BELA PARTNERSHIP LTD

Corby Northern Orbital Road

Revised Ecological Management Plan

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BELA PARTNERSHIP LTD

CORBY NORTHERN ORBITAL ROAD

ECOLOGICAL MANAGEMENT PLAN

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1 INTRODUCTION

Wardell Armstrong has been commissioned by Bela Partnership Ltd to produce an Ecological Management Plan for the Corby Northern Orbital Road (CNOR) development.

This follows the submission of an Environmental Statement (ES) which accompanied a detailed planning application for the site infra-structure and an outline application for the development at Corby.

The report draws on Chapter 6, Ecology section of the ES produced by Wardell Armstrong and aims to secure the protection and long-term maintenance and monitoring of features of nature conservation interest along the proposed road route.

This document aims to set out measures to be undertaken prior, during and after construction that will safeguard all species and habitats of importance.
2 SITE DESCRIPTION

2.1 General Information

Site Location
The site is situated approximately 1km north east of Corby, Northampton, between Rockingham Speedway to the North and the Weldon Industrial estate to the south (shown on CL00490/T01). The route of the road is predominantly over land previously worked for mineral extraction within the last 50 years and along existing road networks. The route begins on an existing road network, namely Steel Road. It is then located almost parallel to the course of a former mineral railway over previously quarried land and adjacent to Rockingham Speedway. Moving north it joins with existing roads to link up to Phoenix Parkway. The majority of the road network is associated within modern industrial estates.

Management Infrastructure
Contractual agreements have not yet been agreed for the lifetime of the management and monitoring proposals. The objective is to employ suitably qualified ecologists and contractors who will carry out the management and monitoring work. Bela Partnership Ltd have committed to undertake the works and to provide funding.

Broad Development Proposals
The proposed development is shown on Drawing CL00490/T01. The main aspects of the project, working from south to north are as follows:

a) remodelling of Steel Road Roundabout (roundabout 1) at the junction with A43;
b) dualling of Steel Road (Road 1);
c) remodelling of the existing Birchington Road roundabout (roundabout 2);
d) new dual carriageway (Road 2) link to roundabout 3 west of the existing Morrison’s depot;
e) new roundabout (roundabout 3) immediately north west of the Morrison’s depot;
f) new dual carriageway (Road 3) to new roundabout 4 in the western portion of Rockingham Speedway land;
g) dual carriageway link road (road 4) on existing Mitchell Road;
h) new roundabout (roundabout 5) to form a junction between road 4 and Phoenix Parkway.
2.2 Environmental Baseline and Nature Conservation Value

Section 6 of the ES details a description of the habitats and protected species across the site. To summarise, the road corridor is surrounded by a mix of habitats including rough semi-improved grassland, improved grassland and an area of woodland with several ponds adjacent and a brook found traversing the course of the road. The habitats are shown on Drawing NL08225/05 and the Target notes are included in Appendix 2.

The area of land discussed within this report comprises the Morrison’s land which is considered to be neutral/calcareous grassland with scattered scrub including hawthorn (Crataegus monogyna), blackthorn (Prunus spinosa), elder (Sambucus nigra) and ash (Fraxinus excelsior) interspersed with bramble (Rubus fruticosus agg), field rose (Rosa arvensis) and dog rose (Rosa canina agg.).

Further north the road route passes through Willow Brook and the associated woodland. The main trees found here are sycamore (Acer pseudoplatanus), ash (Fraxinus excelsior), willow (Salix sp.) and hawthorn (Crataegus monogyna) with an area of downy birch (Betula pubescens). The ground flora is mainly semi-improved grassland species but with areas of false brome (Brachypodium sylvaticum). At present this area of land is heavily disturbed by vehicles and lacks important diversity. The brook itself appears to be of poor water quality with the vertical banks unvegetated due to the gradient and the fact that it is overshadowed in places by the woodland.

There are marshy areas that surround willow brook in the autumn and winter months. These areas do not contain important wetland plants and consist of common species such as rosebay willowherb (Chamaenerion angustifolium) and nettles (Urtica dioica).

Protected species found within the area are as follows:
- badgers – a single badger sett has been identified within woodland adjacent to Dingly Dell and is located over 30m from the road route construction area. This woodland is to be retained as part of the development scheme and no impacts are anticipated. Further badger setts have been identified within the Priors Hall development site to the east;
- great crested newts (GCN) – a small population of GCN has been identified within the Morrison’s site (Zone B on Drawing NL08225/01).
GCN populations are also known to exist along the Willow Brook North river corridor as shown on Drawing NL08225/18 and 19;

- reptiles were noted along the road route using certain areas of the habitat, in particular, the grassland areas;
- no potential bat roosts were found along the road route, however, it was noted that Willow Brook may act as a flight line for a number of species;
- breeding birds – areas of the site will be used by birds during the breeding season; and
- water vole and otter – are known to be present within this part of Northamptonshire, though no signs or activity have been found during the various surveys undertaken.

2.3 **Legislation**

   Table 1 summarises the legislation for the relevant species.
Table 1: Legislation referring to relevant protected species

