Ecological Appraisal

The Sandpit Field,

Henfield,

Sussex

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EXECUTIVE SUMMARY

- Wildlife Splash Ltd. was commissioned by Andrew Sharp to carry out an Ecological Survey of the Sandpit Field Henfield, Sussex.
- The purpose for the survey was to evaluate the status of the grassland in order to ascertain the future use and management of the site.
- The Sandpit Field is to the north east of Henfield Common and can be accessed by Henfield Common North road. It is bounded by a pastoral field to the north, a small woodland to the west and small fields to the south. It is triangular in shape and well sheltered.
- Two possible options for this field are considered which are grassland restoration or the establishment of an orchard. Grassland restoration is dependent upon the grassland being relatively species rich (hence facilitating grassland community restoration) and the ability for subsequent management.
- The grassland is species poor and is dominated by common grasses and forbs. There are some limited indications that it was once more varied with a handful of additional forbs found at the level of 'one or two individuals'.
- The grassland community does not have similarities to any National Vegetation Classification type and, as such, does not classify as a UK BAP Habitat of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006.
- Transforming this grassland to a species rich sward would be possible but it would require significant intervention and on-going maintenance in the form of cutting or grazing. Preparation would be facilitated by the use of heavy machinery, which would be difficult due to site access issues. On-going management would require either heavy machinery or grazing animals. Grazing animals would require installation of fencing, water and welfare visits as well as another site to move them to at certain times of year.
- Orchard establishment could be achieved without the use of machinery or the need for grazing animals. Once the trees are planted management would be minimal except for times of extreme drought when additional watering may be required.
- On-going management would require pruning which can be carried out by hand, with brash piled in the woodland.
- Other communities found in the field include a stand of Bracken, a defunct leggy and gappy hedgerow, Bramble scrub and a small area of oak woodland regeneration. It is recommended that the hedgerow be restored, the woodland regeneration be thinned, the Bracken eradicated or much reduced and the scrub managed.
- Before work starts, it is also recommended that a plan be made as to proportions of each habitat. For example, the scrub is very beneficial to wildlife, and so it would be advantageous to retain a wide margin along the woodland boundary at the west side of the site. However, it would be best to plan just how wide this margin should be in order that it can be maintained as such into the future. Likewise, it must be decided whether the Bracken margin should be retained, and, if so, at what width in order to monitor encroachment.

- Details for the restoration / management of each habitat are given in Section 5 of this report.
- The site also has the potential for a number of protected species such as amphibians, bats, Badger, breeding birds, Dormouse and reptiles; most of which have been recorded in the wider area. The main species / groups that could be impacted upon by the type of work to be carried out are breeding birds, Dormouse, amphibians and reptiles.
- Scrub clearance and hedgerow cutting / laying should take place during the winter months (September to February) in order to avoid breeding birds and foraging Dormice. Dormice nests were not seen during surveys, but this species may be active during a mild winter. Should any Dormice nests be found they should not be disturbed, and the advice of a licensed ecologist be sought.
- Tree planting should take place in the winter months (October – late February) when reptiles and amphibians are hibernating. Amphibians and reptiles may hibernate in mammal holes and so there is an outside change that (particularly Slow Worm) may be found.
- Care therefore should be taken when digging around any burrows / small mammal holes, and if any hibernating amphibians / reptiles were found then these should immediately be placed in a cotton bag and an ecologist contacted.
- Should planting take place in the summer months, then certain preparations outlined in Section 5 of this report would be required in order to deter reptiles and amphibians from the planting area:

1 INTRODUCTION

Purpose of this report

1.1 Wildlife Splash Ltd was commissioned by Andrew Sharp to undertake an ecological survey of the Sandpit Field Henfield, Sussex.

1.2 The purpose for the survey was to evaluate the status of the grassland in order to ascertain future management of the site.

1.3 The following two management options are to be considered:

- establishment of a small orchard; or
- grassland restoration.

Ecological context

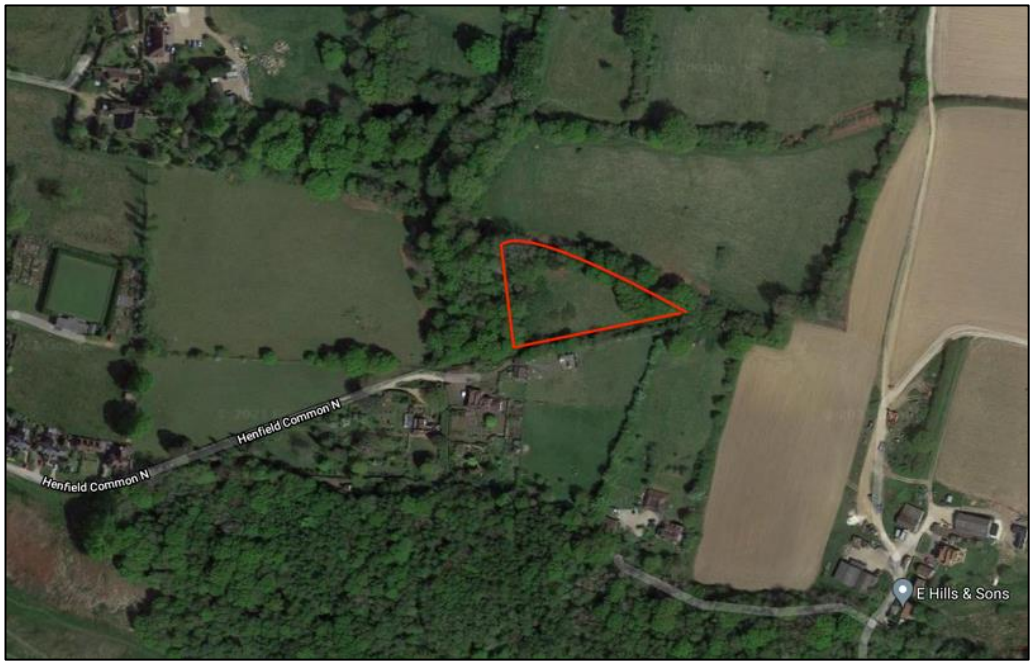
1.4 The Sandpit Field is to the north east of Henfield Common at Ordnance Survey grid reference TQ 22190 15877. It is triangular in shape and bounded by a pastoral field to the north, a small woodland to the west and small fields to the south.

