Proposed Lake, Norton Hall, Mickleton, Gloucestershire GL55 6PX

Construction Environmental Management Plan (Biodiversity)

August 2023

on behalf of **Mr I. D'Silva**

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Client	Mr I. D'Silva
Job name	Proposed Lake, Norton Hall, Mickleton, Gloucestershire GL55 6PX
Report date	11th August 2023
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	Signed	**Name**	**Position**	**Date**
Prepared by	[redacted]	Reuben Hayden *MSc*	Senior Ecologist	10/08/2023
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Report Contents

1 Introduction

This Construction Environmental Management Plan (CEMP) has been prepared by Windrush Ecology Ltd (referred to as the 'site' for the purposes of this report).

1.1 Site Description

Norton Hall is located approximately 1.2km to the north-west of the village of Mickleton in Gloucestershire GL55 6PX (see Figure 1). The wider estate of Norton Hall comprises buildings (such as the Hall itself, as well as farm buildings), arable farmland, parkland, grassland, woodland, standing water and running water (Noleham Brook).

For further details of the wider estate, and its habitats, please refer to the Preliminary Ecological Appraisal dated December 2022 and prepared by Windrush Ecology Ltd.

The focus of this addendum is an area of land to the north, north-east and east of Norton Hall where there is a proposal to create a lake; this area is referred to as the 'site' within this report. The approximate Ordnance Survey grid reference for the centre of the site is SP 1453 4399.

The proposed lake will occupy an arable field (to the north) and an area of improved grassland (to the south); the grassland forms part of a wider area of parkland. In addition to the lake, there is a proposed sediment pond to the south-eastern area of the site, as well as proposed pipe lines linking the lake to the sediment pond and the sediment pond to a stream (Noleham Brook) that forms the eastern boundary of the Norton Hall estate (Figure 1).

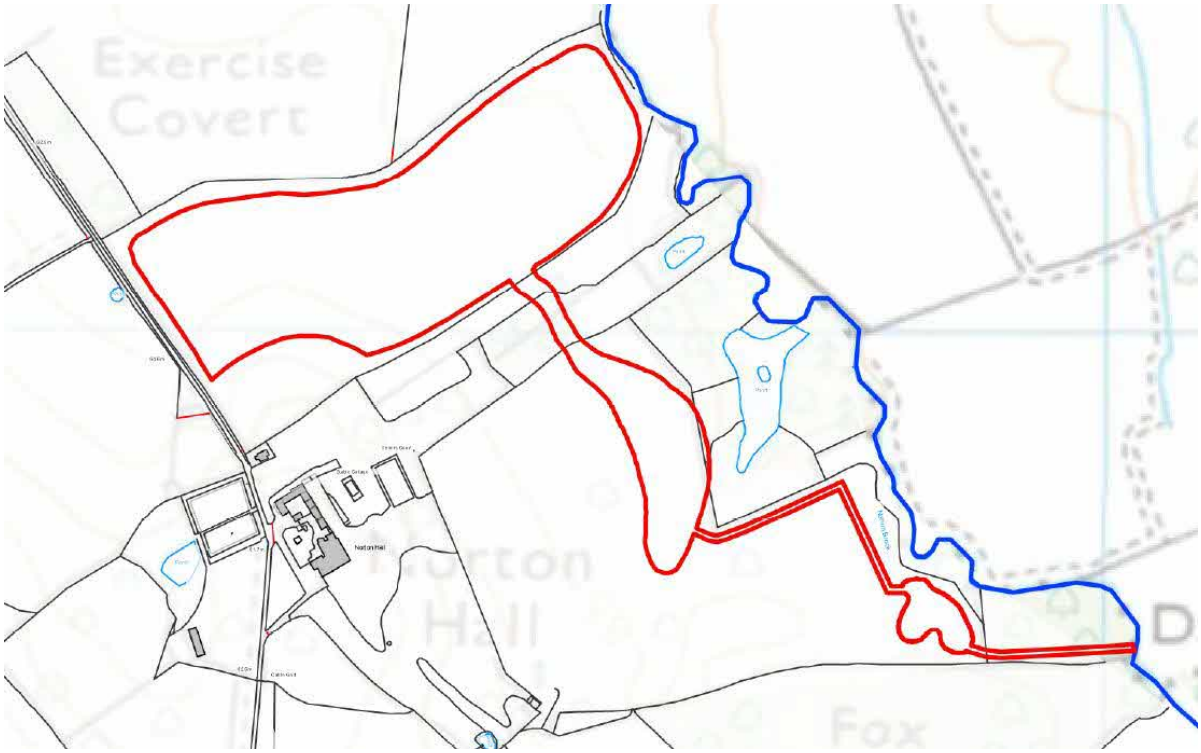

Figure 1. The red line indicates the application boundary for the proposed lake at Norton Hall. The blue line indicates the boundary of the estate as a whole and also the watercourse of the Noleham Brook.

