

# Westfield Pasture Nature Reserve

---

MANAGEMENT PLAN JUNE 2018- JUNE 2023



## I. Contents

II. Summary Sheet .....	3
III. Abbreviations .....	4
1.0 Description.....	5
1.1 General information .....	5
1.2 Map Coverage.....	5
1.2.1 Site Location .....	5
1.2.2 Historical map cover .....	6
1.3 Summary description .....	8
1.4 Photographic coverage .....	8
1.5 Phase One Habitat .....	0
1.6 Flora and Fauna .....	0
1.5 Past and Current management.....	1
2.0 Confirmation of important Features.....	2
2.1 Provisional list of features .....	2
2.2 Evaluation of features.....	2
2.2.1 Wet Grassland.....	2
2.2.2 Acid Grassland.....	3
2.2.3 Ponds .....	3
2.2.4 Scrub land .....	4
2.2.5 Woodland .....	5
2.2.6 Breeding birds.....	5
2.2.7 House Sparrow.....	7
2.2.8 Yellowhammer.....	7
2.2.9 Bats .....	7
2.2.10 Badgers .....	7
2.2.11 Hedgehogs.....	8
2.2.12 Great crested newts .....	8
2.2.13 Access .....	8
2.2.14 Education.....	9
2.2.15 Legal .....	9
2.3 Confirmed list of features .....	9
3.0 Summary of factors which may influence features .....	10

3.1	Owners objectives.....	10
3.2	Internal natural factors .....	10
3.3	Internal human induced factors.....	10
3.4	External natural factors.....	11
3.5	External human induced factors .....	11
3.6	Factors arising from legislation/tradition .....	12
4.0	Management objectives .....	13
4.1	Objective 1 - Wet grassland .....	13
4.2	Objective 2 - Acid Grassland .....	16
4.3	Objective 3 – Ponds .....	20
4.4	Objective 4 - Scrub .....	24
4.5	Objective 5 - Woodland .....	26
4.6	Objective 6 – Access.....	28
4.7	Objective 7 - Higher level stewardship scheme .....	29
4.8	Objective 8 – Education .....	32
4.9	Objective 9 - Legal.....	33
5.0	Project register and work program.....	34
5.1	Project register.....	34
5.2	Work program.....	40
6.0	References .....	49
7.0	Appendix A.....	51
8.0	Appendix B .....	53
9.0	Appendix C .....	54
10.0	Appendix D.....	56

## II. Summary Sheet

### Westfield Pasture Nature Reserve

**Area:** 13.5ha

**County:** Tyne and Wear

#### Features of interest:

Significant habitats, Species and Features	UKBAP	DBAP	Local/ regional importance
Wet grassland		✓	✓
Dry Acid grassland		✓	✓
Ponds	✓	✓	✓
Scrubland	✓	✓	✓
Woodland		✓	✓
Breeding birds		✓	✓
House Sparrow	✓	✓	✓
Yellow hammer	✓	✓	✓
Bats	✓	✓	✓
Badgers		✓	✓
Hedgehogs	✓	✓	✓
Great Crested Newts	✓	✓	✓
Access			✓
Education			✓
Legal			✓

### III. Abbreviations

"DBAP" - Durham Biodiversity Action Plan

"UKBAP" - United Kingdom Biodiversity Action Plan

CMS codes:

R Recording	M Management	A Administration
<b>RA Record, fauna</b>	<b>MA</b> Manage other land	<b>AA</b> Site acquisition / declaration
<b>RB Record, biology general</b>	<b>MB</b> Manage habitat, hedgerows	<b>AE</b> Employ staff
<b>RC Record cultural heritage</b>	<b>MC</b> Manage cultural features	<b>AF</b> Financial planning and recording
<b>RF Record, vegetation</b>	<b>ME</b> Manage site infrastructure	
<b>RH Record, human interaction</b>	<b>MH</b> Manage habitat	<b>AI</b> Inspections and audits
<b>RM Record, marine</b>	<b>MI</b> Information / education / interpretation / events	<b>AL</b> Legal matters and payments
<b>RP Record, physical environment</b>	<b>ML</b> Liaison with stakeholders	<b>AN</b> Site designation
<b>RV Record, archive general, photos, maps etc.</b>	<b>MM</b> Manage machinery and equipment	<b>AP</b> Planning, plan preparation and revision
	<b>MN</b> Manage habitat, marine	<b>AR</b> Reports and general correspondence
	<b>MP</b> Patrol	<b>AS</b> Site and species safeguard, law enforcement & admin.
	<b>MS</b> Manage species	<b>AT</b> Training and management
	<b>MU</b> Manage earth science	