1.5 A fence is along the north boundary and a hedgerow, that appears to be largely unmanaged, is along the south boundary with an adjacent footpath. The location is shown in Figure 1 with an aerial shot in figure 2.

1.6 Access to the site is along the public footpath which runs along the northern side of Henfield Common. This footpath narrows towards the eastern end once past the Henfield Common North road.

FIGURE 1: *The location of the Sandpit Field*

FIGURE 2: *Aerial view of the Sandpit Field*



2 METHODS

Habitat surveys

2.1 A suitably qualified ecologist, Jacqueline Thompson, BSc (Hons), MSc undertook a preliminary ecological survey at the Sandpit Field on the 3rd June 2021. The site was briefly re-visited on 25th August to re-check for the presence of any rare species and to ascertain the species of sedge present (seeds required).

2.2 The grassland was surveyed in detail in order to ascertain the community type and the possibility of restoration. Other site features were also noted and taken into account.

2.3 The survey includes the following elements:

- Habitat mapping using a set of standard colour codes to indicate habitat types on a Phase 1 Habitat Map.
- Description of features of ecological or nature conservation interest in notes relating to numbered locations on the Phase 1 Habitat Map, called Target Notes.
- A plant species list with subjective estimates of the relative abundance of species in selected habitat parcels using a modified DAFOR scale. The DAFOR scale ranks species according to their relative abundance in a given parcel of land as follows: d – dominant, a – abundant, f – frequent, o – occasional, r – rare. In addition, the following prefixes are used: l – locally, v – very.

2.7 Plant nomenclature in this report follows Stace (2010) for native and naturalised species of vascular plant.

Protected species

2.8 The potential for the grassland to support protected species was also taken into account. For example, should the grassland be floristically rich then it may support a good range of invertebrates. Signs of other species that may be using the habitat were searched for in order to ascertain potential issues for site management.

2.9 The National Biodiversity Network (NBN) was also consulted in order to ascertain which species have been recorded in the area.

Badger

2.10 The site and surrounding area was searched for signs of Badger *Meles meles* including setts, foraging signs, paths (runs) and latrines.

Birds

2.11 Features were assessed for their suitability for nesting birds, giving consideration to factors such as cover, food, disturbance and habitat requirements.

Dormouse

2.12 The hedgerows and scrub were assessed for their suitability for Dormouse *Muscardinus avellanarius* for nesting, foraging and for hibernation sites.

Great Crested Newt

2.13 Initial surveys centre on assessing any ponds within the site and identifying suitable terrestrial habitat. If there are Great Crested Newt *Triturus cristatus* breeding ponds within 500 m (that are not isolated from the site by unsuitable habitat or physical barriers), the species could potentially be using terrestrial habitat within the site.

Reptiles

2.14 The site was assessed for reptiles, with particular attention paid to those features that could be used as basking areas (*e.g.* south-facing slopes), hibernation sites (*e.g.* banks and walls) and opportunities for foraging (rough grassland, ruderals and scrub).

UK BAP Species of Principal Importance

2.15 The habitats on the site were assessed for the likelihood of presence for species of regional and national importance such as the Western European Hedgehog *Erinaceus europaeus* and Common Toad *Bufo bufo.*

Limitations

2.16 This type of survey does not assess the presence or absence of species, but is used to assess the potential for the various structures and habitats to support them. Where clear and recent evidence of a species or the species is seen, this is reported.

2.17 The visit was undertaken in June which is an ideal time of year for a survey of this type.

3 RESULTS

FIELD SURVEY

Habitats and features

3.1 The survey results are presented in the form of a phase 1 habitat map, given in the Appendix, with the associated target notes. A botanical species list is also given in the Appendix.

3.2 The following habitats and features are present on site:

- Bracken
- Grassland
- Hedgerows
- Scrub
- Scattered trees
- Woodland regeneration

Bracken

3.3 A margin of Bracken *Pteridium aquilinum* dominates the north boundary of the site. The field layer below the Bracken is variously dominated by patches of Bracken litter, Ground-ivy *Glechoma hederacea* and Germander Speedwell *Veronica chamaedrys* with weak grass growth in places.

