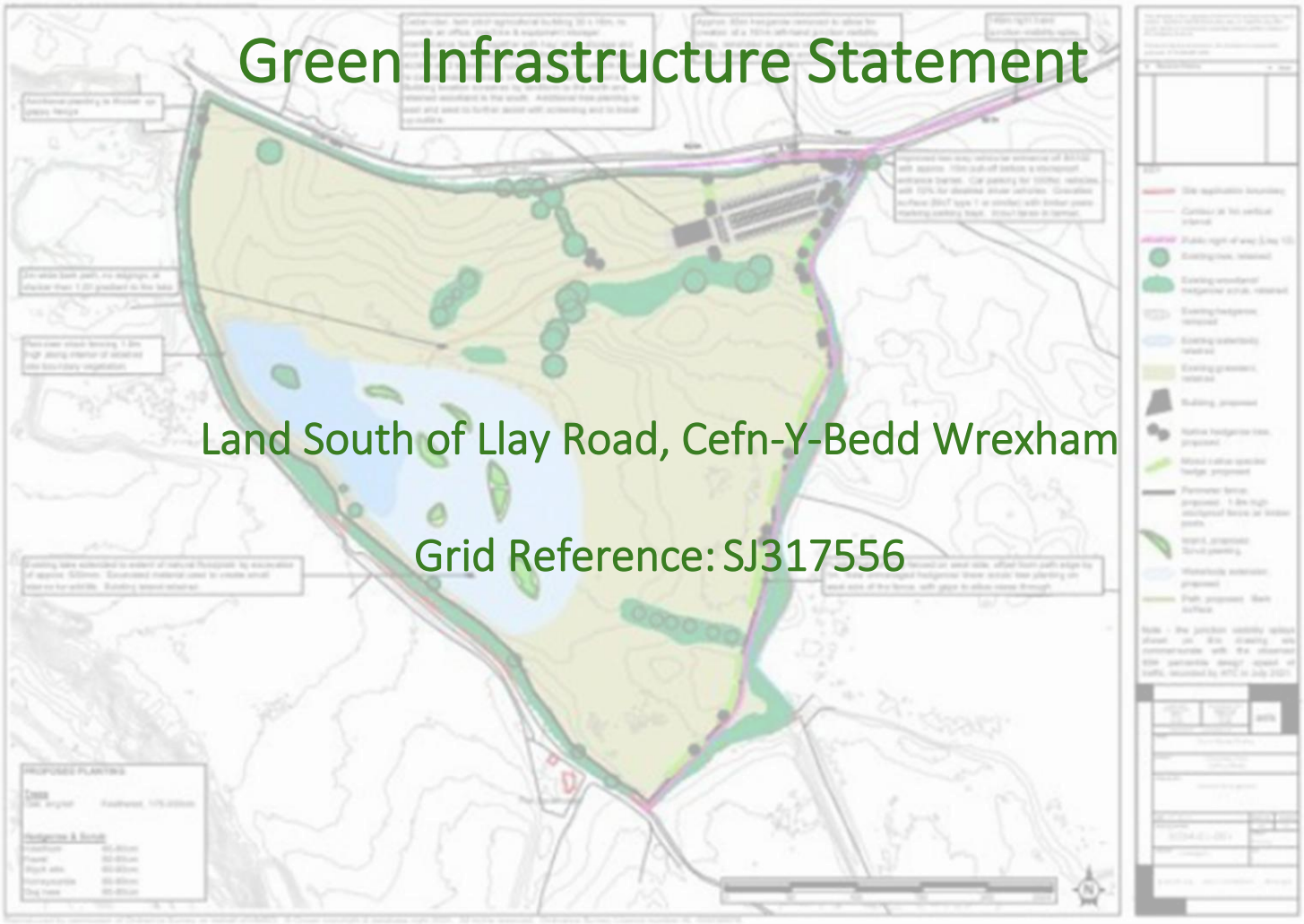
Leigh Ecology Ltd

Protected Species and Habitat Surveys

Green Infrastructure Statement



Land South of Llay Road, Cefn-Y-Bedd Wrexham

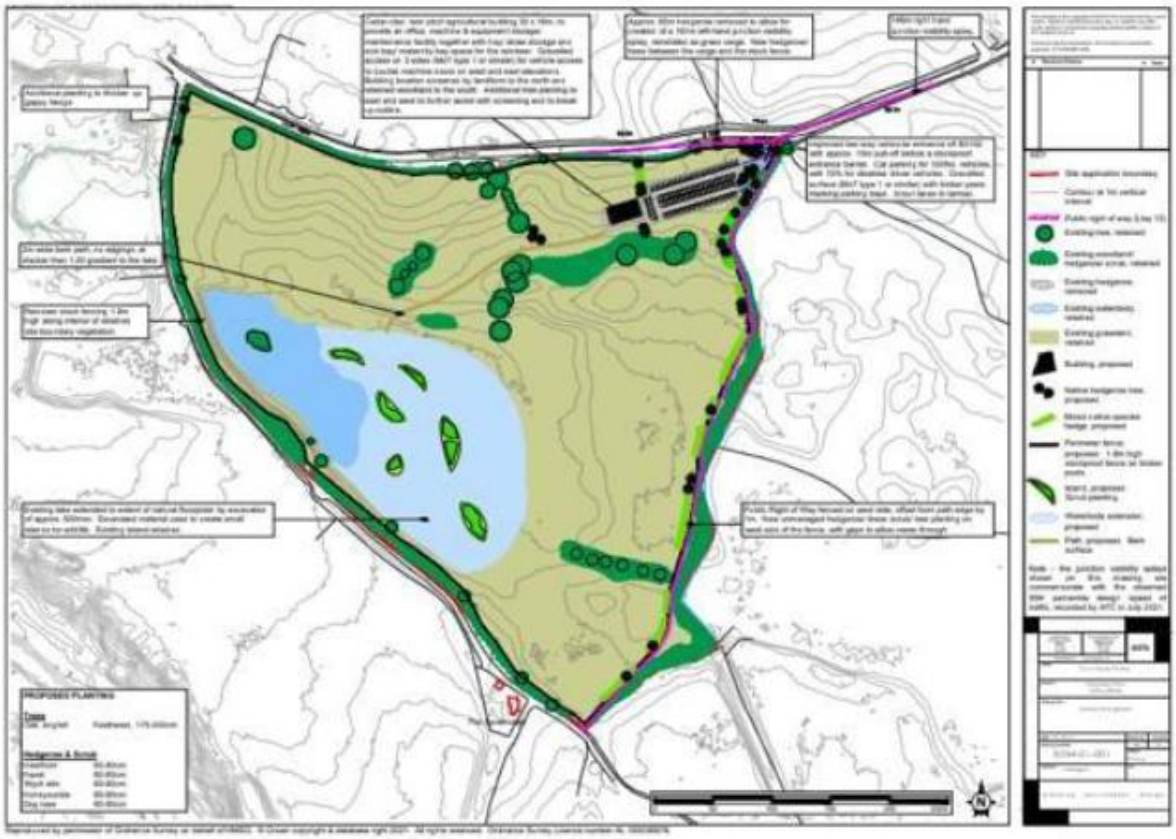
Grid Reference: SJ317556

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Appendix 1: Green Infrastructure Statement and Net Biodiversity Benefit

1. Description of proposal:



The site is an open mosaic habitat containing semi-improved neutral grassland, poor semi-improved grassland and marshy grassland with open water and ponds.

The site has limited public access. Trees within the site offer poor bat roosting habitat but do offer foraging and commuting opportunities for bats.

Areas of key ecological interest within the development site include marshy grassland, the lake itself, the ponds and the hedgerows.

The site contains habitat frequented by commoner and scarcer bird species; any habitat removal should be undertaken outside of the bird-nesting season March- August inclusive.

The provision of similar muddy bare ground should be provided as part of the site landscape design.

2. What green infrastructure features (trees, hedges, hedgebanks) have already been removed from site and/or require removal to facilitate the development (add lengths or areas)?

No trees or hedgerows have been removed.

3. How are the retained features being protected during development (BS5837:2012)?

The lake, muddy marginal areas and marshy grassland vegetation habitat may provide suitable habitats for UK BAP priority species, as well as more common bird species.

Works will be undertaken in periods outside the bird breeding season.

It is suggested that the marshy area and its vegetation is protected by the provision of a raised boardwalk, which can be used as part of a nature trail.