<table>
<thead>
<tr>
<th>Species</th>
<th>Table 1: Key legal protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td>All wild birds, their nests and eggs are, with few exceptions, fully protected by law. In addition, over eighty species or groups of species are listed under Schedule 1 of the <em>Wildlife and Countryside Act</em>. These species are specially protected by increased penalties and cannot be intentionally disturbed when nesting, with additional protection also provided to species listed in Annex IV of the <em>Habitats Directive</em>.</td>
</tr>
<tr>
<td>Bats</td>
<td>All bat species are protected in accordance with Schedule 5 of the <em>Wildlife and Countryside Act (1981, as amended)</em>. This protection extends to both species and roost sites. Bat roosts are protected at all times of the year regardless of whether bats are present at the time. In addition, all bats are listed under Annex II of the European Unions <em>Habitats Directive</em>. Bat species have been identified as Biodiversity Action Plan species.</td>
</tr>
<tr>
<td>Badgers (Meles meles)</td>
<td>Badgers are the subject of separate legislation contained within the Protection of Badgers Act 1992. This means that it is unlawful to knowingly kill, capture, disturb or injure any individual or intentionally damage, destroy or obstruct an area used for breeding, resting or sheltering badgers. An English Nature licence is required for heavy machinery work within 30m, light machinery within 20m and hand digging within 10m of a badger sett.</td>
</tr>
<tr>
<td>Great crested newt</td>
<td>Protected under the <em>Wildlife and Countryside Act</em> and under Annex II and IV(a) of the European Union’s <em>Habitats Directive</em>. Under the legal protection afforded great crested newt it is an offence to knowingly kill, harm, injure or disturb a great crested newt or its habitat. It is also an offence to damage, destroy or obstruct access to any structure or place used for shelter protection or breeding by the species; or to disturb it while it is occupying such a structure or place. Where a project or plan has been identified as impacting on great crested newt, the appropriate authority (in England, Defra) can issue licences which make otherwise illegal actions lawful. Such licences can, however, only be issued for “preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.” Likewise, licenses for species such as great crested newt can only be issued if there is no alternative solution.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>Protected under the <em>Wildlife and Countryside Act</em>, Annexes II and V of the European Unions <em>Habitats Directive</em> and Appendix III of the <em>Berne Convention</em>. In addition, it has been identified as a Biodiversity Action Plan Species by the UK Biodiversity Group and is classed as globally threatened by the International Union for Conservation of Nature.</td>
</tr>
<tr>
<td>Otters</td>
<td>The otter is fully protected under the <em>Wildlife and Countryside Act</em> making it an offence to damage, destroy or obstruct access to any structure or place which is used by otters. Otter is also listed under Annexes II and IV (a) of the European Union <em>Habitats Directive</em>.</td>
</tr>
<tr>
<td>Water vole (Arvicola terrestris)</td>
<td>The water vole is listed on Schedule 5 of the Wildlife and Country Act 1981 (as amended). The legal protection makes it an offence to intentionally damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection, or to disturb water voles whilst they are using such a place. Since April 2008, water voles in England have benefited from full s9 protection, so in addition it is also an offence to intentionally kill, injure or take a water vole, have possession or control (live or dead), sell or offer to sell.</td>
</tr>
</tbody>
</table>
3 IMPACT ASSESSMENT IN ABSENCE OF MITIGATION

The following impact considerations have been assessed.

3.1 Short-term Impacts: Disturbance
Disturbance works will include the felling of a small section of woodland and
removal of vegetation through Dingly Dell with scrub and grassland removal
along the proposed road route corridor within the Morrison’s land. There will
also be temporary disturbance to the area surrounding the road route where
the working area is required during construction, but will be restored and
landscaped following completion.

Disturbance may also be an indirect result of construction due to the
environmental effects associated, such as water run-off, dust deposition,
chemicals spillages and lighting. These factors all have the potential to disturb
wildlife.

3.2 Long-term impacts: habitat loss or modification
There will be a loss of approximately 5 hectares of terrestrial habitat, but no
loss of aquatic habitats. A small area of woodland will be cleared and two
SUDS ponds installed which are to be adapted to be suitable for wildlife,
especially amphibians. Although, these water bodies are classed as
supplementary areas to newt breeding ponds as they are not specifically
designed for wildlife, they will provide a beneficial impact by providing
diversity in the habitat and being suitable for a range of species.

In addition, an area of scrub and young trees, which is currently located within
a damp habitat will be manipulated to create an area of wet grassland. This
will provide further habitats for invertebrates and, therefore, good foraging
areas for amphibians and other wildlife. The amount of terrestrial habitat
remaining after the land take of the scheme is also large in comparison and
therefore, there will not be a drastic change in community dynamics except
with regards to fragmentation and isolation as detailed below. However, the
fact that terrestrial habitat is being lost denotes an impact which is classed as
‘high’.

3.3 Long-term impacts: Fragmentation and Isolation
The construction of the road will result in the partial fragmentation of
terrestrial habitat and loss of an area of suitable terrestrial habitat
(approximately 5 hectares). Within the road scheme there is to be a bridge
constructed over Willow Brook North which will provide access for amphibians
and other species within the area, such as mammals, to cross from one habitat to another without the risk of road deaths. However, without any barrier to prevent animals, amphibians in particular, from crossing the road at other points there is a risk of road mortality away from the bridge, as described below in Post-development Interference Impacts. Another factor to fragmentation aside from the hard standing of the road itself is lighting.

The road may act as a barrier to dispersal of species, particularly GCN, and result in isolated populations. As stated in the ‘Great Crested Newt Mitigation Guidelines’ this can have an effect on populations within the proposed development area but also those further away due to the structure of the metapopulations. The road will dissect the ‘Morrison’s land’ (Zone B) which is an area known to support GCN and also forms a barrier between the ponds to the south west of the route and others within the area. This fragmentation and isolation could lead to extinction of those populations and have a wider effect on the populations within the county.

3.4 Post-development interference impacts
Once the road is constructed it will carry an amount of traffic which poses a significant risk to wildlife in the area. In the absence of any fencing or barrier to prevent species, GCN in particular, from crossing the road and entering the highway there is a risk of mortality.

3.5 Predicted Scale of Impact
The proposed development will have an overall adverse impact on wildlife within the site, at a local level and possibly at a regional level with regards to fragmentation and isolation of breeding GCN ponds, loss of terrestrial habitat and the increased risk of road deaths and disturbance by activities related to construction. Table 2 shows that the impact is assessed as being ‘high’ adverse.
### Table 2: Predicted Scale of Impacts

<table>
<thead>
<tr>
<th>Habitat Feature</th>
<th>Development Effect</th>
<th>Impact</th>
<th>Scale of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terrestrial Habitat</strong></td>
<td>Loss of 5 hectares of terrestrial habitat.</td>
<td>Reduced foraging land.</td>
<td>Adverse High</td>
</tr>
<tr>
<td></td>
<td>Dissection and fragmentation.</td>
<td>May lead to extinction of certain populations.</td>
<td>Adverse High</td>
</tr>
<tr>
<td></td>
<td>Disturbance through vegetation clearance.</td>
<td>Disturbance.</td>
<td>Adverse High</td>
</tr>
<tr>
<td></td>
<td>Vehicle usage upon creation of road and associated features such as drains.</td>
<td>Road deaths and trapping in drains.</td>
<td>Adverse High</td>
</tr>
<tr>
<td></td>
<td>Modification of wet, scrub area to wet grassland.</td>
<td>Encourage more invertebrates and provide extra foraging areas for wildlife.</td>
<td>Beneficial</td>
</tr>
<tr>
<td><strong>Surrounding Aquatic Habitats</strong></td>
<td>No loss of aquatic habitat but possible fragmentation.</td>
<td>Isolation and fragmentation of breeding amphibian populations.</td>
<td>Adverse High</td>
</tr>
<tr>
<td></td>
<td>Installation of two SUDS adapted for wildlife. Creation of 4 ponds acting initially as receptor sites.</td>
<td>Providing extra habitat for amphibians and invertebrates within the area.</td>
<td>Beneficial</td>
</tr>
<tr>
<td><strong>All habitats</strong></td>
<td>Disturbance through construction activities.</td>
<td>Disturbance and fragmentation.</td>
<td>Adverse High</td>
</tr>
<tr>
<td></td>
<td>Construction Bridge over Willow Brook North.</td>
<td>Allowing dispersal of wildlife at a specific point across the road.</td>
<td>Beneficial</td>
</tr>
</tbody>
</table>
4 HABITAT CREATION AND ENHANCEMENT

Net gain of Biodiversity
This Ecological Management Plan sets out measures that will create new habitats in the vicinity of the road. The proposed landscaping will provide further habitats and allow for beneficial planting of species within the LBAP (refer to Chapter 5 of the ES for full Landscape Strategy). Detailed below are the main habitat enhancements and creation that illustrate the net gain for biodiversity with regards to the LBAP.