Grassland

3.4 Species poor grassland, short and rabbit-grazed in places and forming a dense thatch in others with longer grass around the site margins and in amongst the Bramble scrub. It is variously dominated by Creeping Bent *Agrostis stolonifera*, Common Bent *Agrostis capillaris*, Yorkshire fog *Holcus lanatus* and, in places, Red Fescue *Festuca rubra*. Sheep's Fescue *Festuca ovina* is locally common on the top of ant hills. Other grass-like plants include Heath Wood-rush *Luzula multiflora* and Common Prickly Sedge *Carex muricata* subsp. *lamprocarpa*, which forms sizable stands in places.

3.5 Forb cover is high but is limited to a handful of species with abundant Germander Speedwell *Veronica chamaedrys*, Common Sorrell *Rumex acetosa* and Common Ragwort *Senecio jacobaea* (Photograph 1). Sheep's sorrel *Rumex acetosella* is also present but mostly restricted to ant hills and disturbed patches. Bird's-foot Trefoil *Lotus corniculatus* is the only other frequently occurring species.

3.6 Just a handful of other grassland forbs are present but they are limited to just one or two individuals (usually one) and include Common Knapweed *Centaurea nigra*, Autumn Hawkbit *Scorzoneroides autumnalis*, Yarrow *Achillea millefolium* and Yellow Rattle *Rhinanthus minor.*

PHOTOGRAPH 1: *Species poor grassland with a stand of Common Ragwort in the background*

Hedgerow

3.7 An overgrown and outgrown hedgerow (Photograph 2) is along the north side of the site. It is dominated by Hawthorn *Crataegus monogyna* with Domestic Plum *Prunus domestica*, Holly *Ilex aquifolium* and, rarely, Ash *Fraxinus excelsior* (multi-stemmed). There is a mature oak *Quercus robur* and a mature Sweet Chestnut *Castanea sativa*.

3.8 The field layer is a mixture of scrub, wayside species such as Garlic Mustard *Alliaria petiolata*, Nipplewort *Lapsana communis*, Red Campion *Silene dioica* and the non-native Greater Periwinkle *Vinca major*. These are growing amongst more robust grasses than those growing elsewhere, particularly False Oat-grass *Arrhenatherum elatius*.

PHOTOGRAPH 2: *Defunct and leggy hedgerow*

Scrub

3.9 Scrub, dominated by Bramble *Rubus fruticosus* agg., is encroaching from the west side of the site and has reached the centre of the site in places. There are also pockets of scrub along the southern side of the site adjacent to the footpath.

3.10 Young Pedunculate Oak *Quercus robur* and plum *Prunus sp*. trees are growing up through the Bramble, along with Blackthorn *Prunus spinosa* shrubs as shown in Photograph 3.

PHOTOGRAPH 3: *Dense Bramble scrub with shrubs and trees establishing*

Scattered trees

3.11 The majority of the trees that are shown on the Phase 1 map are saplings that are growing within the scrub or adjacent to the hedgerow (Photograph 4). These are mostly Pedunculate Oak *Quercus robur* saplings.

3.12 An Evergreen Oak *Quercus Ilex*, native to the Mediterranean, is along the north boundary along with a mature native Pedunculate Oak *Quercus robur*.

PHOTOGRAPH 4: *Saplings establishing along the footpath adjacent to the hedgerow*

Woodland Regeneration

3.13 A small area of woodland that has appears to have regenerated from larger trees along the fence-line is at the eastern end of the site. This is dominated by oak trees (*Quercus robur*) that are mostly tall and spindly (Photograph 5) with a diameter or approximately 10 cm – 20 cm, though there are occasional larger trees with a trunk diameter of 30 cm – 45 cm.

3.14 The field layer is indicative of woodland regeneration rather than old woodland with abundant Red Campion *Silene dioica* and patches of Common Nettle *Urtica dioica*. Areas of bare ground have been colonised by annuals forming small patches such as Three-veined Sandwort *Moehringia trinervia* and Lesser Chickweed *Stellaria pallida.* Bluebells *Hyacinthoides-non-scripta* are scattered.

PHOTOGRAPH 5: *Scattered spindly oaks*

Notable plants

Rare plants

3.15 No rare plant species were recorded from the site.

Protected species

3.16 The site has the habitat to potentially support nesting birds, foraging Badger, Dormouse, Great Crested Newt, reptiles and UK BAP species such as Hedgehog and Common Toad.

Amphibians

3.17 Amphibians such as Great Crested Newt and Common Toad move away from water for much of the year and forage in rough grassland and woodland. As there are a number of ponds in the vicinity these species could well be using the habitat within the site. Moreover, Common Toad has been recorded in the area (NBN).

3.18 The woodland and field edges provide refuges, in the form of spaces beneath roots and shaded ground, for amphibians to shelter beneath. The tussocky grassland provides excellent foraging habitat in close proximity to these refuges.

Badger

3.19 Evidence of Badger was found in the small woodland to the west and foraging activity was seen throughout the grassland.

Birds

3.20 The hedgerows and the scrub have the potential to support nesting birds. The area of grassland is too small to support and ground-nesting bird species.

3.21 Species that were seen and heard during the survey are Cuckoo *Cuculus canorus* (Red-listed), Nuthatch *Sitta europaea*, Great Tit *Parus major*, Long-tailed Tit *Aegithalos caudatus* and Linnet *Linaria cannabina* (Red-listed). The Linnets appeared to be nesting within the Bramble within the site boundary.