#### Recording projects

**RA Record Fauna, is divided:**

**RA0 Collect data, mammals**

**RA1 Collect data, birds**

**RA2 Collect data, herptiles**

**RA3 Collect data, fish**

**RA4 Collect data, Lepidoptera**

**RA5 Collect data, Odonata**

**RA6 Collect data, Orthoptera**

**RA7 Collect data, other insects**

**RA8 Collect data, other invertebrates**

**RA9 Collect data, fauna, general**

#### Each category is further divided, for example:

**RA0 Collect data, mammals**

**RA00 Collect data, mammals, general** **RA01 Collect data, mammals, natural event**

**RA02 Collect data, mammals, survey** **RA03 Collect data, mammals, monitor**

**RA04 Collect data, mammals, count / estimate / measure / census**

**RA05 Collect data, mammals, research project**

**RA06 Collect data, mammals, list species**

#### Management projects

**MH Manage habitat, is divided:**

**MH0 Manage habitat, forest / woodland / scrub**

**MH1 Manage habitat, grassland**

**MH2 Manage habitat, controlling invasive species**

**MH3 Manage habitat, heath**

**MH4 Manage habitat, bog / mire / flush**

**MH5 Manage habitat, swamp / fen / inundation**

**MH6 Manage habitat, open water / rivers**

**MH7 Manage habitat, coastal**

**MH8 Manage habitat, rock**

**MH9 Manage habitat, upland / montane**

#### Each category is further divided, for example:

**MH0 Manage habitat, forest / woodland / scrub**

**MH00 Manage habitat, forest / woodland / scrub, by coppicing**

**MH01 Manage habitat, forest / woodland / scrub, by planting / sowing**

**MH02 Manage habitat, forest / woodland / scrub, by thinning / group felling**

**MH03 Manage habitat, forest / woodland / scrub, aiding natural regeneration**

**MH04 Manage habitat, forest / woodland / scrub,**

**maintaining ride/path/glade**

**MH06 Manage habitat, forest / woodland / scrub, by enclosure / exclosure**

**MH07 Manage habitat, forest / woodland / scrub, by**

**scrub control**

**MH08 Manage habitat, forest / woodland / scrub, by**

**managing dead wood**

## 1.0 Description

### 1.1 General information

Westfield Pasture nature reserve is located in the Tyne and Wear lowlands of the Gateshead Borough, situated one-mile north-west of Ryton (See Figure 1) which is centered on grid reference NZ 14482 64997. Access to the site is limited; however, there is permission from the golf course to access the site via a path running from the car park to the gate of Westfield Pasture at the end of Westfield Lane. Clara Vale can be accessed via the same route, but then following the footpath round Westfield Pasture. Westfield Pasture and Clara Vale cover a total of 13.5 hectares. The site is of a high amenity due to its close proximity to the urban fringe and the large variety of habitats present within, including rare wet grassland communities. Gateshead Council currently owns the sites and in June 2014, the site was leased to the Durham Wildlife Trust whom continue to work to develop the area of wildlife (DWT, 2017). Documents and visitor information regarding the site are held in the Durham Wildlife Trust Rainton Meadows visitor centre, and site information may also be located on their website online.