Where any excavation occurs on site all trees and hedgerows will be protected by stand-off fences located outside the root protection zone

Ponds will be protected by managing water levels.

4. What Green Infrastructure is being planted as mitigation for losses?

White willow around the wet areas that the ditch creates, also some Goat willow around the lake area to provide refuge for the water birds.

Double planting of locally sourced native trees and scrub have been planted to plug gaps and reinforce the hedgerows.

Large areas have been left wild, and we have sown some native wildflower seeds in some areas.

5. Biodiversity enhancements

Various enhancements have been provided on site, water cleaning and drainage re direction to ensure the ponds retain water all year.

Planting of wildflower grassland meadows and the area within the headlands are able to maintain wildlife corridors.

Planting native hedge trees to create new hedges and to strengthen existing trees as shown on the plans.

Bat and Bird Boxes

State type and number, height and aspect.

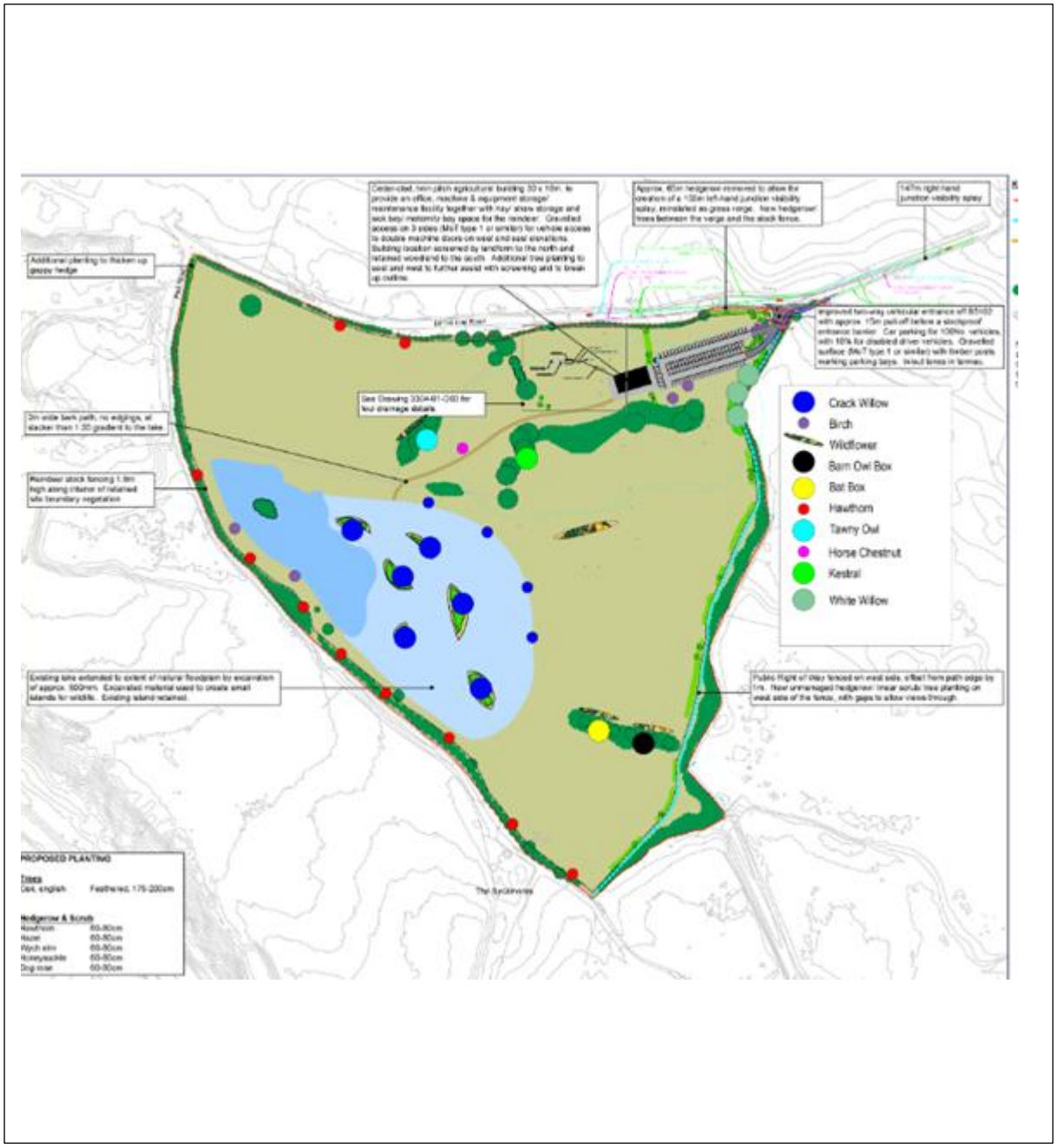
Barn Owl A Frame box x 1- 4m facing southeast