Dormouse

3.22 According to the National Biodiversity Network the nearest record for Hazel Dormouse is in a block of woodland to the east of Woodmancote, at a distance of approximately 4 km. However, the greater area between the two locations has good connectivity via hedgerows, tree-lines and woodland and so this species could be in the vicinity.

3.23 The trees and scrub provide suitable for forage for Dormouse and the small area of woodland to the west could potentially support a population of Dormice.

Hedgehog

3.24 Hedgehogs have been recorded all around the residential area of Henfield and so it is highly probable that they are in the adjacent countryside. This species will cover a good distance when foraging and the site (and the surrounding area) provides ideal foraging habitat.

Reptiles

3.25 Slow Worm *Anguis fragilis*, Grass Snake *Natrix Helvetica* and Common Lizard *Zootoca vivipara* have all been recorded on Henfield Common. The habitat around the sand pit is more suitable for Slow Worm and Common Lizard.

3.26 The rough and tussocky grassland provides good foraging and basking opportunities for reptiles, particularly with scrub nearby providing extra cover and protection from predators.

4 EVALUATION

Habitats

Bracken

4.1 The Bracken along the northern boundary is increasing in extent which is evidenced by new fronds creeping into the grassland. Without management the Bracken will gradually advance further into the field.

Grassland

4.2 The grassland is species poor being dominated by a handful of grasses and forbs. There are some indications that it was once more varied with several additional grassland forbs found at the level of 'one or two individuals'.

4.3 The primary reason that the grassland has lost its (likely) former diversity is a lack of management. The grasses have become dominant and have formed a dense and impenetrable thatch in places due to their growth from with rhizomes and stolons. This is prohibitive to most forbs that must set seed in order to survive and require germination sites in order for this to be achieved. The result is a progressive loss of flowering plants.

4.4 The most abundant forb in this dense grass is Germander Speedwell *Veronica chamaedrys.* This plant can also increase in extent vegetatively with creeping rhizomes and so does not necessarily need to set seed to persist. Heath Wood-rush *Luzula multiflora* also produces rhizomes to increase in extent.

4.5 The grassland community does not have similarities to any National Vegetation Classification type and, as such, does not classify as a UK BAP Habitat of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006.

Hedgerows

4.6 The UK Biodiversity Action Plan (2007) defines a hedgerow as any boundary line of trees or shrubs over 20 metres long and less than 5 metres wide, and where any gaps between the trees or shrub species are less than 20 metres wide.

4.7 To classify as a native hedgerow it must consist predominantly (i.e. 80% or more cover) of at least one woody UK native species. This Habitat of Principal Importance covers such hedgerows and the hedgerow is therefore a UK BAP Habitat of Principal Importance.

Scrub

4.8 As with the Bracken, the Bramble scrub is advancing throughout the site. Other shrubs and trees, such as Blackthorn and Oak, are establishing within the Bramble which will make clearance more difficult and ultimately gradually move the field to woodland.

Scattered trees

4.9 An Evergreen Oak *Quercus Ilex,* native to the Mediterranean, is along the north boundary along with a mature native Pedunculate Oak *Quercus robur*, and as mature boundary features these should be retained.

4.10 Seedlings, saplings and young trees are becoming established, particularly adjacent to the hedgerow and within patches of scrub. Leaving these will result in succession to woodland.

Woodland Regeneration

4.11 The small area of woodland regeneration is quite different from the very young scattered trees as the trees are mostly mature and established. Natural regeneration has resulted in the trees growing close together and therefore they are mostly tall and thin and would benefit from thinning.

Notable plants

Rare plants

4.12 No nationally rare or nationally scarce plants were recorded on site. No plant species listed as being of Principal Conservation Importance in Section 41 of the Natural Environment and Rural Communities Act (2006) were found on site. No plant species likely to be included in the local BAP were recorded on site.

Non-native species

Greater Periwinkle

4.13 Greater Periwinkle *Vinca major* is growing at the west end of the site along the hedgerow. This species currently forms a sizable patch and is likely to increase in extent at the expense of native species.

Protected species

Amphibians

4.14 Great Crested Newts (GCN) are fully protected by both the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. The species is a European Protected Species and, along with Common Toad, a UKBAP Priority Species and has been adopted as a Species of Principal Importance in England under Section 41 of the NERC Act (2006).

4.15 Great Crested Newt and Common Toads hibernate during the winter months (October until late February) in burrows, gaps around established tree roots and very dense leaf litter.

4.16 Tree planting should take place during these months in order to ensure that no newts or toads are harmed. If this were not possible then certain procedures would need to be followed in order to ensure that these species will avoid the works area.

Badger and bats

4.17 Works involving grassland restoration or the planting of an orchard will have no impact on foraging badger or bats

Birds

4.18 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation, it is an offence to intentionally kill, injure or take the birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.

4.19 In order to comply with legislation, the removal of vegetation must be taken outside the bird-breeding season (March to September inclusive). If any work involving such clearance were scheduled to take place between the beginning of March and the end of September, a survey to check for nesting birds would be required. No vegetation can be cleared whilst a nest is occupied.

Dormouse

4.20 Dormice receive full protection under The Conservation of Habitats and Species Regulations 2010, and the Wildlife and Countryside Act 1981 (as amended). Dormouse is a UKBAP Priority Species and has been adopted as a Species of Principal Importance in England under Section 41 of the NERC Act (2006). The UK holds 25 % of world population of Dormice.