## 1.2 Map Coverage

### 1.2.1 Site Location

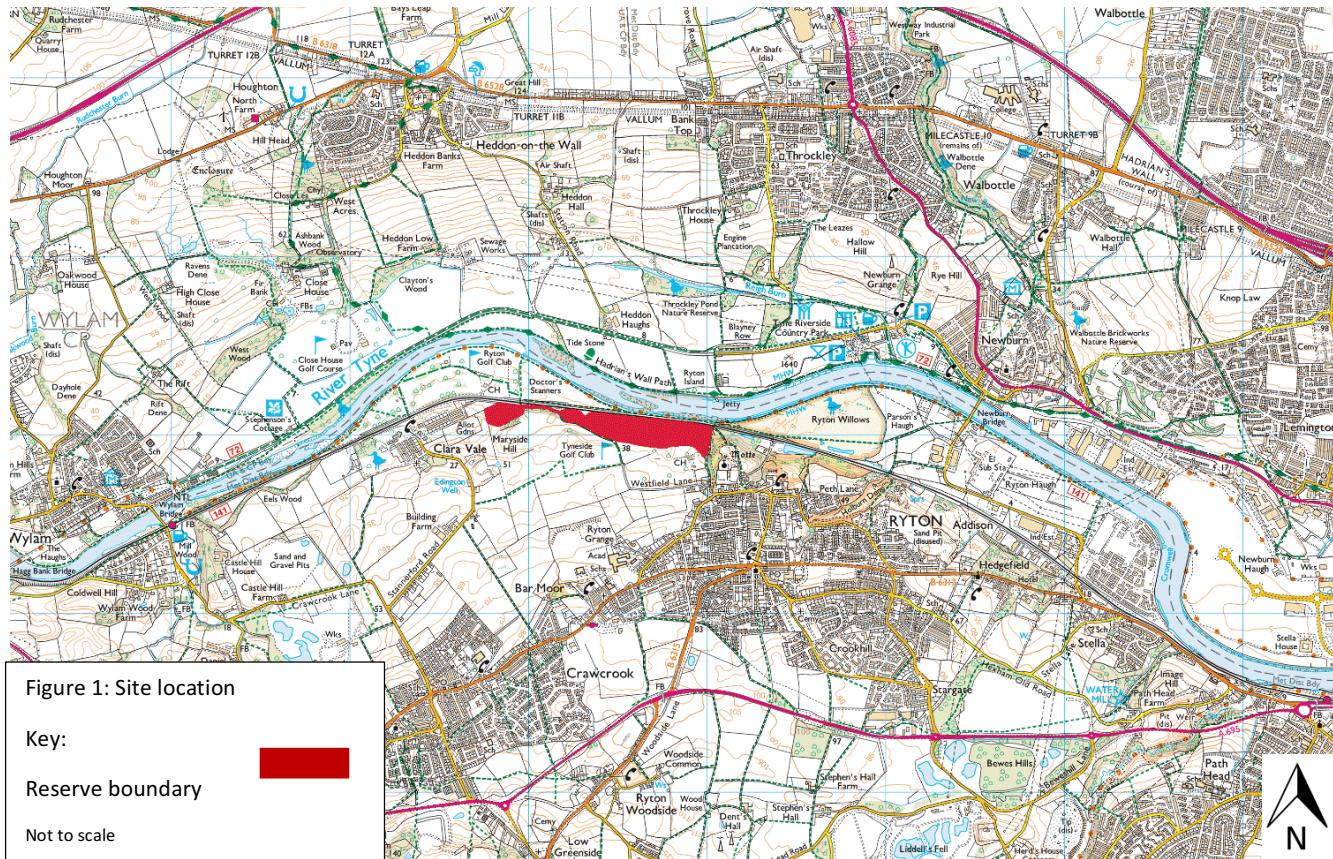


Figure 1: Location of Westfield Pasture. © Crown Copyright and Database Right 2018. Ordnance Survey (Digimap Licence)

## 1.2.2 Historical map cover



Figure 2: 1850's map of Westfield Pasture and surrounding area. © Crown Copyright and Landmark Information Group Limited (2018). All rights reserved. (1850).