1.2 Proposals

The proposals are to create a lake within the grounds of Norton Hall. The creation of the lake will require the removal of some trees, some of which will be lost and some of which will be relocated elsewhere within the site.

The proposals also include a sediment pond and two pipe lines, as well as creating grassland and parkland habitats within the existing arable field and some new woodland planting.

1.3 Aims of Study

The aims of this study are to provide information for a Construction Environmental Management Plan, according to the detail below.

No development shall take place (including demolition, ground works and vegetation clearance) until a Construction Environmental Management Plan – Biodiversity (CEMP-B) has been submitted to and approved in writing by the local planning authority. The CEMP-B shall include, but not necessarily be limited to, the following:

i. Risk assessment of potentially damaging construction activities;
ii. Identification of 'biodiversity protection zones';
iii. Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements);
iv. The location and timing of sensitive works to avoid harm to biodiversity features (e.g. daylight working hours only starting one hour after sunrise and ceasing one hour before sunset);
v. The times during construction when specialists ecologists need to be present on site to oversee works;
vi. Responsible persons and lines of communication;
vii. Use of protective fences, exclusion barriers and warning signs, including advanced installation and maintenance during the construction period; and

The approved CEMP shall be adhered to and implemented throughout the construction period strictly in accordance with the approved details.

1.4 Summary of Ecological Features & Protected Species

A full ecological assessment, informed by detailed ecological surveys, has been undertaken for the site during 2022 (Windrush Ecology Ltd, 2022). The existing ecological features within the site are shown on the Phase 1 habitat plan which can be found in Appendix 1.

1.4.1 *Sites of Nature Conservation Importance*

1.4.1.1 Statutory Sites

There are no statutory sites of nature conservation importance, such as Sites of Special Scientific Interest, within 1km radius of the site.

There are no international sites of nature conservation importance, such as Special Areas of Conservation, within a 5km radius of the site.

1.4.1.2 Non-statutory Sites

There are no non-statutory sites of nature conservation importance within the site, or within the 1km search radius around the site.

1.4.1.3 Habitats of Principal Importance

Habitats of 'principal importance' that occur within the site, as shown on the MAGIC website include Traditional Orchards (Figure 2) and Lowland Mixed Deciduous Woodland (Figure 3).

However, Traditional Orchards are not considered to be present within the site, and the areas of Traditional Orchard through which the lake will be created, as shown on Figure 2, are not Traditional Orchards but areas of parkland tree planting. Whilst two young cherry trees will be removed, these are not being used for fruit production, and do not form an orchard.

Similarly, the area of Lowland Mixed Deciduous Woodland through which the proposed lake will be created (Figure 3) is not considered to be a woodland. In this area there are planted trees within

amenity grassland, which form a parkland habitat. This area does not comprise a woodland. The proposed pipe line linking the proposed sediment pond within the south-eastern area of the site will pass through an area of woodland (which is shown as Lowland Mixed Deciduous Woodland on MAGIC). However, this area of woodland appears to be a plantation, with trees planted in rows.

MAGIC does not show any areas of woodland as ancient woodland, or ancient replanted woodland. The parkland habitats are not shown on MAGIC as parkland or wood pasture.