4.21 According to the desktop survey this species has not been recorded in the vicinity, but given the high density of woodlands in the surrounding countryside its presence cannot be excluded.

4.22 The hedgerow along site periphery may support foraging Dormice and this species may venture into the site to forage in the scrub.

4.23 It is highly unlikely that any proposed activity would disturb a Dormouse nest, however, if this were the case and a nest were found then works must immediately cease and the advice of an ecologist be sought at once.

Reptiles

4.24 Reptiles are protected under the Wildlife and Countryside Act of 1981 (and as amended), making it an offence to intentionally kill, injure, sell or advertise to sell any of the native species of reptile in the UK.

4.25 All reptiles are UKBAP Priority Species and have been adopted as Species of Principal Importance in England under Section 41 of the NERC Act (2006).

4.26 As reptiles are in the vicinity it is likely that they will be using the habitat within the site; particularly Slow Worm. The window of activity is similar to amphibians and therefore the constraints will be similar too.

5 RECOMMENDATIONS

Habitats

General

5.1 This site is currently grassland that has become rank and lost its diversity. Moreover, due to a lack of management succession is occurring and the end result would be deciduous woodland with a field layer dominated by Bramble and Bracken.

5.2 The options for the site were grassland restoration (if relatively species rich and worthwhile) or the establishment of a small orchard. However, given the lack of diversity of forbs and grasses thus providing a poor baseline for restoration, and the restoration process along with constraints that would arise for the ongoing management (briefly outlined below) this would be extremely demanding.

5.3 As such, it is recommended that the establishment of an orchard would be the best way forward for this particular site.

5.4 However, in addition to the establishment of an orchard it is also recommended that the hedgerow be restored, the woodland regeneration be thinned, the Bracken be eradicated or reduced in extent and the scrub managed.

5.5 Before work starts, it is also recommended that a plan be made as to proportions of each habitat. For example, the scrub is very beneficial to wildlife and so it would be advantageous to retain a wide margin along the woodland boundary at the west side of the site. However, it would be best to plan just how wide this margin should be in order that it can be maintained as such into the future. Likewise, it must be decided whether the Bracken margin should be retained, and, if so, how wide in order to prevent encroachment.

Grassland restoration

5.6 Transforming this grassland to a species rich sward would be possible but it would require significant intervention and on-going maintenance in the form of cutting or grazing.

5.7 The process would begin by breaking the dense thatch which would be achieved by harrowing or scarifying.

5.8 Although there may be some seeds of flowering plants in the seed bank, it is likely that these have been swamped by grass seeds, and therefore small areas of bare soil would then need to be created for sowing seeds. Seed sown into gaps in existing vegetation (as opposed to a cleared field) will grow, but more slowly and less reliably as a result of competition from well-established neighbours (grasses in this case).

5.9 On-going management in the form of regular cutting or grazing would then be required in order to promote the continuing establishment of forbs and then to maintain the sward.

5.10 The Sandpit Field has significant constraints to achieving this as follows:

- The use of machinery. This would ideally be required for restoration and on-going maintenance in the form of cutting; however, the site is accessed by a narrow footpath which is prohibitive to moving heavy machinery.

- Grazing animals. Grazing animals in the form of sheep or cattle or even a horse or donkeys could be used to maintain the grassland. However, the site would require fencing along the woodland boundary to the west and gates at the south-west and east ends of the site allowing footpath access. Moreover, grazing animals would require a water supply, daily welfare visits and another site to be moved to in the early summer months to allow forbs to flower and set seed.

Orchard establishment

Spacing and layout

5.11 Traditionally, orchards are planted in a grid formation, in rows of trees from North to South to maximise how much sun reaches each tree. It is important that each tree is positioned in a place that receives sufficient sun and soil depth, and is not too close to other trees or large shrubs.

5.12 Spacing between fruit trees should be generous to allow for competition-free root and canopy growth. This depends on the type of tree (and the ultimate size) to be planted, but consider 3.5 - 5 m apart.

Planting

5.13 The soil should be approximately 0.6 m deep before hitting the substrate as most of a tree's feeder roots will occur in the top 0.6 m of the soil.

5.14 A square shaped pit is best as it gives the roots angles to grow into rather than growing around the edge. The pit should accommodate the entire root ball with ease and root establishment would benefit from having the surrounding soil loosened. The removed turf could be placed at the bottom of the pit as this will provide additional nutrients as it breaks down.

5.15 When back-filling, the topsoil should be used as this has more nutrients. Care must be taken to ensure that no air spaces are left around the roots. Shaking the tree every few minutes will ensure that the soil falls into any spaces. Care should be taken to lift any roots that originate from higher up, placing soil underneath them so that the roots extend at many levels, as they did when they grew in the nursery. This helps with stability.

Mulching

5.27 In order to aid establishment a generous layer of mulch can then be added. This should form a circle around the tree, around 1 m diameter and 8-10 cm thick. A hollow should be made immediately around the base of the tree's stem so that the mulch is not touching the bark, which can lead to rotting. The mulch could be wood chips or compost.

Tree guards

5.28 The young trees may be vulnerable to grazing deer, particularly in this setting, and so the use of tree guards is recommended.

Watering

5.29 Trees will usually establish without regular watering, however, at times of drought trees should be checked for signs of stress. Should young and establishing trees become stressed then watering would be required. The mulch around the trees will aid water retention to a degree.