4.1 Wetland Habitat
The main addition is the creation of two suds ponds which will be adapted for biodiversity with sensitive planting and grading as set out in the great crested newt development licence. The ponds will include areas of reedbed and open water so as to be beneficial to a range of species. This will add to Northamptonshire’s Biodiversity targets with regards to the creation of new water bodies. In addition, the ecological monitoring will be beneficial to the LBAP through the recording of what species are present in the five years following the completion of the development.

An additional four ponds are to be created within the area of Willow Brook to initially act as receptor sites for GCN’s through the translocation scheme. These six ponds in total will provide suitable habitat for GCN, which is a UK BAP species and the palmate newt (Triturus helveticus) which is also listed as a LBAP species.

Additionally, an area of scrub and young trees, which is currently damp will be manipulated to create an area of wet grassland. This will provide further habitats for invertebrates and, therefore, good foraging areas for amphibians and other wildlife.

4.2 Woodland surrounding Willow Brook
The trees and shrubs to be planted will be of local provenance and sensitively chosen to reflect the natural surrounding habitats. This landscaping will mitigate for the loss of habitat and add biodiversity value due to the inclusion of specially selected species, such as the blackthorn (Prunus spinosa).

The area surrounding Willow Brook, locally known as Dingly Dell, will require the removal of part of the woodland. To compensate for this loss native trees and shrubs will be planted to provide additional woodland habitat. The additional woodland will aid with the Green Infrastructure guidelines by providing further woodland planting.
The area will be planted with species which are already found in the existing woodland. These include downy birch (Betula pubescens) and hawthorn and the additional species native to the area of hazel (Corylus avellana), ash (Fraxinus excelsior), field maple and oak (Quercus robur). Approximately 100-150 trees will be planted as 60-80cm whips at 2m spacings. They will be protected by the use of 1m high tree shelters to prevent any damage by rabbits or deer. This woodland will provide a diverse habitat with sources of food enabling certain species to extend their range within the county such as the dormouse (Muscardinus avellanarius).

4.3 Willow Brook

The road scheme plans to build a bridge over the brook but not to disturb the banks. However, mitigation for the protection of water voles, if present, will be undertaken. In addition, parts of the banks will be regraded and the planting under the bridge will be beneficial to water voles. It is proposed that there is a cycle route under the bridge. At present, the sides of Willow Brook contain short grass with little cover which is frequently disturbed due to the area being used as a 4x4 race track. Within the scheme, once the bridge is built, grass planting underneath will be tailored to ensure that there is longer grass directly adjacent to the brook providing cover and a wildlife corridor for water voles and other species. The cycle path will be further from the banks to limit disturbance to the brook.

The area surrounding Willow Brook will be planted with the same species as outlined for the roadside verges. However, the cycle path will require a more robust grass seed mix containing short hardy grasses such as red fescue (*Festuca rubra*) and the margins of the brook will require suitable water margin planting, outlined below (Table 3 and 4). The cycle and pedestrian path will be located adjacent to the bridge sides to enable the installation of a strip of long grass and marginal wetland vegetation between the path and the Willow Brook to provide a habitat corridor for wildlife species including small mammals and amphibians (see Drawing B0522600/L/3000/00006).

A suggested grass mix for the habitat corridor along Willow brook is detailed below. The suggested species is adapted from Pro Flora 12 Water Margin & Pond Edges seed mix (DFL Trifolium Ltd, Thorn Farm, Inkberrow, Worcestershire, WR7 4LJ).

Table 3. Grass seed mix to be used in the landscaping of Willow Brook (Pro Flora 12 Water margin & Pond Edges, DFL Trifolium Ltd.).
Table 3: Grass Seed Mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>% in seed mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crested dog's-tail</td>
<td><em>Cyanosurus cristatus</em></td>
<td>20</td>
</tr>
<tr>
<td>Browntop bent</td>
<td><em>Agrostis castellana</em></td>
<td>5</td>
</tr>
<tr>
<td>Common sedge</td>
<td><em>Carex nigra</em></td>
<td>0.5</td>
</tr>
<tr>
<td>Meadow foxtail</td>
<td><em>Alopecurus pratensis</em></td>
<td>10</td>
</tr>
<tr>
<td>Pendulas sedge</td>
<td><em>Carex pendula</em></td>
<td>0.5</td>
</tr>
<tr>
<td>Rough meadow Grass</td>
<td><em>Poa trivialis</em></td>
<td>7</td>
</tr>
<tr>
<td>Sheeps fescue</td>
<td><em>Festuca ovina</em></td>
<td>38</td>
</tr>
<tr>
<td>Sweet vernal</td>
<td><em>Anthoxanthum odoratum</em></td>
<td>4</td>
</tr>
<tr>
<td>Tufted hairgrass</td>
<td><em>Deschampsia caespitosa</em></td>
<td>15</td>
</tr>
</tbody>
</table>

Table 4. Wildflower seed mix to be used in the landscaping of the Willow Brook (Pro Flora 12 Water Margin & Pond edges, DFL Trifolium Ltd.).

