally preferring poorer soils[9]. Mowing/ flail mowing for orchids, if required, should be undertaken once or twice a year at most unless establishing orchids in a more overgrown area filled with ruderals and vigorous and tussocky grasses. In those circumstances it is advisable to mow more frequently and potentially spot treat problem weeds, making sure to remove all cuttings. Some of the management choices will depend also on how the grassland itself, aside the orchids, is being

[7] Smith, Sarah E. Physiology and Ecology of Orchid Mycorrhizal Fungi with Reference to Seedling Nutrition, 1966. Department of Botany, Cambridge University.

[8] McCormick, Melissa K. and Jacquemyn, Hans. 2013. New Phytologist (2014) 202: 392–400 doi: 10.1111/nph.12639

[9] Growing Wild Orchids - Emorsgate Seeds (wildseed.co.uk)

developed. Cutting through autumn and winter may be desirable and should not affect the orchids as long as cutting is avoided during the growing season for the orchids, not too early and not too late, with flowering usually finishing around late July[10]. Grazing can take the place of cutting and provide additional benefits[11,12] but this would be down to the site manager and provides other logistical challenges. In the short-term grazing is unlikely to be a practical option for a public site like New Park Springs. Bryophytes can be an issue for orchid growth and monitoring should flag up if they become an issue preventing propagation[13].

Orchid species can take several years to go from seed to new plants appearing and flowering. Seeds may remain in the soil for 5-6 years and then spend 1-3 years developing underground before emerging to first leaf and then flower which can take more than a year[14]. *Dactylorhiza* spp. are often quicker to emerge than most so may start appearing in leaf within 2 years[15]. Monitoring is recommended as below and if there are fewer orchids developing as expected after several years then remedial action can be taken. Orchids can be purchased for planting as can mycorrhizal fungi for seeding the ground. Orchids may also be propagated from seed by experienced growers[16].

The creation of orchid-rich areas is a form of bespoke enhancement, based on 'other neutral grassland in good condition' but not matching it exactly.

As such, it is recommended that a set of specific condition criteria are applied, all of which must be met, as follows, after a period of either 10 years (Receptor Areas 2 and 3) or 15 years (Receptor Areas 1 and 4), as set out below:

Orchid Receptor Site Condition Criteria
That orchids are present within each of the receptor areas, in at least the numbers translocated there from the Goldthorpe 3 donor site. If the number of orchids has fallen in one receptor area, a corresponding increase will need to have occurred in another receptor area, or elsewhere within New Park Springs.
The appearance and composition of the vegetation resembles that of marshy or damp grassland, or another form of species-rich grassland.
Cover of bare ground is <5%
Cover of bracken is <20%
Cover of scrub, including bramble scrub, is <5%
There is an absence of invasive non-native species listed in Schedule 9 of the Wildlife and Countryside Act (1981)
The combined cover of species indicative of sub-optimal condition and physical damage, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities accounts for <5% of total area.

It is proposed that monitoring shall take place in Years 1, 3, 5, 10, and 15 (by which time the target condition of all receptor areas should have been attained), and Years 20 and 30, covering the full duration of the management plan period.

[10] Verge Maintenance and Orchids 2017.pdf (hardyorchidsociety.org.uk)
[11] Plantlife Meadows | Grazing Livestock
[12] Growing Wild Orchids - Emorsgate Seeds (wildseed.co.uk)
[13] Orchid Habitat Management - Mersey Gateway Environmental Trust (mget.org.uk)
[14] Ibid
[15] Wild Flower Shop - British Orchids
[16] HOS - Orchid Cultivation (hardyorchidsociety.org.uk)

Monitoring reports shall be issued to the local planning authority after each audit. The Land Trust, or their appointed maintenance contractor, shall be responsible for commissioning this work, and for carrying out any remedial action, if required to meet the target condition. Corrective actions, if needed, shall be detailed within the relevant monitoring report.