Tawny Owl Boxes x 1- 5m facing west

Kestrel Box x 1- 5m facing southeast

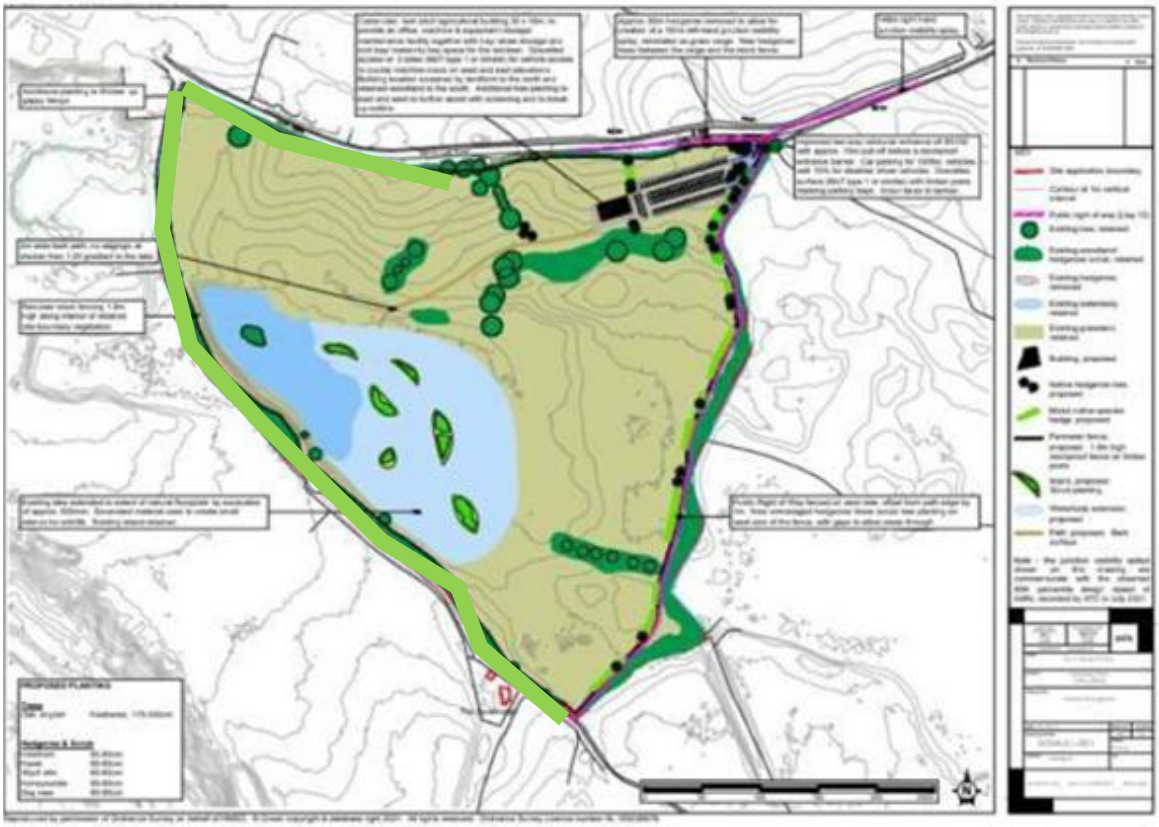
General Bat Roost Boxes x 2- 4.5m facing southwest and southeast

Bat and bird box location plan



Hedgerow

Total new or restored length, including total number of each species:



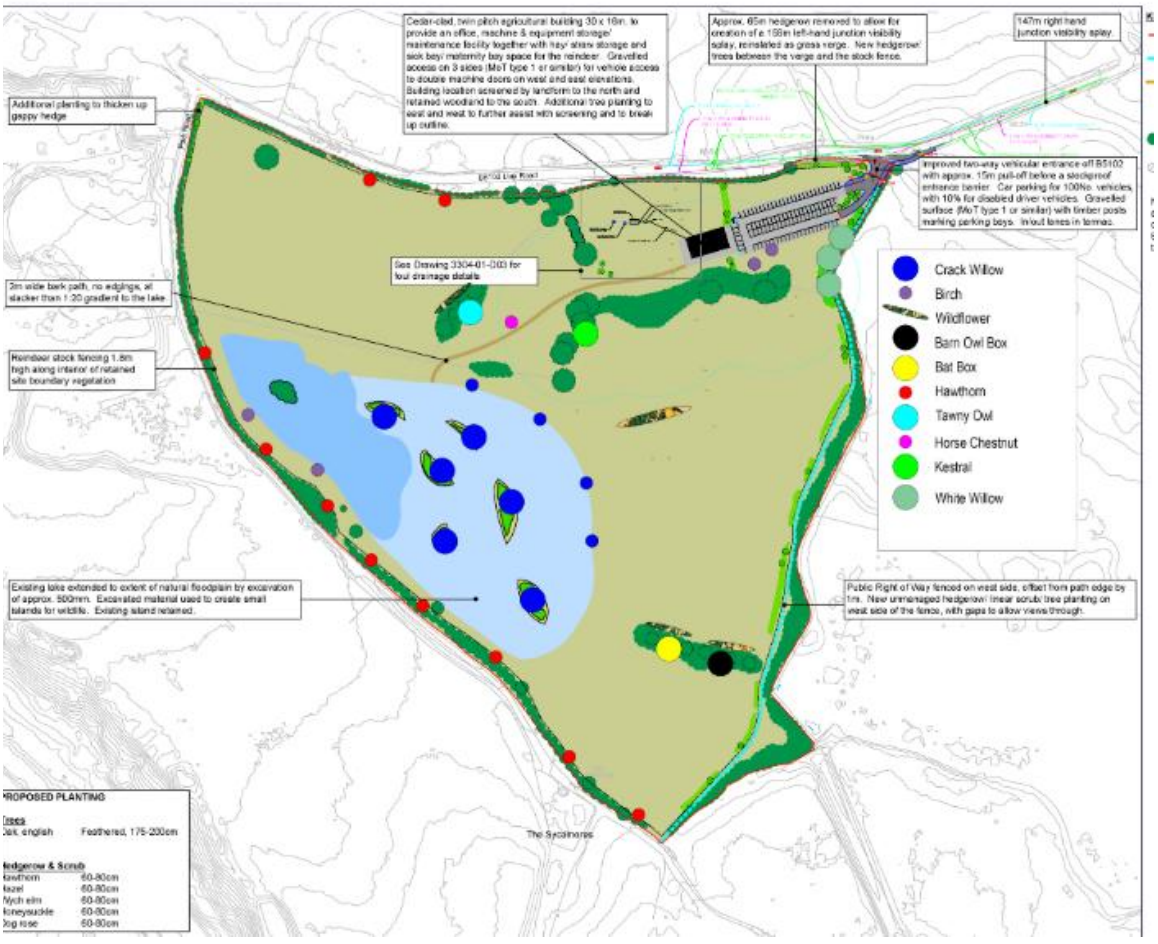
Native Hedgerow Planting

Hedgerow location plan

Trees Planting

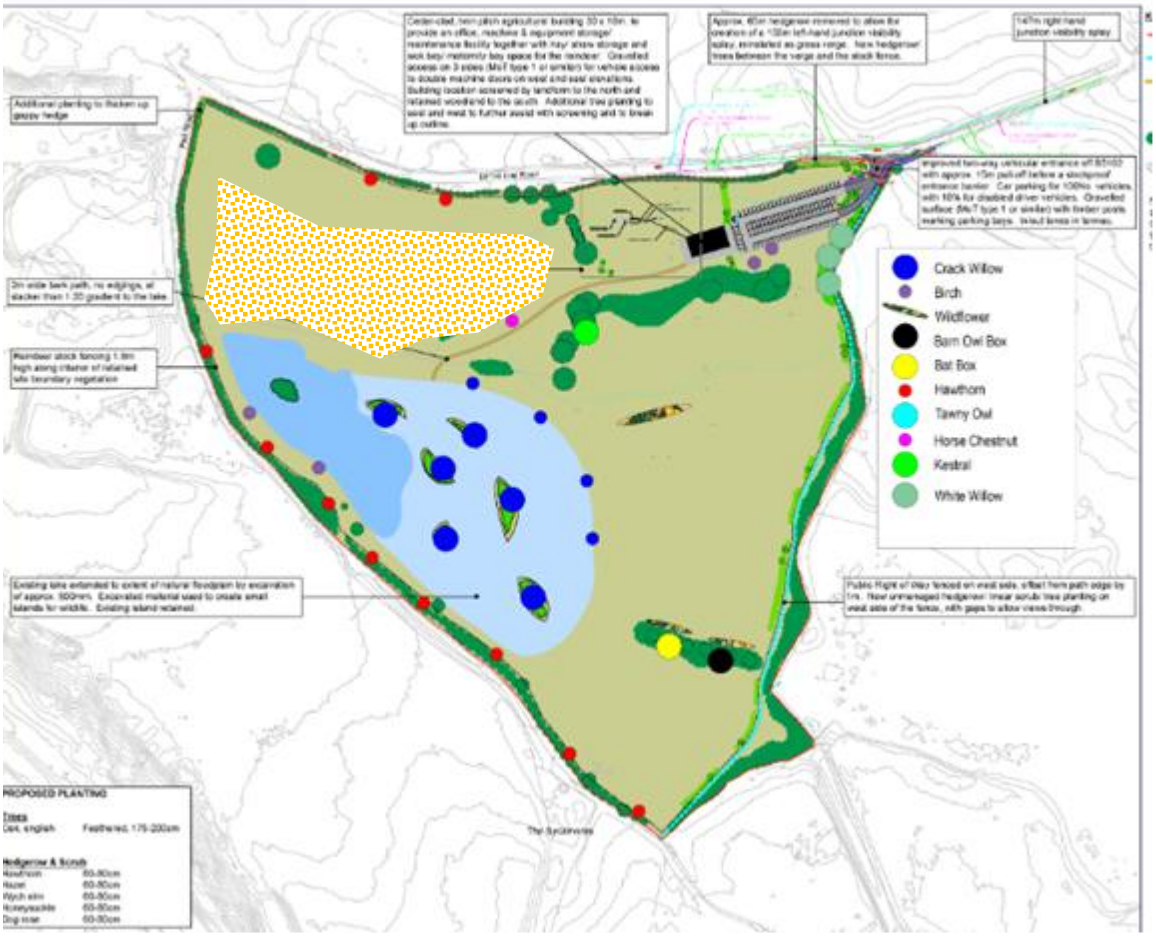
Number and size of trees at planting, species (latin name) and proposed protection measures.

White willow around the wet areas that the ditch creates, also some Goat willow around the lake area to provide refuge for the water birds.



Tree planting plan

Wildflower Grassland



Wildflower Meadow Planting

Wildflower grassland planting plan

Management of the water has improved the onsite ponds water quality, it has also improved the pond adjacent which is a protected site, this has ensured that it remains



Site Photographs



The proposed water spring cascade ponds are seemingly in good condition; however some chemical-based pollution occurs from offsite drainage particularly the run off from the road.





The trees are in good condition and have benefitted from no cattle browsing as previously



Barn Owl on agricultural sites on hedgerow tree.



The lake and marshy area

Please note the following guidelines for the installation of bird boxes:

* Wherever possible, bird boxes should be integrated into new builds or extensions, rather than attached externally.

* Woodcrete boxes (such as those made by Vivara or Schwegler) are the most durable and provide the best conditions; wooden boxes should only be used when woodcrete is not suitable.

* Bird boxes should be installed at a minimum height of four meters on a tree or wall.

* The box should face between north and east to avoid strong sunlight and wet winds, unless there are trees or buildings that provide shade during the day.

* Ensure a clear flight path to the nest without any clutter in front of the entrance. Tilt the box forward slightly to deflect rainwater.

* House sparrows and starlings will use nest boxes placed high up under the eaves. Two or three boxes can be spaced out on the same side of the building, as these birds nest in loose colonies. Keep these boxes away from areas where house martins typically nest.

* Within a housing development, a minimum of 75% of properties should have an integrated bird nesting feature. For a single house, either an integral bird or bat feature can be chosen.