Bracken control

5.16 During growth Bracken stores the products of photosynthesis in rhizomes (creeping stems lying, usually horizontally, at or under the surface of the soil) that spread underground allowing the stand of bracken to increase in size. The rhizomes have active and dormant buds, the active buds are normally produced from the rhizomes lying above or just below the surface of the soil, these produce the fronds. The dormant buds produce the fronds in subsequent years.

5.17 In the winter the fronds die back covering the surface of the ground with a dense litter and thus prohibiting the establishment of other (possibly competitive) plant species. New fronds are produced in the spring from the energy stored in the rhizome. Control is based upon depleting rhizome of its store of energy and preventing the rhizome from accumulating additional stored energy.

5.18 This can be achieved by cutting, with the aim to cut twice each season. The first cut in about mid-June (possibly slightly earlier) when the fronds have just finished unfurling and the bracken is 50-75 cm high, and again approximately six weeks later when second fronds have been produced. This twice-yearly cutting is likely to be required for at least 3 years and should be repeated when (and if) the Bracken shows signs of recovery.

5.19 Cutting can be achieved with a hand scythe given the relatively small area to be controlled. The litter can be removed by raking in order to allow flowing plants and grasses to establish on the ground below.

Hedgerow restoration

5.20 Currently, the hedgerow bounding the southern edge of the site (adjacent to the footpath) is defunct. It is tall and leggy and, as such, does not provide nesting opportunities for birds.

5.21 It is recommended that this hedgerow be layed. This is a traditional method of long-term management of hedges, which, as well as providing a dense stockproof barrier (which is also beneficial to nesting birds) it rejuvenates the shrubs contained in the hedge. Any decent trees can be left as such forming a 'hedgerow with standards'.

5.22 Hedge laying is generally done between November and March. As a general guide, the leaves should have started to 'turn' before work begins and it is best to stop when the buds start to burst in the Spring.

5.23 The National Hedgelaying Society (found on line) would be a good first point of contact and can be used to find local hedgelayers.

Scrub control

5.24 Brambles advance by sending out long stems (primocanes) that grow vigorously, sometimes three inches a day, in an arching manner and capable of attaining up to nine metres in length.

When the shoot tip settles to the ground, it can root in this new spot, ready to send out a new primocane for further advance the following year.

5.25 The newly established roots formed in this manner tend to be shallow and easy to hand-pull and so it is best to attack Bramble from its advancing front.

5.26 Should clearance be required into the more established part of the stand then roots would need to be dug up rather than cut. Roots cut above the ground are likely to send out new shoots and quickly re-establish themselves.

5.27 Other scrub, in the form of small trees and shrubs, should be removed by hand pulling or digging. These would eventually compete with the establishment of the apple trees.

5.28 The brash produced could be used to form dense and prickly piles in the woodland to the west or the small area of woodland at the eastern end of the site.

Woodland regeneration thinning

5.29 Thinning is the removal of some trees within woodland. The trees in this small copse are tall and thin because they are competing with each other for space, light, and nutrients. This has resulted in a very slow growth rate.

5.30 Removing the weakest and thinnest trees would allow the other trees to grow. With growth, these trees would then start to develop features that would be beneficial to wildlife. Due to the small area, just a handful of trees should remain.

5.31 Thinning can be done gradually with just one or two trees removed each season. The cut wood can be removed for fire wood and / or placed into log piles within the area to rot down gradually and, whilst doing so, be of benefit to wildlife.

5.32 Log piles allow growth of moss and fungi and attract insects and other invertebrates. This, in turn, attracts a range of small mammals, reptiles, amphibians and birds that will visit to prey on the insect residents.

Species

General

5.30 Hedge-cutting / laying, scrub clearance and digging holes for tree planting all have the potential to impact upon protected species that may be using the site. The hedge-cutting / laying and scrub clearance may impact Dormice and birds and the digging may impact reptiles and amphibians.

Breeding birds and Dormice

5.31 Scrub clearance and hedgerow cutting / laying should take place during the winter months in order to avoid breeding birds and foraging Dormice. Dormice nests were not seen during surveys but this species may be active during a mild winter and so any nests should not be disturbed and the advice of a licensed ecologist be sought.

Amphibians and reptiles

5.32 Planting should take place in the winter months (October – late February) when mammals and amphibians are hibernating.

5.33 Amphibians and reptiles may hibernate in large tussocks of grass and in mammal holes. Large grass tussocks are not present but there are mammal holes and so there is an outside change that (particularly Slow Worms) may be found.

5.34 Care therefore should be taken when digging around any burrows / small mammal holes, and if any hibernating amphibians / reptiles were found then these should immediately be placed in a cotton bag and the ecologist contacted.

5.35 Should planting take place in the summer months then the following would be required in order to deter reptiles and amphibians from the planting area:

- All vegetation (grass and ruderals) must be cut and maintained at a maximum height of 30 mm in order to deter protected species.
- The first cut should even the height to approximately 75 mm. A further cut one or two days later should bring the sward height down to 30 mm.
- The vegetation should then be maintained at a maximum height of 30 mm through regular mowing or strimming or the whole process must be repeated.