Mixed Scrub

The 1.097ha area of conifer planation to be removed and replaced with mixed scrub in good condition shall attain its target condition after 10 years.

In order to achieve good condition after 10 years the following five criteria will need to have been met.

Mixed Scrub Condition Criteria
There are at least three woody species, with no one species accounting for >75% of the total cover.
There is a good age range, with seedling and established shrubs being present.
There is an absence of invasive non-native species (listed in Schedule 9 of the Wildlife and Countryside Act (1981), and that species indicative of a sub-optimal condition (such as creeping thistle and common nettle) make up <5% of the overall area.
The scrub has a well-developed edge, with scattered scrub and tall grassland and/ or herbs present between the scrub and adjacent habitats.
There are clearings, glades or rides present within the scrub, providing sheltered edges. In this case the clearings are likely to form naturally, perhaps as some areas of scrub fail to establish; it is recognised that sizeable glades do not form part of the planting regime.

It is proposed that monitoring shall take place in Years 1, 3, 5 and 10 (by which time the target condition of should have been attained), and Years 20 and 30, covering the full duration of the management plan period.

Monitoring reports shall be issued to the local planning authority after each audit. The Land Trust, or their appointed maintenance contractor, shall be responsible for commissioning this work, and for carrying out any corrective action, if required to meet the target condition. Corrective actions, if needed, shall be detailed within the relevant monitoring report.

3.3 Summary of Monitoring and Body Responsible

A summary of the monitoring to be undertaken at both Goldthorpe 3 and New Park Springs is set out below, along with the organisation responsible for delivering it, or contractors appointed on their behalf:

Monitoring	Year 1	Year 3	Year 5	Year 10	Year 15	Year 20	Year 30
Golthorpe 3 (Gleeson Development)							
Existing and New Hedgerow							
Urban Trees							
New Park Springs (The Land Trust))							
Orchid Receptor Areas							
Mixed Scrubby Woodland							

4.0 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The steps that will be taken to create the desired habitats, and the level and (where relevant) form of monitoring within Goldthorpe 3, and New Park Springs, is set out below.

4.1 Protection of Retained Hedgerows

Retained hedgerows, including their root protection areas, will be protected from direct damage by machinery impact, storage of materials and compaction of rooting areas by the use of robust fencing.

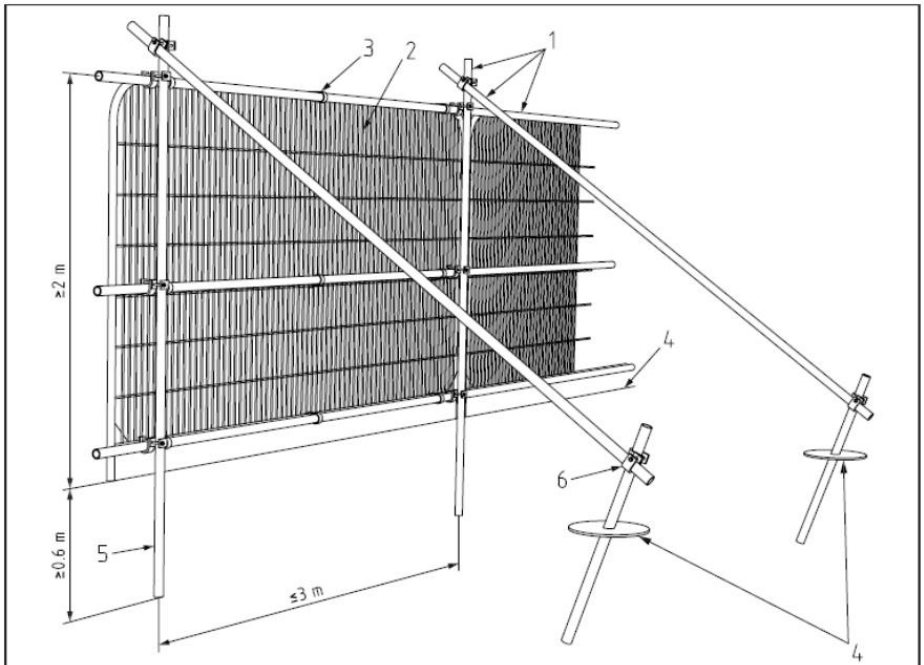
The fencing shall be able to withstand impacts from machinery and plant equipment operating in the area. Paragraph 6.2.2 and Fig. 2 & 3 of BS5837 details the appropriate fencing specification. The appropriate fencing is shown below.