Please note the following guidelines for the installation of bat boxes:

Please note that there is a preference for integrated bat boxes and tubes, such as the Green & Blues Bat Block, Vivara pro build-in, and Schwegler woodstone bat tube, which can be incorporated into the walls and facade of a building. These options offer a secure, permanent space for bats with minimal maintenance and potentially improved thermal properties.

If integral boxes are not feasible, long-lasting woodcrete boxes like the Schwegler 2F or Beaumaris should be used.

To increase the likelihood of use, bat boxes should ideally be located near known bat feeding areas. Installing several boxes facing different directions on sunny aspects can provide a range of warm conditions. Placing boxes as high as possible helps avoid predation from cats, and on buildings, they should be positioned as close to the eaves as possible. As bats use dark tree lines or hedgerows for navigation, placing boxes near these features may also aid in their discovery.

Please note the following guidelines regarding bat roosts and roofing:

* Raised ridge tiles or access to roof spaces should only be implemented if the roofing membrane is a non-fibrous, traditional bitumen-based material. Breathable membranes can cause entanglement issues for bats, which is harmful to both the animals and the roof structure.
* Within housing developments, a minimum of 30% of properties should incorporate a bat roost feature. For single houses, either an integral bird or bat feature can be chosen.

When installing bat boxes, please consider the following locations:

* Areas where bats are known to feed and navigate, such as close to hedges and tree lines.
* Ideally, at least 4 meters above the ground, where safe installation is possible.
* Away from artificial light sources to protect bats from predation.
* Sheltered from strong winds and exposed to the sun for part of the day, usually facing south, south-east, or south-west.

Wildflower Grassland:

Many of our pollination insects are experiencing a rapid decline with native bees experiencing a 70% reduction in the last 40 years.

Creating wildflower grassland offers an immediate and effective solution. These areas not only provide vital food sources for pollinators, birds, amphibians, and mammals but also create an attractive floral display and can even reduce maintenance costs by minimizing mowing needs.

Seed should be native and from a trusted and reputable supplier such as Wild Flower Habitat Seed Mixes | 100% UK Native Wildflower Seed - Landlife Wildflower or Mixtures | Emorsgate Seeds – (01553) 829 028 (wildseed.co.uk) where mixes can be bought for various sites and soil conditions.

Supplier's advice on ground preparation should be followed or general instructions can be found;

Wildflower meadow: establishment / RHS Gardening

Turfs

In some circumstances turfs can be purchased and give a more instant result. However, these are expensive and many are backed with plastic to hold the turfs together. Like any turf, they will require regular watering until established.

Management

Management of wildflower grassland is key, and this should be given appropriate consideration prior to installation. Grasslands should be cut a maximum of twice per year (early March and mid- late August) and then all arising removed to reduce fertility and provide improved conditions for wild flowers. For this reason it is difficult to maintain wildflower grassland on slopes or bunds.

Trees:

Native trees and woodland provide habitat for a variety of plants and animals as well as storing carbon which helps to combat climate change. Tree planting in groups is especially valuable.

Native trees which are considered to have biodiversity benefits are listed below.

- Alder, Beech, Birch (silver or downy), Blackthorn, Black poplar, Cherry (bird or wild), Crab apple, Dog wood, Field maple, Hawthorn, Hazel, Holly, Lime (common or small leaved), Oak (English or sessile), Rowan/mountain ash, Wild service, Willow (grey or goat) and Wych elm.

- The tree planting season is considered to be from November to March.
- Trees should be protected from damage from livestock or rabbits by fencing or guards if necessary.
- Watering may be required in periods of dry weather.
- The size and species of any trees should be clearly marked on plans.

Native Hedgerow

Hedges are a better choice of boundary for wildlife than fences or walls, especially if native trees and shrubs are used. Hedges allow wildlife to move about between gardens and other spaces and provide feeding and breeding opportunities. If hedges exist but are patchy (defunct) hedgerow restoration is an option including some fencing as protection.

Choosing the Right Species

- Take a look at other hedgerows in the local area and choose species that you can see to retain local distinctiveness.
- Use a minimum of 5 species.