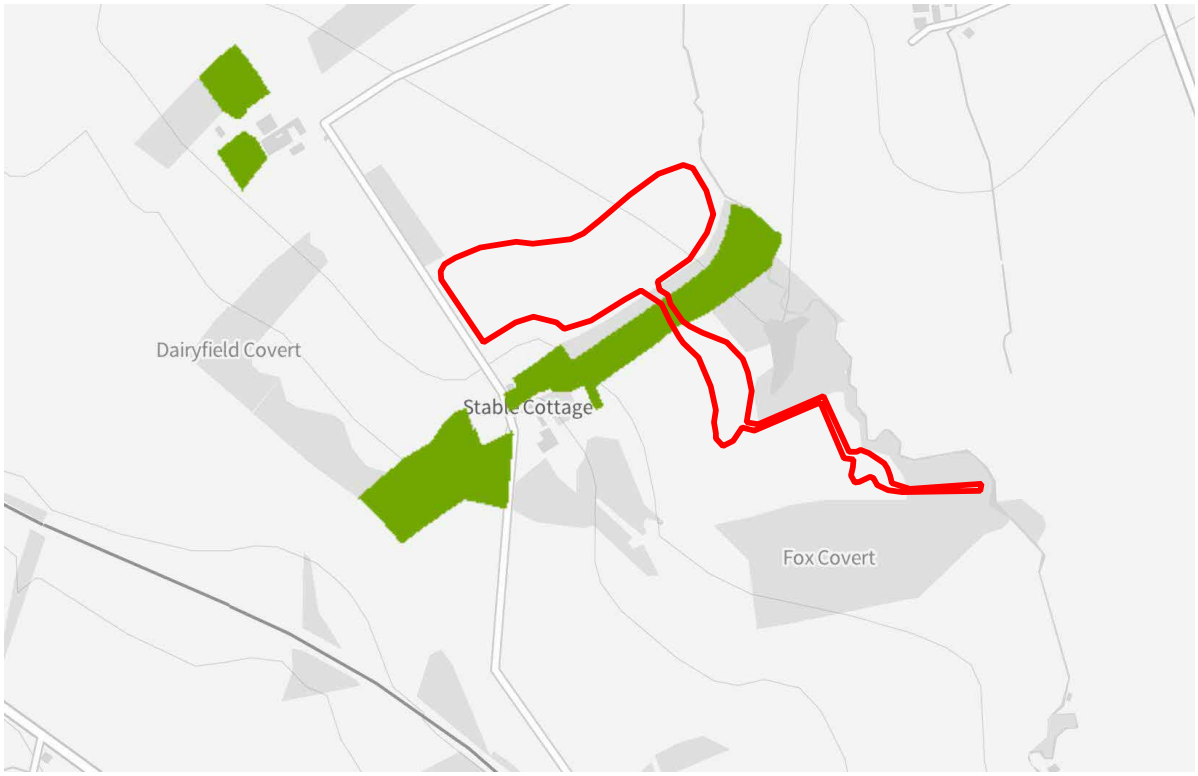

Figure 2. The red line indicates the application boundary for the proposed lake at Norton Hall. The green shaded areas are indicated as being 'Traditional Orchards' on the MAGIC website.

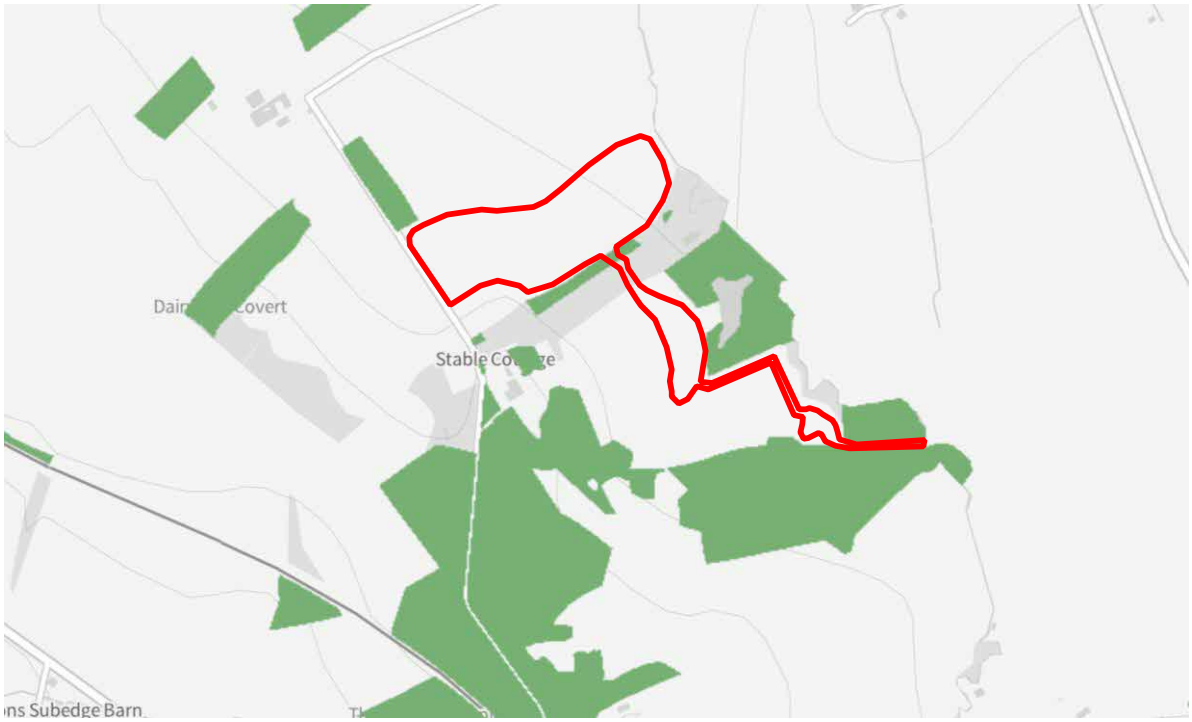

Figure 3. The red line indicates the application boundary for the proposed lake at Norton Hall. The green shaded areas are indicated as being 'Lowland Mixed Deciduous Woodland' on the MAGIC website.