The protective fencing shall be erected prior to any groundworks taking place and remain in place for the duration of the construction phase.

These following general precautions will also be adhered to within the root protection areas of the hedgerows:

- No soil disturbance, including compaction;
- No change in the soil level, by stripping or filling unless stated below;
- No excavation, without prior discussion with the Local Planning Authority;
- No redirection of surface water runoff into or out of the RPA;
- No temporary buildings, sheds, or offices, without prior discussion with the Local Planning Authority;
- No storage of materials or fuel;
- No dumping of materials, whether into a skip or onto the ground;
- No fires within 10m of either hedgerow;
- No refuelling of mechanical equipment;
- No storage or mixing of cement;
- No washing of cement mixers within or uphill of the RPA; and
- Follow the guidance contained within the National Joint Utilities Group Volume 4 (Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees (Issue 2, 2007); www.njug.org.uk) when installing underground services inside or other excavation in the RPA of a tree or hedgerow.

The protective fencing should be erected prior to any other development activity taking place (before ground works/ soil removal/ scrape) and remain in place for the duration of the construction phase. The image below shows the required fencing specification used elsewhere as an example.



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

This sign (below) must be laminated and securely fixed to the outside/ site side of the Tree Protective Fence line every 6-8m and replaced when weathered or lost. This is available as a pdf upon request.

4.2 Protection of Nesting Birds during Site Clearance Works

The majority of the vegetation clearance is due to take place outside of the bird nesting season which extends between March and August inclusive. Only the area supporting the orchids, at the southern end of the Goldthorpe 3 site, shall remain.

A pre-commencement survey shall be undertaken by a suitably qualified ecologist immediately prior to the removal of the vegetation supporting the orchids (ideally within 24 hours of the vegetation removal taking place). If active bird nests are present within the orchid area these will be retained, along with a suitable buffer (typically five metres around the nest), until the young have fledged, or the nesting attempt is otherwise complete.

Similarly, a nesting bird survey shall take place immediately before the proposed strimming/ flail mowing takes place within Orchid Receptor Areas 2 and 3.

The conifers shall be felled during the autumn (September to October) period, outside of the bird nesting season, as a precaution .

DRAWING 1

Results of Extended Phase I Habitat Survey (of Goldthorpe 3)

LEGEND

- SITE BOUNDARY
- INTACT SPECIES-POOR HEDGEROW
- INTACT NON-NATIVE HEDGEROW
- FENCE
- SCATTERED SCRUB
- BRAMBLE DOMINANT HABITAT
- TALL HERB DOMINANT HABITAT
- MARSHY GRASSLAND
- SI — SEMI-IMPROVED NEUTRAL GRASSLAND
- SI — POOR SEMI-IMPROVED GRASSLAND
- H1 — HEDGEROW REFERENCE
- 1 — TARGET NOTE

homes by gleeson

SLR global environmental solutions
UNIT 2, NEWTON BUSINESS CENTRE
THORNCLIFFE PARK ESTATE
NEWTON CHAMBERS ROAD
CHAPELTOWN
SHEFFIELD, S35 2PH
T:+44 (0)114 2455153
www.slrconsulting.com

LAND OFF WEST MOOR CROFT RD, GOLDTHORPE

ECOLOGICAL IMPACT ASSESSMENT (EcIA)