Table 4: Wildflower Mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>% in seed mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common fleabane</td>
<td><em>Pulicaria dysenterica</em></td>
<td>2</td>
</tr>
<tr>
<td>Gipsy wort</td>
<td><em>Lycopus europaeus</em></td>
<td>6</td>
</tr>
<tr>
<td>Greater Bird's-foot trefoil</td>
<td><em>Lotus uliginosus</em></td>
<td>6</td>
</tr>
<tr>
<td>Hemp agrimony</td>
<td><em>Eupatorium cannabinum</em></td>
<td>4</td>
</tr>
<tr>
<td>Marsh marigold</td>
<td><em>Caltha palustris</em></td>
<td>2</td>
</tr>
<tr>
<td>Marsh woundwort</td>
<td><em>Stachys palustris</em></td>
<td>9</td>
</tr>
<tr>
<td>Meadow rue</td>
<td><em>Thalictrum flavum</em></td>
<td>8</td>
</tr>
<tr>
<td>Meadowsweet</td>
<td><em>Filipendula ulmaria</em></td>
<td>15</td>
</tr>
<tr>
<td>Purple Loosestrife</td>
<td><em>Lythrum salicaria</em></td>
<td>5</td>
</tr>
<tr>
<td>Ragged Robin</td>
<td><em>Lychnis flos-cuculi</em></td>
<td>9</td>
</tr>
<tr>
<td>Sneezewort</td>
<td><em>Achillea ptarmica</em></td>
<td>7</td>
</tr>
<tr>
<td>Square stemmed St. John's wort</td>
<td><em>Hypericum tetrapterum</em></td>
<td>6</td>
</tr>
<tr>
<td>Water avens</td>
<td><em>Geum rivale</em></td>
<td>3</td>
</tr>
<tr>
<td>Yellow flag iris</td>
<td><em>Iris pseudacorus</em></td>
<td>18</td>
</tr>
</tbody>
</table>

The banks of Willow Brook will be regraded in sections to enhance them for water vole and allow for a good gradient for the floral species to establish.
The banks of Willow Brook should be regraded to a gradient greater than 35˚ but not vertical. The specified planting along Willow Brook should be sown as turfs with seed intermingled as in the case of coir matting if possible. The planting of tall grass and shrubs along the side of the road linking with the landscaping under the proposed bridge over Willow Brook will aid with the Green Infrastructure guidelines in particular maintaining and enhancing the habitat corridor and resulting in a net gain of Biodiversity Action Plan habitats.

The planting and bridge over Willow brook will provide a passage for animals under the road with abundant cover and food plants which will enable species to continue to use willow brook as a habitat corridor. The planting of the roadside verges aims to allow the passage of species along the verges and direct them under the bridge. Guide fencing will be used to control passage of GCN under the bridge. In addition, the grassland species are sufficiently diverse to allow for their dispersal into the local area thereby adding to the overall biodiversity.

The grassland species will also create a vegetated area directly adjacent to Willow Brook which is currently unvegetated due to the use of the area by 4x4’s. This will enhance the area for important species such as the water vole, dragonflies, butterflies and a number of other terrestrial and aquatic invertebrates therefore, providing good foraging areas for bats.

The bridge which will span Willow Brook will be a three span bridge therefore, allowing an amount of light underneath but this may slightly reduce the amount of vegetation directly under the bridge. However, the bridge will act as a habitat corridor allowing the free passage of species along the brook side and the bridge itself will be utilised to provide habitats for bats. In addition to the planting that will provide foraging areas for bats, 10 bat boxes will be installed under the bridge. This will potentially make the area more attractive to bats as the diverse habitats offer the food source and the bat boxes will provide roosting habitat.

4.4 Hedgerow
The creation of a hedgerow along the northern most section of the road scheme (screening the northern side of the road where it meets Phoenix Parkway) will contribute to biodiversity by providing further wildlife corridors. The hedgerow will be planted with native species and include blackthorn \((Prunus spinosa)\), a food plant of the local Biodiversity Action Plan species, the Black Hairstreak butterfly \((Satyrium pruni)\). This shrub will be used where possible along the road route.
4.5 Roadside Verges

The trees, shrubs and grassland species mixes which will be used along the roadside verges will complement and enhance the existing habitats. In light of the fact that the surrounding habitats are neutral/calcareous grassland it is considered that the best flora to use would be those most suitable to base rich conditions which would complement the existing flora. In order to create the correct soil nutrient status within the roadside verges, calcareous fines will be utilised and mixed with existing soils on site.

The species listed below (Tables 5, 6 and 7) will be used along the roadside. They have been chosen for their ability to grow on calcareous soils. They will be locally sourced to obtain species of local provenance.

Table 5. Trees and Shrubs to be planted.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild Privet</td>
<td>Ligustrum vulgare</td>
</tr>
<tr>
<td>Wild crab</td>
<td>Malus sylvestris</td>
</tr>
<tr>
<td>Hazel</td>
<td>Corylus avellana</td>
</tr>
<tr>
<td>Hawthorn</td>
<td>Crataegus monogyna</td>
</tr>
<tr>
<td>Blackthorn</td>
<td>Prunus spinosa</td>
</tr>
</tbody>
</table>

Table 6. Grass mix to be used in the landscaping of the roadside verges (adapted from Pro Flora 4 Calcareous Soils, DFL Trifolium Ltd.).

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>% in seed mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crested dog's-tail</td>
<td>Cyanosurus cristatus</td>
<td>18</td>
</tr>
<tr>
<td>Common Quaking Grass</td>
<td>Briza media</td>
<td>5</td>
</tr>
<tr>
<td>Smooth Meadow Grass</td>
<td>Poa pratensis</td>
<td>20</td>
</tr>
<tr>
<td>Slender catstail</td>
<td>Phloem pratense bertoloni</td>
<td>7</td>
</tr>
<tr>
<td>Golden oatgrass</td>
<td>Trisetum flavescens</td>
<td>10</td>
</tr>
<tr>
<td>Sheeps Fescue</td>
<td>Festuca ovina</td>
<td>25</td>
</tr>
<tr>
<td>Upright Brome</td>
<td>Bromus erectus</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 7. Wildflower seed mix to be used in the landscaping of the roadside verges (adapted from Pro Flora 4 Calcareous Soils, DFL Trifolium Ltd.).
Table 7: Wildflowers

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Latin Name</th>
<th>% in seed mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hairy Rock Cress</td>
<td>Arabis hirsuta</td>
<td>5</td>
</tr>
<tr>
<td>Spotted cat's-ear</td>
<td>Hypochoeris maculata</td>
<td>6</td>
</tr>
<tr>
<td>Bird's-foot trefoil</td>
<td>Lotus corniculatus</td>
<td>10</td>
</tr>
<tr>
<td>Bulbous buttercup</td>
<td>Ranunculus bulbosus</td>
<td>12</td>
</tr>
<tr>
<td>Dropwort</td>
<td>Filipendula vulgaris</td>
<td>5</td>
</tr>
<tr>
<td>Greater knapwort</td>
<td>Centaurea scabiosa</td>
<td>6</td>
</tr>
<tr>
<td>Hoary plantain</td>
<td>Plantago media</td>
<td>8</td>
</tr>
<tr>
<td>Kidney vetch</td>
<td>Anthyllis vulnearia</td>
<td>5</td>
</tr>
<tr>
<td>Lady's bedstraw</td>
<td>Galium verum</td>
<td>5</td>
</tr>
<tr>
<td>Ox-eye Daisy</td>
<td>Leacanthermum vulgare</td>
<td>5</td>
</tr>
<tr>
<td>Small scabious</td>
<td>Scabiosa columbaria</td>
<td>5</td>
</tr>
<tr>
<td>Tufted vetch</td>
<td>Vicia cracca</td>
<td>10</td>
</tr>
<tr>
<td>Wild carrot</td>
<td>Daucus carota</td>
<td>8</td>
</tr>
<tr>
<td>Wild marjoram</td>
<td>Origanum vulgare</td>
<td>5</td>
</tr>
<tr>
<td>Wild Mignonette</td>
<td>Reseda lutea</td>
<td>5</td>
</tr>
</tbody>
</table>