Figure 4. The red line indicates the application boundary for the proposed lake at Norton Hall overlaid on an aerial photograph.

1.5 Habitats

1.4.1 *Arable Land*

The northern section of the site comprises an arable field, currently cultivated with broad beans. The field has narrow grassy margins that are typical of arable land, with cock's-foot *Dactylis glomerata*,

false oat *Arrhenatherum elatius* being dominant and ruderals including broad-leaved dock *Rumex obtusifolius*, creeping thistle *Cirsium arvense*, creeping buttercup *Ranunculus repens* and cleavers *Galium aparine*.

The habitat is species-poor, typical of cultivated arable land, and considered to be of negligible ecological value.

1.5.2 *Scattered Trees*

There are two scattered trees within the arable field, one mature oak *Quercus robur* and one dead oak.

Both trees are considered to be of local ecological value. Both trees will be retained and protected.

1.5.3 *Parkland*

The southern section of the site, including the proposed sediment pond, is an area of parkland with amenity grassland and planted trees. The majority of the trees are non-native and have been planted as an arboretum. The trees are of a mixture of ages, with some veteran trees within the wider landholding (but not within the site), mature trees, semi-mature trees and young trees, some of which appear to have been very recently planted.

The grassland of the parkland within the site is agriculturally improved and managed through regular and more infrequent mowing; no grazing livestock are present. The sward is dominated by common grass species including perennial rye *Lolium perenne*, meadow foxtail *Alopecurus pratensis*, cock's-foot and false oat grass, with herbs in low abundance including white clover *Trifolium repens*, creeping buttercup, dandelion *Taraxacum officinale*, yarrow *Achillea millefolium* and thyme-leaved speedwell *Veronica serpyllifolia*. The grassland habitat is species-poor and typical of agriculturally improved grassland.

Taken as a whole, the parkland habitat is considered to be a habitat of 'principal importance' as listed within Section 41 of the NERC Act 2006, namely 'wood pasture & parkland', and is considered to be of ecological value at the county level.

However, when broken down into its component parts, namely improved grassland and planted trees, the individual habitats are of lower ecological value. The improved grassland is considered to be of value only at the site level, whilst the value of the trees depends on a number of factors including species (many non-native species are present), age and condition. Trees that are to be affected by the works are all young or semi-mature and are considered to be of ecological value at the site level only.

Trees in this area do not form a Lowland Mixed Deciduous Woodland, nor are they a Traditional Orchard (as indicated on MAGIC).

1.5.2 *Woodland (Plantation)*

The proposed pipe line that links the sediment pond to the Noleham Brook (see below) passed through an area of plantation woodland, following an existing track of bare ground. The woodland has no characteristics of ancient woodland, including no ancient woodland indicators in the ground flora, and the trees appear to have been planted in rows.

The canopy includes oak and ash *Fraxinus excelsior*, with hawthorn *Crataegus monogyna* and elder *Sambucus nigra* noted in the understorey. The ground flora includes stinging nettle *Urtica dioica*, clover *Trifolium repens*, creeping buttercup and ivy *Hedera helix*. MAGIC indicates that this area is Lowland Mixed Deciduous Woodland, but this area is considered to be a plantation woodland.

Plantation woodland is considered to be of ecological value at the local level.

1.5.3 *Running Water*

Much of the eastern site boundary is marked by the Noleham Brook, a running watercourse. The brook is a shallow and narrow (approximately 30 to 50cm wide) watercourse that is densely shaded for much of its length. There is little or no marginal, aquatic or submerged vegetation, which is likely to be a result of this dense shading.

It is considered that this brook does meet the criteria for a habitat of 'principal importance' as listed within Section 41 of the NERC Act 2006 (Rivers), as it is semi-natural and forms a headwater of the River Avon. Given this, the running water habitat is considered to be of district ecological value.

1.5.3 *Summary of Habitat Evaluation*

The following table summarises the evaluation of habitats, in order of increasing value.