EXTENDED PHASE 1 HABITAT SURVEY

DRAWING 1

Scale	Date
1:1000 @ A3	JUNE 2020

DBRAIN

424.03044.00168.27.001.0 Ex Ph 1 Hb Svy.dwg

DRAWING 2

Proposed Ecological Enhancements to New Park Springs

441000 441200 441400 441600

408000

407800

N

Orchid Recptor Area 2

0.1ha

Orchid Recptor Area 3

0.25ha

Orchid Receptor Area 1

0.40ha

Conifer Woodland Removal, Being Replaced with Mixed Scrub Area 5

0.63ha

0.036ha

Orchid Recptor Area 4

Conifer Woodland Removal, Being Replaced with Mixed Scrub Area 6

0.467ha

0 50 100 150 200

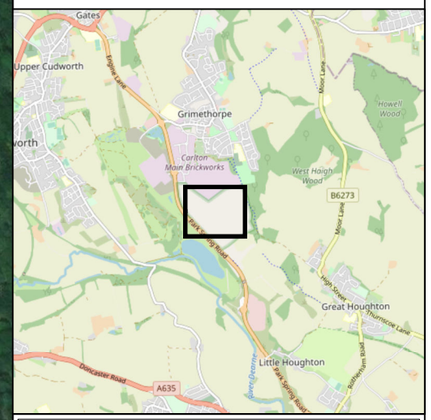
Metres

LEGEND

Orchid Receptor Area

Conifer Woodland Removal, Being Replaced With Mixed Scrub

Orchid Receptor Area
1 - To Recieve 100 Marsh Orchids.
2 - Due to Recieve All Common Spotted Orchids.
3 - Due to Recieve 75 Marsh Orchids.
4 - To Recieve Remainder of Marsh Orchids, Estimated to be 75 Plants).



the Land Trust

SLR
4/5 LOCHSIDE VIEW
EDINBURGH PARK
EDINBURGH
EH12 9DH
T: +44 (0)131 335 6830
www.slrconsulting.com

NEW PARK SPRINGS
MANAGEMENT PLAN

PROPOSED ECOLOGICAL ENHANCEMENTS TO 'NEW PARK SPRINGS'

DRAWING 1

Scale 1:2,500 @ A3

Date MARCH 2023

03044.00237.0003.2 Proposed Ecological Enhancements to New Park Springs

APPENDIX 1

Detailed Landscape Proposals for Goldthorpe 3

This drawing has been prepared for the purpose of planning approval.

Proposed Native Hedge Mix 1 (4.00/m)

Nr	Code	Plant Name	Ht(cm)	Root	Cntr(l)	Mix(%)
29	Ac	Acer campestre	80-100	B		5.00
120	Cav	Corylus avellana	80-100	B		20.00
178	Cm	Crataegus monogyna	80-100	B		30.00
58	Ia	Ilex aquifolium	80-100	C	5	10.00
120	Ps	Prunus spinosa	80-100	B		20.00
58	Sc	Salix caprea	80-100	B		10.00
29	Vo	Viburnum opulus	80-100	B		5.00

Proposed Shrubs

Nr	Code	Plant Name	Ht(cm)	Root	Cntr(l)	Nr/m²
28	BtA	Berberis thunbergii 'Atropurpurea'	45-60	C	5	3.00
63	BrS	Brachyglottis 'Sunshine'	30-40	C	5	3.00
82	CtS	Choisya ternata 'Sundance'	30-40	C	5	3.00
23	EfEG	Euonymus fortunei 'Emerald 'n' Gold'	15-30	C	5	5.00
100	EfE	Euonymus fortunei 'Emerald Gaiety'	15-30	C	5	5.00
51	HpS	Hebe pinguifolia 'Sutherlandii'	30-40	C	5	4.00
9	Hca	Hypericum calycinum	45-60	C	5	4.00
42	LaH	Lavandula angustifolia 'Hidcote'	30-40	C	5	4.00
48	LnBG	Lonicera nitida 'Baggesen's Gold'	30-40	C	5	4.00
31	LnMG	Lonicera nitida 'May Green'	30-40	C	5	3.00
26	Vd	Viburnum davidii	30-40	C	5	3.00
25	Vt	Viburnum tinus	40-60	C	5	3.00
57	Vmi	Vinca minor	15-20	C	5	4.00