The grassland planting should contain 20% wildflower mix and 80% grass mix. The suggested species is adapted from Pro Flora 4 Calcareous Soils seed mix (DFL Trifolium Ltd, Thorn Farm, Inkberrow, Wocestershire, WR7 4LJ). Specific calcicoles have been chosen for their habitat preference and with reference to the National vegetation Classification grasslands found locally within the county, namely CG2 Festuca ovina-Avenula pratensis, CG3 Bromus erectus, CG4 Brachypodium pinnatum and CG5 Bromus erectus-Brachypodium pinnatum. Hairy rock cress and spotted cat's-ear have been integrated into the planting as they are LBAP species as noted in the Northamptonshire BAP for lowland calcareous grassland. The planting of these species will enhance the area by adding native floral species and providing calcareous floral diversity. Wildlife species within the area will benefit from the additional, native planting as will the local BAP species the butterfly Black Hairstreak (*Satyrium pruni*) whose food plant is blackthorn and the nationally notable species, the small blue butterfly (*Cupido minimus*), whose food plant is kidney vetch.
5 MANAGEMENT OF HABITATS

Having established new habitats it is essential that they are maintained to ensure that they develop into diverse and varied habitats.

5.1 Wetland Habitat
The created ponds and SUDS will be managed as set out in the great crested newt development licence. This will involve an annual survey to ensure that any planting which has failed is replaced with the same species and any clearance where appropriate to ensure the water features do not become overgrown. The area of wet grassland will be surveyed annually to ensure that the area is maintaining the hydrological status and no rank species are encroaching. Any failed planting will be replaced and measures will be recommended for future management.

5.2 Tree and Shrub planting
Newly planted trees and shrubs will be monitored by an ecologist or landscape architect on a yearly basis for the 5-year period. Any planting which has failed will be replaced with the same species.

Further management recommendations such as thinning and coppicing will be proposed in a yearly update to this management plan.

5.2 Grassland Habitat
The roadside verges will require management to ensure that rank grassland species do not encroach and out compete with the planted species. The main way of preventing this situation arising is by removing any source of nutrient input and allowing the slower growing or smaller species to survive by not being out competed. Therefore, a cutting regime should be employed.

Within the first year, the sward will be cut whenever 100cm is reached with arisings left on site for 24hours to allow invertebrates to disperse and then removed. The sward should be cut to 100-150mm to avoid scalping and should not be carried out when conditions are damp or wet. The last cut should be in October. This should allow the important calcareous species to survive.

After this, it is recommended that the site is cut once a year on a rotational basis so that there is diversity throughout the site with one third of the verge cut each consecutive year. This should occur in August/September following the method outlined above.
Adopting this management regime will provide a range of habitats for invertebrates such as the ground beetles *Harpalus obsurus* and *Harpalus punctatulus*. However, the management of the grassland areas should be reviewed every year to ensure that it is effective in maintain optimal conditions.

5.3 **Willow Brook Bridge Area**

The specified planting along Willow Brook should be sown as turfs with seed intermingled as in the case of coir matting if possible.

The marginal grassland/marginal water side planting will need to be managed to prevent the encroachment of rank grassland species and the choking of the brook. A cutting regime should be employed to achieve this. There are two main cutting periods occurring in the summer and winter months with a late summer cut preferred. It is recommended that the cut is rotational, cutting different parts of the brook in different years. This will ensure that the brook retains a variety of habitats at any one time. The brook should be cut every 3-5 years with all arisings left for 24 hours and then removed. As with the grassland management, any management should be informed annually via the yearly surveys.

This management regime will enhance the brook for water voles and aquatic invertebrates along with other species such as birds.

5.4 **Woodland surrounding Willow Brook**

The trees and shrubs planted around the bridge will be managed and surveyed along with the roadside verge planting as detailed in paragraph 5.1.
6 MINIMISING DISTURBANCE DURING CONSTRUCTION

6.1 Pre-Construction Measures

The following outlines the ecological surveys and mitigation requirements prior to the road construction commencing in order to safeguard those species which are or may be present.

Water Voles

During the survey of Willow Brook no evidence of water vole presence was identified. However, water vole populations are known to fluctuate spatially from year to year, therefore, Willow Brook will be re-surveyed in accordance with the methodology outlined in the Water Vole Conservation Handbook (Strachan, 1998) prior to any construction that will affect this watercourse.

The survey will encompass the working area plus an additional 10m either side. If water vole populations are recorded during this survey it will need to be extended to includes lengths of watercourses outside of the working area in order to estimate carrying capacity to receive any translocated voles.

The mitigation strategy for water voles will need to be agreed in advance with Natural England, however, should water voles be found, the method outlined below can be used as a guide;

- all existing water vole burrows are to be marked by an ecologist prior to vegetation strimming works and all works are to be supervised on the ground by an ecologist;
- all bankside and emergent vegetation within the impact area and for a distance of 10m on each side of the easement and 10m from the bankside will be cut as close to the ground and water level as possible;
- all cutting will be carried out using hand held strimmers, taking care to avoid damage to banks and water vole burrows. Existing burrows must be kept open after the vegetation had been cut to ensure that voles are not accidentally buried. All cuttings will be removed from site;
- the strimmed areas will be left undisturbed for three consecutive days to allow any water voles to move away from the area;
- a check for water vole activity in the strimmed areas will need to be made on the fourth day after strimming. All existing burrows will be stopped up with grass and a check made the following day for burrows with grass removed and other water vole activity such as latrines. This process will need to be continued until burrows are no longer being used and no...
further signs are recorded; or until a suitable end point is reached, agreed in advance with Natural England;

- if vegetation strimming has been insufficient to deter water voles away from the impacted zone with activity still being recorded, after a designated length of time agreed with Natural England in the mitigation strategy, then water vole exclusion using fencing and trapping and translocation will be required;

- the impact areas will be fenced with plyboard to prevent water voles from returning (with the impact area defined as the location of construction works plus about 5m on each side);

- the working area will then be fenced with suitable wooden ply-boards dug in by hand or using a JCB ‘ripper’, where the machine can reach the banks without causing damage;

- water vole live-capture traps can be set and checked three times daily and any captured water voles released to the non-working areas side of the exclusion fencing. The exclusion fencing must be kept in place until construction has been completed and prior to the site being vacated to prevent harm to water voles.