Examining during the 1850's, there is a notable area north of Westfield Pasture, beyond the railway line; "Doctor's Stanners". The area is now occupied by grassland, however was previously an area of riverbed dredging where large areas of shingle were exposed. Siltation rates would be high here at present day. The only signs of human presence are the railway line, which remains to present day and Stanner House located at the now Clara Vale village. Patches of now ancient woodland can be seen within eastern and western Westfield Pasture.



*Figure 3: 1920's map of Westfield Pasture and surrounding area. © Crown Copyright and Landmark Information Group Limited (2018). All rights reserved. (1920).*

By 1920, Clara Vale village has been established, with a coalmine opening in 1893. Also present are allotment gardens for local farming to the north of the village, beyond the railway. The Golf Course is now present to the south of Westfield Pasture. There are still areas of woodland present within western and eastern Westfield Pasture.



*Figure 4: 1960's map of Westfield Pasture and surrounding area. © Crown Copyright and Landmark Information Group Limited (2018). All rights reserved. (1960).*

As of the 1960s, there are a number of refuge landfill areas to the north of Clara Value where the previous allotments were; runoff from this site may have altered the condition of the nearby Clara Vale Pond area. Allotment gardens are located to the south of Clara Vale, where agricultural activity may be occurring. Woodland within Westfield Pasture is sustained. The coalmine closed down in 1966. The 1960's map is the last historical map of the area available.

### 1.3 Summary description

Westfield Pasture nature reserve compromises of the land at Clara Vale Pond and Westfield Pasture. The wide variety of habitats on site makes it especially important as a component of the Tyne valley wildlife corridor, which follows the River Tyne from Wylam to Bill Quay. The landscape within the area is mainly comprised of coal measure rocks of the Carboniferous age overlain by Permian rocks (Natural England, 2013). Within the lowlands, soils are typically slowly permeable seasonally wet slightly acid but base rich loamy and clayey (Natural England, 2013). The habitats of Westfield Pasture vary in terms of wet and dry acid grassland, deciduous woodland, a large covering of scrubland and small ponds. The lower slopes of Westfield Pasture and Clara Vale provide the grassland with flush communities whilst the upper parts of the slopes are home to the drier communities. Within Westfield pasture towards the base of the slope, there are two small ponds, whilst Clara Vale has a permanent pond that provides more flora than the ponds in Westfield Pasture, of which several are temporary.

### 1.4 Photographic coverage



Figure 5: Clara Vale permanent pond



Figure 6: Westfield Pasture pond

## 1.5 Phase One Habitat

Prior to the wintering conditions influencing the site, a visit was conducted to allow for habitat identification and the production of a Phase One habitat map. The splitting of the site into areas allows for easier management practices and area navigation. Areas are based upon the habitat within Westfield Pasture nature reserve.

Area	Features	Key
1	Semi natural broad leaved woodland	████
2	Scattered scrub	███
3	Semi improved dry acid grassland	
4	Wet grassland	
5	Standing water i.e Ponds	█████
6	Fencing	++

Table 1: Phase one habitat key



Figure 7: Phase one habitat map of Westfield Pasture

## 1.6 Flora and Fauna

Westfield Pasture has a mesotrophic grassland with flush communities towards the lower slopes, with the upper slopes being significantly drier communities (DWT, 2017). The grasslands are dominated by hard and soft rush with common-spotted orchid (*Dactylorhiza fuchsii*), marsh thistle (*Cirsium palustre*), meadowsweet (*Filipendula ulmaria*) and ragged robin (*Lychnis flos-cuculi*) numerous. Within the lower slopes of Westfield Pasture, Cowslip (*Primula veris*) and primrose (*Primula vulgaris*) occur. The mesotrophic grasslands are highly attractive to birdlife with over 70 species recorded on the site within the last 10 years at both Westfield Pasture and Clara Vale. Notable species include curlew (*Numenius arquata*), Fieldfare (*Turdus Pilaris*) and Redwing (*Turdus ilacus*). Also within Clara Vale, four different bat species have been recorded, two of which including Whiskered bats (*Myotis mystacinus*) and Natterer's bat (*Myotosis Nattereri*).