Native Hedge Mix 1
1nr Ac
43nr Cav
64nr Cm
21nr Ia
43nr Ps
21nr Sc
1nr Vo

All hedges to be carefully and regularly clipped with line and level being maintained to promote a dense, uniform and tidy appearance, according to the type of hedge and situation

Native Hedge Mix 1
2nr Ac
4nr Cav
13nr Cm
10nr Ia
4nr Ps
10nr Sc
5nr Vo

All hedges to be carefully and regularly clipped with line and level being maintained to promote a dense, uniform and tidy appearance, according to the type of hedge and situation

Gaps in existing hedgerow to be in-filled with same species and density of proposed Native Hedge mix 1

Native Hedge Mix 1
7nr Ac
28nr Cav
42nr Cm
14nr Ia
28nr Ps
14nr Sc
7nr Vo

Gaps in existing hedgerow to be in-filled with same species and density of proposed Native Hedge mix 1

Planting Notes

Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in wet/ waterlogged conditions.

Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1986 (as amended 1997 or, otherwise, updated/superseded legislation) and following manufacturer's instructions by qualified staff. The topsoil shall than be cultivated to 150mm depth.

Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428:1989.

Trees: Standard trees to be planted in pits 800x800x450mm or dimensions of rootball, whichever is greater. Tree to be supported by 1Nr stake (1500mm long, per tree, 600mm above ground, 75mm diameter) and 1Nr bio-degradeable tie. Alginure soil improver and 150g Enmag (or, equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit.

Container grown shrubs, transplants and whips: Shrubs and transplants shall be planted in pits 300x300x400mm depth), and the backfill shall include 3 litres of peat-free tree and shrub compost. Where two or more shrub species are indicated within a single bed each species shall be randomly mixed throughout the bed in groups of 3/5.

Native hedge: To be planted as a double row.

Herbicide: Spot treat with herbicide throughout the maintenance period in accordance with the manufacturer's instructions.

Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/edge plants to be planted with 800g flax fibre mulch mat pinned to soil. Native hedgerow to be planted through 800g flax fibre mulch roll, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.

Plant position: Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers.

Grass: All turf/seeded areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.

Planting Season: Bare-root plants to be planted between mid-November and mid-March dependant upon the planting season.

LEGEND

- Existing tree to be retained
- Existing tree to be removed
- Existing tree (to be trimmed back)
- Existing hedge to be retained
- Existing hedge to be trimmed back
- Proposed tree Standard
- Proposed tree Standard (Light)
- Proposed shrub bed
- Proposed grass
- Proposed native hedge mix

Proposed Trees

Nr	Code	Plant Name	Form	Ht(cm)	Girth(cm)	CStm(cm)	Root
4	Ac	Acer campestre	Standard	250-300	8-10	175-200	B
6	Al	Amelanchier lamarckii	Standard (Light)	250-300	6-8	150-175	B
5	Bp	Betula pendula	Standard	250-300	8-10	175-200	B
6	MJD	Malus 'John Downie'	Standard (Light)	250-300	6-8	150-175	B
2	Sar	Sorbus aria	Standard	250-300	8-10	175-200	B
4	Sau	Sorbus aucuparia	Standard	250-300	8-10	175-200	B

Rev D: Revised in line with AMS review19Oct22 (RP)

Rev C: Hedging note added in line with feedback 08Sep22 (RP)