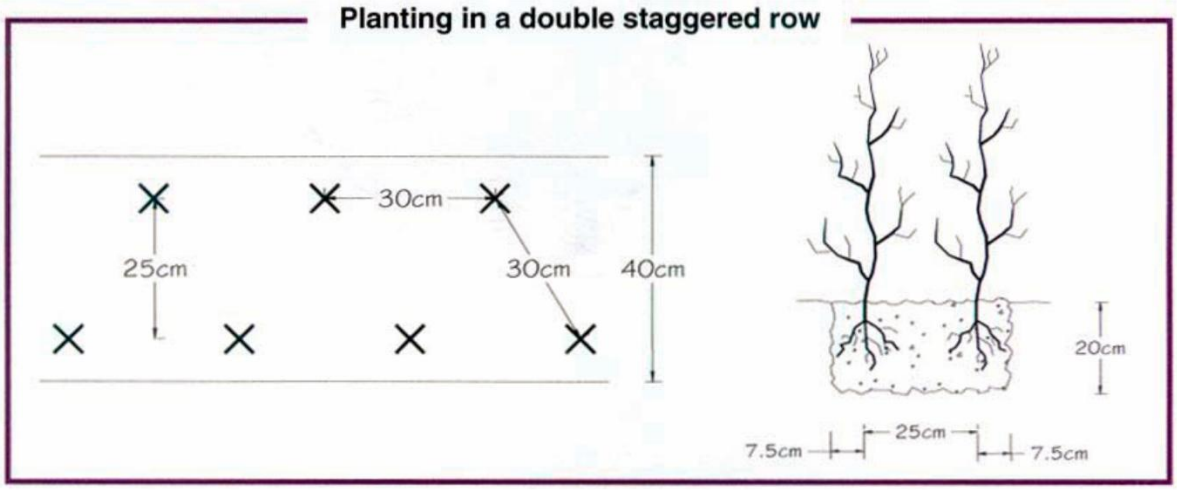
- Blackthorn (*Prunus spinose)* combined with Hawthorn (*Crataegus monogyna)* should make up 80-85% of your species, these can be integrated with any three from:
- 5-15% Hazel (*Corylus avellana)* and/or Field Maple *(Acer campestre);* and
- 0-5% of Holly (*Ilex aquifolium),* Field Rose *(Rosa arvensis),* Gooseberry (*Ribes uva-crispa),*
- Bird Cherry *(Prunus padus)* and Dog Rose *(Rosa canina).*
- Choose 60cm+ bare-rooted transplants or pot grown for some species such as Holly

Preparation

- The best time for planting is late autumn, after mid-November, although anytime between October and March is acceptable, provided the ground is not frozen or flooded.
- Create a 1m wide, weed free strip either by ploughing, digging or in limited cases, treating with a systemic herbicide.
- Ensure the bare roots of the plants do not dry out before planting.

Planting

- Plants should be supplied in accordance with the Horticultural Trade Association's National Plant specification and be sourced from a nursery that is a Member of the Horticultural Trades Association Nursery Certification Scheme.
- Plant in trenches large enough to take full spread of roots (20cm depth x 40cm width). Back fill with a previously prepared mixture of topsoil excavated from the pit, together with suitable compost and additional topsoil as required.
- Plant in a double staggered row approximately 30cm apart.
- Set out plants evenly using the plan below as a guide, 6 plants per m.
- The base of the hedge should be mulched with a 50-75mm layer of composted bark to stop weed growth and retain moisture in the soil.
- Where necessary, protect plants from damage and grazing by using protective tubes or spiral guards.



Maintenance

- Water the hedge for the first summer or any dry period in the 1st 12 months.
- Maintain weed control for at least 2 seasons.
- Replace any stock that dies within the first year.
- To encourage wildlife, trim the hedgerow no more than every 2nd year. This allows the shrubs and trees to produce more flowers, nuts and berries.
- Never trim the hedgerow between the beginning of March and the end of August when it would be harmful to invertebrates and nesting birds. The ideal time to trim the hedgerow is between January and February.

Wildlife Ponds

Wrexham County Borough is classed as an important pond landscape due the soils and geology providing excellent conditions. Previous farming techniques have resulted in field systems with a pond density far greater than the national average.

As part of an application it may be possible to restore an old pond, enhance an existing pond or provide a new wildlife pond.

Guidance on the above can be found at - Ponds - Freshwater Habitats TrustFreshwater Habitats Trust