**Otters**

No evidence of otters was found along Willow Brook during the initial surveys. However, otter populations may disperse into the area and therefore, a further survey of the watercourse will be undertaken to establish presence/absence.

The survey will be undertaken for 1km either side of the road route crossing. If signs of otters are found, Natural England will be informed and a development licence may be required.

**Bats**

There will be no disturbance to any potential bat roosts within the area and therefore, no pre-construction activity is required.

**Badgers**

As previously mentioned a badger sett has been identified outside over 30m away from the road route construction area within a small area of woodland adjacent to Dingly Dell. The woodland is to be retained and no impact on the sett is anticipated. This badger sett is being monitored and a further survey of the area will be undertaken prior to any construction.
Great Crested Newts

Due to the extent of development within the Corby area and the wider issues regarding impacts on GCN populations within and surrounding the Corby Northern Orbital Road (CNOR), it has been necessary to address these wider issues and to develop a GCN strategy as the CNOR cannot be considered in isolation of the development at Priors Hall. Separate GCN licences together with Reasoned Statements and Method Statements have been submitted to Natural England, both licence applications make reference to each other especially with regards to safeguarding the metapopulations within the area through the retention of connectivity by utilising the Willow Brook green corridor, retention and creation of suitable terrestrial habitats with creation and enhancement of ponds and wet grassland areas.

A series of drawings have been produced to show the current habitats, in particular GCN, and populations; mitigation proposals and resulting habitats of both these developments. These are:

- GCN locations and existing habitats – shown on Drawing NL08225/18 and 19;
- mitigation proposals – shown on Drawing NL08225/20 and 21;
- habitat creation, restoration and enhancement – shown on Drawing NL08225/16 and 17.

All of these drawings show the area covered by both the CNOR and the Priors Hall development.

The mitigation strategy has four components:

- capture and translocation of GCN from the working areas to a receptor site to prevent harm and disturbance;
- creation of four ponds within two receptor sites to provide further aquatic habitat alongside the supplementary SUDS ponds adapted for wildlife;
- best practice to be followed by the contractors to avoid environmental effects;
- creation of wet grassland area and hibernacula for terrestrial habitat and shelter;

This Ecological Management Plan contains details extracted from the documents which have supported the licence application submitted under the Habitat etc. The mitigation strategy has been designed to protect and
enhance the population of GCN present in the area, and this will also have benefits for other species present in the vicinity of the development.

To mitigate for the potential impacts of the development the strategy will include the installation of upright and one-way Temporary Amphibian Fencing (TAF) at certain areas along the road route (for location of TAF and specification of fencing refer to Drawing NL08225/13 and Drawing NL08225/25). This will ensure that GCN cannot enter the working areas. It also covers the capture and translocation of any GCN found within the road route corridor to suitable receptor sites whilst the works are undertaken and additional habitats created.

Mitigation is to include the creation of receptor sites containing four ponds and hibernacula (see Drawing NL08225/22). This will be situated adjacent to Willow Brook North. A wet grassland area is to be created within Zone C to increase the diversity of the remaining terrestrial habitat. Six further hibernacula will be created adjacent to the Willow Brook North area. Monitoring of the ponds created within the receptor sites, the attenuation ponds and existing surrounding ephemeral ponds will be undertaken for a period of four years upon completion of the scheme to monitor the GCN population size. A copy of the ecological management plan outlining the monitoring is included in the Reasoned Statement of Application which accompanies the Method Statement.

6.2 Ecologist Works covered by the GCN licence application

Capture and Exclusion

This part of the mitigation strategy aims to ensure that there is no disturbance or deaths during construction period of the road and associated works. It aims to protect the current populations of GCN.

Zone A will not be subjected to TAF and capture due to it being within an industrial estate and the works are solely the widening of an existing road. However, an ecological clerk of works will undertake hand searches of all landscaped areas surrounding the existing road prior to disturbance. Zones B and C will undergo detailed works as described below.

To avoid pre and mid term activity impacts, TAF (see Drawing NL08225/25 for specification) is to be installed along the length of the route shown on drawing NL08225/13 and the installation of pitfall traps at 8–10m intervals to enable the capture of newts within the working area. The area will be divided into three compartments (compartments A, B and C) to increase the surface area of the fencing and therefore speed up the capture process. The width of
the TAF varies across the scheme as shown on Drawing NL08225/13 with the approximate length being 800m in Zone B and 900m in Zone C. One-way fencing will be installed at points throughout the development to allow any GCN within the area access to other suitable habitat outside of the working area. This fencing is to be installed within the Morrison’s land around compartment (B) and parts of compartment (A) and also adjacent to the area in the western section of the road route containing the lagoons (the southern section of compartment C). The rest of the fencing is upright preventing access into the working area or outside onto areas unsuitable for GCN.

The pitfall traps will be opened once the night-time temperature is above 5°C, which is anticipated to be from March 2008 onwards. The traps will be checked before 11am each morning with any amphibians released immediately into the receptor sites. All amphibians will be released within appropriate existing refugia to ensure that daytime predation does not occur. Night-time torch searches and destructive hand searches will also be undertaken to enhance capture rate over a 30 day period. After 30 days, the trapping will continue until no GCN are found within any 5 day period. Once a compartment is declared free from GCN then works can begin and once all areas are declared free from GCN the dividing TAF will be removed. The fence will then be checked daily by an ecological clerk of works to ensure that it remains intact during works. If defects are found, they will be repaired within 24 hours.

The receptor sites are to be situated adjacent to the Willow Brook North corridor (see Drawing NL08225/13). It will be created immediately after the granting of this license (approximately January 2008). The area of the receptor site is approximately 2,260 square metres and will be enclosed by one-way TAF. The area will be mostly cleared of trees and scrub with some remaining for diversity and cover. The receptor sites will contain four ponds (see Drawing NL08225/08 for specification) and hibernacula (see Drawing NL08225/15). The ponds will be planted with aquatic and marginal plants, some of which will be found within local water bodies to accelerate the rate of establishment. The total area that the four ponds will provide is 60 square metres of aquatic habitat.