Habitat	**Value (geographic frame of reference)**
Arable land	Negligible
Improved grassland (component of parkland)	Site
Young and semi-mature trees (component of parkland)	Site
Plantation woodland	Local
Scattered trees (within arable land)	Local
Running water	District
Parkland (within the wider landholding)	County

1.6 Species

1.4.1 *Birds*

Arable land has the potential to offer habitat to nesting skylarks, and other ground-nesting species, although no skylarks were heard or seen during either of the habitat surveys in May 2022 and April 2023.

The improved grassland of the parkland is not considered to be suitable for ground-nesting birds, as the sward is short, uniform and maintained through regular cutting.

Parkland and woodland habitats offer nesting opportunities to a number of bird species, and this may include species of 'principal importance' such as dunnock, linnet, bullfinch and song thrush *Turdus philomelos*.

1.5.2 *Bats*

None of the trees that are scheduled for removal or relocation exhibit any potential roost features and all of the trees included in the survey are assessed as having 'negligible' potential (Collins, 2016) to offer shelter to roosting bats.

The majority of the trees that will be removed are young and have not developed any potential roost features. The parkland and woodland habitats are considered to be suitable for foraging and dispersing bats, and the local assemblage is known to include rarer species such as the lesser horseshoe bat *Rhinolophus hipposideros*.

1.5.3 *Mammals (excl. bats)*

The farmland and parkland habitats are considered to be suitable for brown hare *Lepus europaeus* and this species was observed on two occasions during the habitat survey.

No badger *Meles meles* setts, or evidence of badger activity, was noted within the site and badgers setts are considered to be absent.

Woodland and parkland are considered to offer potential habitat to hedgehogs *Erinaceus europaeus*.

The Noleham Brook does not appear to offer suitable habitat to water voles *Arvicola amphibius*. This is due to the fact that it is a shallow, narrow watercourse with heavy shading from woodland. More open sections of the brook do not provide suitable cover, or foraging opportunities, to water voles and the species is likely to be absent.

Similarly, whilst the brook may provide habitat connectivity through the landscape for otters *Lutra lutra*, it is not considered to be suitable for foraging, due to the shallowness of the water and the resultant lack of fish prey.

It is considered very unlikely that dormice *Muscardinus avellanarius* are present within the site. Whilst there are woodland and hedgerow habitats, the area of woodland is too small to support a viable population of dormice in isolation, and there are not considered to be suitable woodland habitats in the wider area that could support a source population of the species. In addition, the parkland habitats are not providing suitable canopy cover or shrub layer to be suitable for dormice, and the species is considered to be absent.

1.5.2 *Amphibians*

There are no standing waterbodies within the site, and thus, no habitats that could support breeding amphibians.

Arable farmland is not considered to be suitable for amphibians whilst on land and the improved grassland of the parkland habitat is also considered to be unsuitable for amphibians during the terrestrial phase of their lifecycle. The sward is species-poor, of uniform height and structure, and maintained through regular cutting.

1.5.3 *Reptiles*

Arable farmland is not considered to offer habitat to common reptiles, and the field margins are mostly narrow and offer little in the form of habitat or cover.

Parkland habitat also appears largely unsuitable, as the grassland is agriculturally improved and species-poor, with poor structure and short height. In some areas, the grassland resembles a lawn and appears to be managed through regular mowing/cutting. The grassland was not noted as having a dense 'thatch' that could provide cover for species such as slow worm *Anguis fragilis* and grass snake *Natrix helvetica*.

1.5.3 *Fish*

The running water habitat (Noleham Brook) provides potential habitats for fish species, and the brook may be suitable for bullhead *Cottus gobio*, which is a species of fast-flowing streams.

1.5.3 *Invertebrates*

Habitats of potential value to invertebrates include woodland, running water and parkland. These habitats may be suitable for a number of aquatic invertebrates, as well as moth, butterfly, ant, beetle, bee and wasp species.

However, grassland habitats of the parkland are considered to be poor for invertebrates, as the grassland appears to be agriculturally improved (fertilised) and resembles a lawn in many areas. Improved grassland habitats do not provide suitable habitat for uncommon grassland invertebrates, such as small heath *Coenonympha pamphilus* or wall *Lasiommata megera* butterflies.

The Noleham Brook has the potential to offer habitat to the white-clawed crayfish *Austropotamobius pallipes*.

2 Risk Assessment

The risk assessment of potentially damaging construction activities in relation to ecological features (including protected species) is set out in Table 1 below. Requirements for mitigation and the locations within the site where the risk is relevant are also identified.

Table 1. Risk of potentially damaging construction activities.