5.36 The vegetation must be kept at this height until the trees are planted.

REFERENCES

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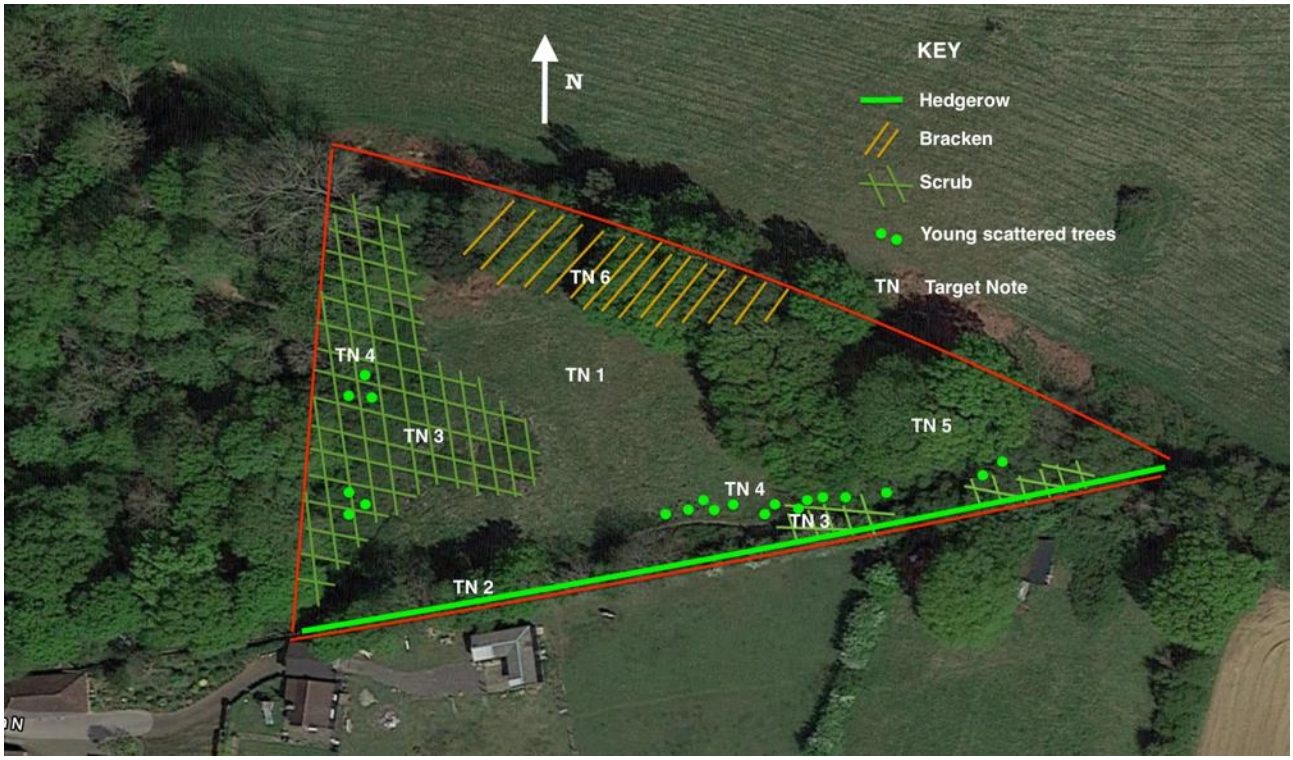
APPENDIX

Phase 1: Habitat Map



Target Notes

Target Note 1	Species poor grassland, short and rabbit-grazed in places and forming a dense thatch in others with longer grass around the site margins and in amongst the Bramble scrub. It is variously dominated by Creeping Bent *Agrostis stolonifera*, Common Bent *Agrostis capillaris*, Yorkshire fog *Holcus lanatus* and, in places, Red Fescue *Festuca rubra*. Forb cover is limited to a handful of species with abundant Germander Speedwell *Veronica chamaedrys*, Common Sorrell *Rumex acetosa* and Common Ragwort *Senecio jacobaea*.
Target Note 2	An overgrown and outgrown hedgerow is along the north side of the site dominated by Hawthorn *Crataegus monogyna* with Domestic Plum *Prunus domestica*, Holly *Ilex aquifolium* and, rarely, Ash *Fraxinus excelsior* (multi-stemmed). There is a mature oak *Quercus robur* and a mature Sweet Chestnut *Castanea sativa*.
Target Note 3	Scrub, dominated by Bramble *Rubus fruticosus* agg. Young Pedunculate Oak *Quercus robur* and plum *Prunus sp*. trees are growing up through the Bramble, along with Blackthorn *Prunus spinosa* shrubs.
Target Note 4	Scattered trees - mostly saplings growing within the scrub or adjacent to the hedgerow. These are mostly Oak *Quercus rubur* saplings. An Evergreen Oak *Quercus Ilex*, native to the Mediterranean, is along the north boundary along with a mature native Oak Quercus robur.
Target Note 5	A small area of woodland that has appears to have regenerated from larger trees along the fence-line is at the eastern end of the site. This is dominated by Pedunculate Oaks *Quercus robur* that are mostly tall and spindly with a diameter or approximately 10 cm – 20 cm.
Target Note 6	Bracken *Pteridium aquilinum* with a field layer variously dominated by Ground-ivy *Glechoma hederacea* and Germander Speedwell *Veronica chamaedrys.*