It is anticipated that a small number of GCN’s will be caught due to the majority of the road route consisting of hard standing, industrial estates and disturbed ground. The GCN will remain within the receptor sites during the construction period, which is anticipated to be approximately one year. After this time, the TAF will be removed which will allow for natural dispersal of GCN within the surrounding area.
6.3 Developer Works covered by the GCN licence application

The mitigation proposals described in this section are shown on Drawings NL08225/20 and 21. The habitat creation, restoration and enhancement are shown on Drawings NL08225/16 and 17.

In-situ retention of breeding/resting sites

A large proportion of the proposed route follows existing road, areas of hard standing and disturbed land, however, there will be a loss of approximately 5 hectares of suitable terrestrial habitat. No aquatic habitats are to be lost.

The TAF will denote the working area and an ecological clerk of works will be present during the working period to ensure that these habitats are protected from vehicle access or other disturbance.

The contractor will use best practice methods of working to ensure that there are no environmental effects such as chemical spillages and dust deposition. Lighting will be limited to the proposed road boundary and pointed down to avoid light spillage into other suitable habitats.

Modification of existing breeding/resting sites

The habitat which will line the road will undergo roadside planting schemes. The habitat under the Willow Brook North Bridge will be enhanced to provide a suitable wildlife corridor. Details and design of the bridge and habitat enhancement can be viewed on Drawings CL00490/P81 and B0522600/L/3000/00006 respectively. The underpass below the bridge will be seeded with the seed mix stipulated for Willow Brook North. This seed mix will establish vegetation to provide foraging land and dispersal routes for amphibians and other species using the Willow Brook North corridor.

An area of wet grassland is to be created adjacent to Willow Brook North where there is an existing damp area (see Drawings NL08225/16 and 17). On removal of the trees it is anticipated that this area will become wetter and wet grassland species can be planted. This area is approximately 0.1 hectares.

New breeding/resting place creation

Additional refugia (nine hibernacula) will be created adjacent to Willow Brook North (see Drawing NL08225/16 and 17 for locations and NL08225/15 for design). Three of these will be situated within the receptor sites with six situated outside of the area.

No aquatic habitats are to be lost. However, there has been a reduction of aquatic habitat in the surrounding area due to previous development and
therefore additional habitats are being created as part of this development. There will be four ponds created within the receptor sites (see Drawing NL08225/22) and two supplementary attenuation ponds, adapted for wildlife, adjacent to the road route within Zone B to help compensate for the reduced number of available breeding habitats lost through earlier development schemes within the surrounding area (see Drawing NL08225/16 and 17).

The attenuation ponds will be designed to offer suitable breeding habitat for GCN. (Refer to drawing NL08225/08). The specification includes varying water depths and suitable aquatic and marginal planting to create refuge within the ponds and provide egg laying material. The dimensions of the water bodies are 2,500 m³ and 3,200 m³. These ponds will be subjected to management for a total of four years following the scheme which will be assessed on an annual basis with any failed planting being replaced.

The receptor site ponds will equal a total of 60 square metres of permanent water.

**Scaled Maps/Plans**
Refer to drawing NL08225/20 and 21 for the mitigation proposals and drawing NL08225/16 and 17 for habitat enhancements.

**Further Mitigation**
Elements of the mitigation strategy do not fit into the sections outlined above. This section deals with further mitigation which will not create, modify or retain habitat but provide suitable linkages to overcome the impacts of isolation and fragmentation and maintain metapopulations within the area.

The construction of the road may fragment populations of GCN within the area, with GCN crossing from ponds and terrestrial habitat into further areas of ponds and terrestrial habitat from east to west and vice versa. Guide fencing will be installed in the vicinity to make sure that GCN disperse safely under the Willow Brook bridge.

To guide the GCN to the safety of the bridge, guide fencing will be erected. The guide fence will be erected along all sections of the road alignment where GCN are considered to be present (see Drawing NL08225/16 and 17). The fencing will be erected prior to the road becoming active. This fencing will then be monitored and checked for defects annually when the monitoring is taking place for a period of four years following the completion of the scheme. Once the monitoring period is complete, the landowner will ensure upkeep of the fence and prevent any further development impacting or undermining the
mitigation set out in this document (see Annex D6 of the Reasoned Statement). This fencing will prevent any GCN from entering the carriageway and ensure that amphibian road deaths due to traffic or trapping incidents within drains are minimised.

In addition, the bridge over Willow Brook North will allow for no interference by the proposed road with the Willow Brook wildlife corridor provide further dispersal routes.

Wider Context
GCN are known within the wider area of the proposed development (see Drawing NL08225/18 and 19). The entire area surrounding the road route is to be developed in the future. The Priors Hall development site to the east is to be covered under a separate licence application. It is proposed for this area to comprise a large residential and industrial development. The Morrison’s land is ear-marked for development but no plans have been published to date. To the western end of the proposed road route, there are areas of land which are currently being developed.

Therefore, this development will provide extra terrestrial and aquatic habitat along Willow Brook North to provide a green corridor through all developments. Willow Brook North links into the Priors Hall site where there is to be a large area retained and created with grassland, reedbeds, refugia and hibernacula and ponds (see Drawings NL08022516 and 17). The connectivity will be provided via the Willow Brook North Bridge, and various natural crossing points along the stream, and amphibian tunnels.

The creation of additional aquatic habitat and the enhancement to terrestrial habitat through landscaping within the green corridor of Willow Brook North should provide the basis of a wider GCN strategy for the area.

Reptiles
To protect reptiles from harm, the working areas will be strimmed and trapping and relocation of reptiles from within the area will follow. The adjacent habitat to the works area is a suitable receptor site to support the displaced population.

Birds
Vegetation clearance should be undertaken outside of the bird breeding season (March-August inclusive) to avoid harm to any nesting bird. If this is not possible, an ecologist will check the area to be cleared immediately prior
to works commencing for breeding birds. If a nest or nest in construction is found, work cannot commence until the young have fledged the nest.

Once the vegetation is cleared, deterrence flags will be used to dissuade ground nesting birds if the ecologist recognises the possibility within the working area before work commences. Flags will be installed from late March and left in place until the site works commence.

A final survey of the grassland will be carried out ahead of the site works to check for ground nests. The survey will be undertaken by an experienced field ecologist.

6.4 During Construction
During construction there will be an ecologist present on site in the form of an experienced ecological clerk of works. The purpose of this role is to ensure the safeguarding of species on site and oversee the mitigation works. The role is described in more detail below under each relevant section.

Water Voles
If water voles have been found during the pre-construction survey, the exclusion fence erected must remain in place and be checked by the ecological clerk of works each day to ensure that it is in sound condition.