Ecological Features	Potential Impact	Risk Assessment (in the absence of mitigation measures)	Location where the risk is relevant
Sites of Nature Conservation Importance	There are no (statutory or non-statutory) sites of nature conservation importance in close proximity to the site.	N/A	N/A
Arable land	Direct impacts certain: loss of habitat to facilitate development. Arable land is considered to be of negligible ecological value. Potential for damage to retained habitats through vehicle movements and material storage.	**Impact certain but not significant**.	Arable land lost to the proposed lake.
Improved grassland	Direct impacts certain: loss of areas of habitat to facilitate development. The improved grassland does not meet the criteria for a priority habitat as listed within Section 41 of the NERC Act 2006.	**Impact certain but not significant**.	Improved grassland lost to the proposed lake.
Young and semi-mature trees	Some trees will be removed, and some trees will be retained but relocated. All of these trees are non-native. Tree species that are to be removed include non-native conifers, holm oak *Quercus ilex*, cherry *Prunus* sp., Himalayan birch *Betula utilis*, sweet gum *Liquidambar styraciflua* and swamp cypress *Taxodium distichum*. Tree species that will be retained and re-located include holm oak, red maple *Acer rubrum* and black tupelo *Nyssa sylvatica*. All of these trees are non-native and either young or semi-mature. Given this, there are no foreseeable ecological impacts as a result of the removal or relocation of trees, and no foreseeable impacts on the wider value of the parkland habitat.	**Impact certain but not significant.**	Trees that require removal or relocation within the area of the proposed lake.
Plantation woodland	No direct impacts predicted: plantation woodland will be retained. The proposed pipe line through the plantation woodland will follow the line of the existing bare ground track, with no loss of trees or woodland habitat. The pipe will be buried and there will be no long-term loss of habitat as a result. Potential for damage to retained woodland through vehicle movements and material storage.	**Impact possible in the absence of mitigation.**	Plantation woodland within wider landholding; outside of the site.

Ecological Features	Potential Impact	Risk Assessment (in the absence of mitigation measures)	Location where the risk is relevant
Scattered trees	No direct impacts predicted: scattered trees within the wider landholding will be retained. Potential for damage to retained trees through vehicle movements and material storage.	**Impact possible in the absence of mitigation.**	Scattered trees within wider landholding; outside of the site.
Running water	The proposal includes a pipe from the existing weir on the Noleham Brook to the proposed sediment pond. Potential for damage to stream bank through works to install pipe.	**Impact possible in the absence of mitigation.**	Eastern boundary of the site (Noleham Brook).
Parkland	No foreseeable impacts on parkland habitats within the wider landholding.	N/A	N/A
Birds	Direct impacts possible: removal of trees and other woody vegetation during the bird breeding period may result in the damage or destruction of active birds' nests, and has the potential to result in the killing or injury of eggs and young. No foreseeable impacts on ground-nesting bird species.	**Impact possible in the absence of mitigation.**	Trees that are to be removed.
Bats	No direct impacts predicted: all trees within the site are of 'negligible' roosting potential for bats. Scattered trees are to be retained. There are no foreseeable adverse impacts on foraging bats or bat dispersal. There are no proposals for new lighting and no foreseeable impacts as a result of changes in lighting. It is considered that the creation of the lake, as well as new parkland and woodland habitats, is likely to result in a significant ecological enhancement with regard to bats, as lakes are used as foraging by a number of bat species, and parkland is also a valuable habitat.	N/A	N/A
Badger, brown hare, dormouse & hedgehog	No direct impacts: no badger setts were recorded within or immediately adjacent to the site, nor were any other signs recorded that could indicate badger presence, such as latrines or dung pits. Habitats within the site are not suitable for dormice, hedgehogs or brown hare.	N/A	N/A
Water vole	No direct impacts: there is no evidence to indicate that the section of the Noleham Brook within the site is being used as a place of shelter or protection by water voles.	N/A	Noleham Brook

Ecological Features	Potential Impact	Risk Assessment (in the absence of mitigation measures)	Location where the risk is relevant
Otter	No direct impacts: there is no evidence to indicate that the section of river bank within the site is being used as a place of shelter or protection by otters.	N/A	Noleham Brook
Amphibians	No direct impacts: features that offer shelter and foraging suitability for amphibians will be retained. Amphibians are considered likely to be absent.	**Precautionary Working Method Recommended.**	Within site boundary.
Reptiles	No direct impacts: features that offer shelter and foraging suitability for reptiles will be retained. Reptiles are considered likely to be absent.	**Precautionary Working Method Recommended.**	Within site boundary.
Fish	No direct impacts on fish species. Indirect impacts possible via the pollution of the Noleham Brook.	**Indirect impact possible in the absence of mitigation.**	Noleham Brook
Invertebrates	No direct impacts on white-clawed crayfish. No foreseeable impacts on rare grassland butterflies. Indirect impacts possible via the pollution of the Noleham Brook.	**Indirect impact possible in the absence of mitigation.**	Noleham Brook

3 Roles Responsibilities & Monitoring

3.1 Biodiversity Protection Zones

All retained trees will be protected in accordance with British Standard 5837:2012, including the establishment and maintenance of appropriate root protection zones.