Plant species list

English name	Latin name	Abundance
Grasses, sedges and rushes		
Cock's-foot	*Dactylis glomerata*	lf
Common Bent	*Agrostis capillaris*	a
Common Prickly Sedge	*Carex muricata subsp. lamprocarpa*	f / la
Creeping Bent	*Agrostis stolonifera*	lf
False Oat-grass	*Arrhenatherum elatius*	lf
Red Fescue	*Festuca rubra*	f
Sheep's-fescue	*Festuca ovina*	lf
Smooth Meadow-grass	*Poa pratensis*	lf
Sweet Vernal-grass	*Anthoxanthum odoratum*	o
Timothy	*Phleum pratense*	lf
Yorkshire-fog	*Holcus lanatus*	f / ld
Flowering plants		
Autumn Hawkbit	*Scorzoneroides autumnalis*	vr
Bittersweet	*Solanum dulcamara*	lf
Bluebell	*Hyacinthoides non-scripta*	ld
Cleavers	*Galium aparine*	lf
Common Bird's-foot-trefoil	*Lotus corniculatus*	r / la
Common Chickweed	*Stellaria media*	o
Common Dandelion	*Taraxacum sect. Ruderalia*	o
Common Knapweed	*Centaurea nigra*	vr
Common Mouse-ear	*Cerastium fontanum*	f
Common Nettle	*Urtica dioica*	lf
Common Ragwort	*Jacobaea vulgaris*	f / ld
Common Sorrel	*Rumex acetosa*	a
Creeping Buttercup	*Ranunculus repens*	vr
Creeping Thistle	*Cirsium arvense*	lf
Field Forget-me-not	*Myosotis arvensis*	vr
Garlic Mustard	*Alliaria petiolata*	lf
Germander Speedwell	*Veronica chamaedrys*	a
Greater Periwinkle	*Vinca major*	la
Greater Plantain	*Plantago major*	r
Ground Ivy	*Glechoma hederacea*	lf
Heath Wood-rush	*Luzula multiflora*	o
Lesser Chickweed	*Stellaria pallida*	lf
Lesser Stitchwort	*Stellaria graminea*	vo
Lords-and-Ladies	*Arum maculatum*	o
Nipplewort	*Lapsana communis*	lf
Red Campion	*Silene dioica*	lf
Sheep's Sorrel	*Rumex acetosella*	o / la
Smooth Hawk's-beard	*Crepis capillaris*	vr
Spear Thistle	*Cirsium vulgare*	r
Three-veined Sandwort	*Moehringia trinervia*	la
Wood Avens	*Geum urbanum*	o
Wood Dock	*Rumex sanguineus*	r
Yarrow	*Achillea millefolium*	vr
Yellow Rattle	*Rhinanthus minor*	vr
Woody species		
A plum	*Prunus sp.*	r
an apple	*Malus sp.*	r
Ash	*Fraxinus excelsior*	r
Blackthorn	*Prunus spinosa*	o
Bramble	*Rubus fruticosus agg.*	ld

English name	Latin name	
Woody species contd.		
Dogwood	*Cornus sanguinea*	r
Domestic Plum	*Prunus domestica*	vo
Elder	*Sambucus nigra*	r
Hawthorn	*Crataegus monogyna*	lf
Holly	*Ilex aquifolium*	vo
Ivy	*Hedera helix*	lf
Pedunculate Oak	*Quercus robur*	o
Red Currant	*Ribes rubrum*	r
Sweet Chestnut	*Castanea sativa*	vr
Ferns		
Bracken	*Pteridium aquilinum*	ld

LEGISLATION

The Wildlife and Countryside Act 1981 (as amended)

Schedule 1

*A*pplies to all wild birds where it is an offence:

6.1 to take, damage or destroy a nest whilst it is being built or in use

6.2 to kill, injure or take any wild bird (subject to certain exceptions)

6.3 to take or destroy the egg of any wild bird.

It is also an offence to disturb any wild bird listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended)

- while it is nest building
- at a nest containing eggs or young
- to disturb the dependant young of any such bird.

Schedule 5

For animals fully protected under Schedule 5 which includes, the hazel dormouse, great crested newt, all bats, water voles, otters, smooth snake, sand lizard and natterjack toad. It is an offence:

- to intentionally kill or injure or take these species
- to intentionally or recklessly damage or destroy or obstruct access to any structure or place which a species uses for shelter or protection, at any time even if the animal is not present.
- to intentionally or recklessly disturb whilst it is occupying a place which it uses for shelter or protection.

Adder, grass snake, common lizard and slow worm are protected from being killed or injured and the white- clawed crayfish is protected from being taken.

Schedule 8

Specific species of plants listed in Schedule 8 are protected. It is an offence: to intentionally pick, uproot or destroy a wild plant listed in Schedule 8.

Schedule 9

Invasive non-native species are listed under Schedule 9. It is an offence:

- to plant or otherwise cause to grow in the wild.
- If soils are contaminated by invasive non native plant species it becomes classified as
- '*controlled waste*' under the Environmental Protection Act 1990 (England, Wales & Scotland),
- and must be disposed of accordingly.

The Conservation of Habitat and Species Regulations 2010

Schedule 2 applies to all European Protected Species (EPS), which included all bat species, great crested newts, dormice, otters, sand lizards, smooth snake and natterjack toad. The protection afforded is overlapping but separate from the Wildlife and Countryside Act 1981 (as amended).