The banks of Willow Brook will be seeded with grass to provide suitable habitat for water voles to colonise if not already present or re-colonise from other areas of the brook.

The proposed cycle path which is to be implemented will be a distance from the banks of Willow Brook allowing planting of long grass along the edge to provide refuge and a buffered wildlife corridor for water voles or any other species present.

The exclusion fence will remain in place until the site has been vacated to prevent any harm to water voles. The fence can only be removed once the ecological clerk of works agrees to its removal.

Badgers
Throughout the construction phase an ecological clerk of works will ensure that the badger sett identified remains undisturbed by people and machinery.
The ecological clerk of works will check that all excavations are left with an egress if left open overnight to allow any foraging badgers a means of escape should they become trapped.

**GCN**
An ecological clerk of works will ensure that the fencing remains in tact for the duration of the construction phase. Any defects in the fence will be reported and fixed by the appropriate contractor within 24 hours.

**Reptiles**
No further mitigation will be required during the construction phase.

**Otters**
There is possibility that otters may use Willow Brook as a wildlife corridor, therefore, the brook must remain unobstructed to maintain the corridor. The ecological clerk of works will ensure that this is enacted on site.

**Bats**
As there will be no disturbance to potential bat roosts during the construction stage no mitigation is required. However, Willow Brook may be used as a flight line by bats and therefore, light usage and the possibility of light spillage into the surrounding areas should be minimised during night-time periods.

In addition, to facilitate more use of the area by bats, 10 bat boxes are to be erected under the Willow Brook bridge to create further roosting opportunities.
7 POST-CONSTRUCTION MONITORING SURVEYS

7.1 Further Annual Surveys

Habitats
Table 10 details the broad period of works to be undertaken during the scheme. Newly planted habitats will be monitored by an ecologist or landscape architect on a yearly basis for a 5-year period, or as appropriate. Any planting which has failed will be replaced with the same species.

Further management recommendations will be proposed on a yearly basis to update this management plan. Reviews will be informed by the annual surveys to ensure that appropriate management is being carried out.

Species
Surveys to review the status of the following species will be undertaken on an annual basis for a five year period:

Badgers
The survey will allow for the assessment of badgers in the area.

Bats
The surveys will assess whether bats are using the bat boxes which have been erected and which species are using the Willow Brook as a flight line.

Reptiles
The survey will establish population size and record trends.

GCN
The survey will establish population size and record trends. Surveys will also evaluate the success of the mitigation scheme.

Water voles and otters
Surveys will determine presence/absence of these species, any population trends and evaluate whether the regarding of the banks of Willow Brook and the planting have been useful in attracting or enhancing populations of the species.

Upon completion of each annual monitoring period a report will be compiled, which will include future management proposals for the coming year. These reports will be submitted to the client and the Local Planning Authority.
**Schedule of Monitoring Works**

A precise works schedule will be made available following the finalisation of the scheme.

Table 8 summarises time constraints for protected species surveys to be carried out on a yearly basis and Table 9 shows the work to be undertaken with respect to protecting GCN.

| Table 8: The seasonal timing constraints for further species survey work |
|-----------------------------|-------|--------|------|--------|-------|--------|------|--------|-------|--------|
| Month | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct |
| GCN | | | | | | | | | | | | |
| Bats | | | | | | | | | | | | |
| Reptiles | | | | | | | | | | | | |
| Badger survey | | | | | | | | | | | | |
| Water voles | | | | | | | | | | | | |

**Key**

- **Main time frame in which surveys are anticipated to be undertaken**
- **Additional / early period in which surveys may be undertaken**
8 TIMETABLE OF WORKS

Table 9 below explains the work to be undertaken in a chronological order with regards to protecting GCN.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Method</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptor site creation.</td>
<td>The area will be fenced and four ponds created</td>
<td>1 week</td>
</tr>
<tr>
<td>Vegetation clearance where required.</td>
<td>Removal of trees and scrub upon completion of fingertip search by ecologist. Area to be left for 24 hrs to allow GCN to leave the area. Hand strim the works area to 150mm and remove arisings upon being checked by an ecologist. Leave the area for 24 hrs to allow GCN to leave the area.</td>
<td>3 days</td>
</tr>
<tr>
<td>TAF and pitfall traps installation</td>
<td>Finger tip search immediately prior to installation of TAF using mini-digger by an approved contractor. Install pitfall traps at 8 -10m intervals along the inside of the TAF.</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Capture and translocation</td>
<td>Pitfall traps to be checked every morning before 11am with any newts (and other amphibians) found recorded and then immediately released into appropriate surrounding habitat. In addition, night-time torch searches and destructive hand searches will be carried out to increase capture rate.</td>
<td>30 days</td>
</tr>
<tr>
<td>Declaring area free of newts</td>
<td>Trapping to continue after the 30 day period until 5 clear days have been achieved. After this, the area is declared free of newts and work will begin.</td>
<td>At least 5 days</td>
</tr>
<tr>
<td>Construction</td>
<td>Construction of the road will begin including the construction of the bridge over Willow Brook, the additional hibernacula, creation of wet grassland and two attenuation ponds.</td>
<td>1 year</td>
</tr>
<tr>
<td>Removal of TAF</td>
<td>TAF is to remain in place during construction and maintained throughout. Any damage is to be repaired within 24 hours. All TAF will be removed upon completion of all works.</td>
<td>1 week</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Monitoring of all ponds within the area for GCN.</td>
<td>5 years</td>
</tr>
</tbody>
</table>
Table 10 below highlights the timing of works.

<table>
<thead>
<tr>
<th>Table 10 – Timing of Works</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>GCN Receptor site creation</td>
</tr>
<tr>
<td>Vegetation Clearance</td>
</tr>
<tr>
<td>GCN TAF/Pitfall trap installation</td>
</tr>
<tr>
<td>GCN/reptile Capture/ Translocation and water vole and badger surveys</td>
</tr>
<tr>
<td>Construction (including mitigation works)</td>
</tr>
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</tr>
<tr>
<td>Removal of TAF</td>
</tr>
<tr>
<td>Commencement of management/monitoring of habitats and species</td>
</tr>
</tbody>
</table>
Typical section through Pond 2. Also applies to Pond 1. Final detail landscape design for Ponds 1 and 2 to be confirmed following technical approval.

Plants from Mix 7 (LE6.1) and Mix 8 (LE6.3) - refer to plant schedules.

- Moisture loving plants and Reeds
- Marginals
- Deep marginals
- Oxygenating plants

150mm topsoil

Enkamat layer

1/2 inch

50mm filter

Terram layer

100mm sand

Permanently wet area of pond