The Noleham Brook will be protected from pollution or disturbance during the construction of the pipe to the brook, it will be protected against spillage incidents and pollution during the course of the development:

Any material or substance which could cause pollution, including soil, spoil, mud or silty water will be prevented from entering the watercourses by the appropriate use of and appropriate placement of (temporary) silt fences, cut-off drains and silt traps where appropriate.
Any sign of failing water treatment measures or sight of silted or contaminated water entering any watercourse on site will be reported immediately.
Areas of permanent waste will be located 30m away from the Noleham Brook.
All stockpiled materials will be stored in designated areas and isolated from any surface drains and a minimum of 30m away from the Noleham Brook.
Disturbance to the bank be minimised whilst carrying out the construction works, and to ensure that disturbed habitats will regenerate quickly after completion of the works.

3.2 Practical Measures to Avoid or Reduce Impacts

Please refer to Table 2 for details of the proposed Mitigation Strategy.

3.3 Location & Timing of Sensitive Works

Trees that are to be removed will be felled outside of the breeding bird period, avoiding March to August inclusive. If this is not possible, the Ecological Clerk of Works (ECoW) will be present immediately prior to felling to undertake a nesting bird check and to confirm the absence of active birds' nests. If active nests are present, felling will be delayed until such time as the ECoW confirms that no active nests are present.

Prior to any works to the bank of the Noleham Brook, a survey of the watercourse will be conducted by the ECoW. The survey will confirm the absence of any water voles or evidence of water voles from the section of the stream that will be affected by the installation of a pipe.

3.4 Ecological Clerk of Works (ECoW)

An ECoW will be appointed by the project manager as required to liaise with the contractor.

The ECoW's responsibilities will be to:

Attend site as per Section 3.3 above.

Provide on-going guidance for the site team in dealing with ecological matters and interpreting the CEMP. Commencing with a tool-box talk to inform all site contractors of the ecological constraints and protection/mitigation measures detailed in the CEMP;

Provide on-site supervision of works that require it;

Develop any additional method statements and or/site protocols as required.

A copy of the CEMP will be kept on site, and with the project manager, and will therefore be available for the ECoW and the contractor's site manager at all times.

3.5 Responsible Persons & Lines of Communication

The contractor responsible for the creation of the lake, and all groundworks, is:

James Boggis
Tulloch & Boggis
Telephone: 07786 473721
Email: james@tullochandboggis.co.uk

The ecologist (Ecological Clerk of Works) for the project is:

Edward Bodsworth MCIEEM
Windrush Ecology Ltd
Telephone: 07817 630929
Email: ted@windrushecology.com

The project manager for the project is:

Irwin D'Silva
Norton Hall
Telephone: 07425 249220
Email: irwin@blackapplorchard.com

The project manager and the Ecological Clerk of Works (ECoW) will communicate directly over implementation of the mitigation measures and any issues or complications that arise during the works to develop the site.

In the unlikely event that any protected or species of principal importance are encountered unexpectantly during the works, including amphibians, reptiles, nesting birds, bats, otters or water voles works should stop immediately and the ECoW should be contacted immediately to provide advice on how best to proceed.

3.6 Use of Protective Fences etc.

Tree protection fencing through the arboretum (parkland) will be orange fencing, installed as per tree removal, relocation and protection plan (see Appendix 1).

The entire site (area within the red line boundary) will be marked by a post and rope fence. All works will operate within these limits.

Daily access is via the agricultural field to the north.

Table 3. Mitigation strategy.