Rev B: Revised to 1014/3J, received 11Apr22 - 21Apr22 (MP/jr)

Rev A: Revised to 1014/3C received 14Oct20 - 15Oct20 (MP/jr)

Base: Richard Ward Design, 'Planning Layout', 1014/3B

PROJECT	Barnburgh View, Goldthorpe Ph 3		
TITLE	Detailed Landscape Proposals (1 of 2)		
CLIENT	Gleeson Homes and Regeneration		
DATE	05 Oct 20	SCALE 1 : 250	SHEET A1
DRAWN	MP/jr	DRAWING NO	3627/2
CHECKED	MP	REVISION	D

ROSETTA LANDSCAPE DESIGN
Chartered Landscape Architects

Swallow's Nest, Main Street
Askham Richard, York, YO26 5NA

Telephone +44 (0)1904 500410

Email design@rosettalandscape.co.uk
Web www.rosettalandscape.co.uk

All hedges to be carefully and regularly clipped with line and level being maintained to promote a dense, uniform and tidy appearance, according to the type of hedge and situation

Gaps in existing hedgerow to be in-filled with same species and density of proposed Native Hedge mix 1

Native Hedge Mix 1
1nr Ac
5nr Cav
7nr Cm
2nr Ia
5nr Ps
2nr Sc
1nr Vo

Native Hedge Mix 1
3nr Ac
13nr Cav
20nr Cm
7nr Ia
13nr Ps
7nr Sc
3nr Vo

Plant Codes (full schedules on Sheet 1)

Code	Plant Name
Ac	Acer campestre
Al	Amelanchier lamarckii
BtA	Berberis thunbergii 'Atropurpurea'
Bp	Betula pendula
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Rev D: Revised in line with AMS review19Oct22 (RP)

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Base: Richard Ward Design, 'Planning Layout', 1014/3B

PROJECT	Barnburgh View, Goldthorpe Ph 3		
TITLE	Detailed Landscape Proposals (2 of 2)		
CLIENT	Gleeson Homes and Regeneration		
DATE	05 Oct 20	SCALE 1 : 250	SHEET A0
DRAWN	MP/jr	DRAWING NO	3627/3
CHECKED	MP	REVISION	D

ROSETTA LANDSCAPE DESIGN
Chartered Landscape Architects

Swallow's Nest, Main Street
Askham Richard, York, YO26 5NA

Telephone +44 (0)1904 500410

Email design@rosettalandscape.co.uk
Web www.rosettalandscape.co.uk

APPENDIX 2

Metric 3.1 BNG Assessment (supplied separately in Excel format)

EUROPEAN OFFICES

United Kingdom

AYLESBURY
T: +44 (0)1844 337380

BELFAST
T: +44 (0)28 9073 2493

BRADFORD-ON-AVON
T: +44 (0)1225 309400

BRISTOL
T: +44 (0)117 906 4280

CAMBRIDGE
T: + 44 (0)1223 813805

CARDIFF
T: +44 (0)29 2049 1010

CHELMSFORD
T: +44 (0)1245 392170

EDINBURGH
T: +44 (0)131 335 6830

EXETER
T: + 44 (0)1392 490152

GLASGOW
T: +44 (0)141 353 5037

GUILDFORD
T: +44 (0)1483 889800

LONDON
T: +44 (0)203 691 5810

MAIDSTONE
T: +44 (0)1622 609242

MANCHESTER
T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE
T: +44 (0)191 261 1966

NOTTINGHAM
T: +44 (0)115 964 7280

SHEFFIELD
T: +44 (0)114 2455153

SHREWSBURY
T: +44 (0)1743 23 9250

STAFFORD
T: +44 (0)1785 241755

STIRLING
T: +44 (0)1786 239900

WORCESTER
T: +44 (0)1905 751310

Ireland

DUBLIN
T: + 353 (0)1 296 4667

France

GRENOBLE
T: +33 (0)4 76 70 93 41