Ecological feature identified as at risk	Purpose of mitigation measures	Mitigation measures to be implemented/ECoW requirements	Timing of works	Location	Responsibility
Plantation & Scattered trees	To protect all retained trees and areas of plantation woodland.	Retained trees and hedgerows will be protected in accordance with British Standard 5837:2012, with the establishment of appropriate root protection zones. Protective fencing will be installed to provide a physical and visual barrier. The fencing will have all weather notices attached, marked as 'Construction Exclusion Zone – KEEP OUT'.	Protective fencing will be put in place prior to the commencement of construction works. The fencing will remain in place throughout the construction period.	Scattered trees and plantation woodland.	Contractor.
Running water: Noleham Brook	Pollution prevention and to minimise the risk for wildlife present within the river during the construction of the new pipe.	In order that the Noleham Brook is not polluted or unduly disturbed during the construction of the pipe, it will be protected against spillage incidents and pollution during the course of the development. The Noleham Brook will be protected from pollution or disturbance during the construction of the pipe to the brook, it will be protected against spillage incidents and pollution during the course of the development: Any material or substance which could cause pollution, including soil, spoil, mud or silty water will be prevented from entering the watercourses by the appropriate use of and appropriate placement of (temporary) silt fences, cut-off drains and silt traps where appropriate. Any sign of failing water treatment measures or sight of silted or contaminated water entering any watercourse on site will be reported immediately.	Prior to the commencement of works to install pipe.	Eastern boundary of the site (Noleham Brook)	Contractor.

Ecological feature identified as at risk	Purpose of mitigation measures	Mitigation measures to be implemented/ECoW requirements	Timing of works	Location	Responsibility
		Areas of permanent waste will be located 30m away from the Noleham Brook. All stockpiled materials will be stored in designated areas and isolated from any surface drains and a minimum of 30m away from the Noleham Brook. Disturbance to the bank be minimised whilst carrying out the construction works, and to ensure that disturbed habitats will regenerate quickly after completion of the works.			
Birds	To avoid the damage or destruction of active birds' nests, and killing or injury of eggs and young.	Removal of individual trees should commence between September and February to avoid the bird breeding season (avoid March – August, inclusive). **If vegetation clearance is required between March and August, the ECoW will be required to assess if there are any risks to breeding birds to ensure compliance with the legal protection afforded to nesting birds under the Wildlife and Countryside Act 1981 (as amended). This will require a survey for nesting birds by the ecologist immediately prior to the vegetation clearance (usually recommended within 24 hours). If nesting birds were present or absence of breeding birds cannot be discounted within the trees and shrubs that require removal, work would need to be delayed in the vicinity of the nest or trees that cannot be discounted until the young have fledged.**	Removal of individual trees outside of the wet woodland areas September to February, inclusive. OR If undertaken during March to August a Breeding Bird Check will be required, prior to removal of the trees and shrubs.	Removal of individual trees	Contractor & ECoW.
Amphibians & Reptiles	To avoid killing and/or injury	Existing arable land will be maintained as bare ground, existing improved grassland will continue to me managed as a short sward	Throughout construction.	Whole site	Contractor.

Ecological feature identified as at risk	Purpose of mitigation measures	Mitigation measures to be implemented/ECoW requirements	Timing of works	Location	Responsibility
		through regular cutting. This will ensure that habitats directly affected by the proposals remain unsuitable for amphibians and reptiles. Within the working zone, the following methods of working will be adopted: Clearance of logs, brash, stones, rocks or piles of similar debris will be undertaken carefully and by hand. Clearance of tall vegetation will be undertaken using a strimmer or brush cutter with all cuttings raked and removed the same day. Cutting will only be undertaken in a phased way which may either include: Cutting vegetation to a height of no less than 30mm, clearing no more than one third of the site in anyone day or; Cutting vegetation over three consecutive days to a height of no less than150mm at the first cut, 75mm at the second cut and 30mm at the third cut; Following removal of tall vegetation using the methods above, remaining vegetation will be maintained at a height of approximately 30mm through regular mowing or strimming to discourage amphibians and reptiles moving into the site. Ground clearance of any remaining low vegetation (if required) and any ground works will only be undertaken following the works above.			

Ecological feature identified as at risk	Purpose of mitigation measures	Mitigation measures to be implemented/ECoW requirements	Timing of works	Location	Responsibility
		Any trenches left overnight will be covered or provided with ramps to prevent amphibians and reptiles from becoming trapped.			
Water voles	To avoid disturbance Pollution prevention	The ECoW will undertake a survey of the bank of the Noleham Brook prior to the works to install the pipe. Due to the apparent absence of burrows or evidence of this species within the site, a licence will not be required from Natural England to allow for the proposed works to reprofile the banks and creation of new wet mooring bays. Pollution prevention measures adopted will be enforced.	During installation of pipis to Noleham Brook.	Noleham Brook	Contractor & ECoW.
Fish & Invertebrates	Pollution prevention	Pollution prevention measures adopted will be enforced.	Pollution prevention measures to be in place throughout the construction period.	Noleham Brook	Contractor.

4 References

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5 Appendix 1. Tree Constrains & Protection Plan

Please refer to separate PDF plan.