Although not rich in fauna, Westfield Pasture and Clara Vale provide habitats that could be suitable to Great Crested Newts (*Triturus cristatus*), which were previously recorded on site 14 years ago, and water voles (*Arvicola amphibius*) due to the suitable wet grassland communities and small ponds located in Westfield Pasture and Clara Vale. To the west of Clara Vale pond is a species rich marsh with marsh marigold (*Caltha palustris*), common-spotted orchid (*Dactylorhiza fuchsii*), marsh horsetail (*Equisetum palustre*), meadowsweet (*Filipendula ulmaria*) and ragged robin (*Lychnis flos-cuculi*). Above the pond is a meadow that shows a diversity within its flora species, with areas containing northern marsh orchid (*Dactylorhiza*), marsh thistle (*Cirsium palustre*), marsh ragwort (*Jacobaea aquatica*) and Lady's smock (*Cardamine pratensis*). Present within the rather acidic grassland areas of Clara Vale are common bent (*Agrostis capillaris*), crested dogs tail (*Cynosurus cristatus*), ladys bedstraw (*Galium verum*), betony, (*Stachys officinalis*), burnet saxifrage (*Pimpinella saxifraga*) and heath bedstraw (*Galium saxatile*). A small area of semi-natural woodland is located east of the pond and at the upper slope which is characterized by oak (*Quercus robur*) and ash (*Fraxinus excelsior*), with hazel (*Corylus avellana*), holly (*Ilex aquifolium*) and hawthorn (*Crataegus monogyna*) in the understorey. Previous records of the ground floor of the woodland show that wood sorrel (*Oxalis acetosella*), foxglove (*Digitalis purpurea*), bluebell (*Hyacinthoides non-scripta*), ivy (*Hedera helix*) and honeysuckle (*Lonicera periclymenum*) are present.

Semi natural woodland accounts for a large percentage of total vegetation cover within Westfield Pasture, accompanied with scrubs such as hawthorn scrub (*Crataegus monogyna*) and gorse (*Ulex*

*europaeus*). The majority of woodland is closed canopy and is characterised by Oak and sycamore (*Acer pseudoplatanus*) with holly, elder (*Sambucus nigra*) and rowan (*Sorbus aucuparia*) being present in the understory. This woodland provides a corridor for fauna from Westfield Pasture through to surrounding areas; as there is a badger (*Meles meles*) sett located within the denser parts of the woodland. Birdlife detection is notable within Westfield Pasture woodland, with a small variety of mammals and other fauna such as hedgehogs (*Erinaceus europaeus*) and Badgers (*Meles meles*) also being detected within the last 10 years. Additionally, there are opportunities for the woodland to provide a suitable habitat to field voles (*Microtus agrestis*), bank voles (*Myodes glareolus*) and the common shrew (*Sorex araneus*) due to the presence of a variety of understory.

### 1.5 Past and Current management

Current and past management practices remain minimal. Within recent years, the main body of Westfield Pasture has been grazed by exmoor ponies (*Equus ferus caballus*) belonging to Durham Wildlife Trust, whilst Clara Vale is grazed by ponies provided by a nearby resident. However, large parts of the site currently remain overgrown. In the past, fencing and boundary work improvements were made on site, with there being various squeeze gaps surrounding the site for human access. The Durham Wildlife Trust are currently managing the relevant on site areas to meet the annual Higher Level Stewardship requirements.

## 2.0 Confirmation of important Features

### 2.1 Provisional list of features

#### Biological conservation features

- Wet grassland
- Acid grassland
- Ponds
- Scrub
- Deciduous woodland
- Breeding birds and protected species
- House Sparrow
- Yellow Hammer
- Badgers
- Great Crested Newts
- Hedgehogs
- Bats
  
- Access
- Education
- Legal

#### 2.2 Evaluation of features

##### 2.2.1 Wet Grassland

The wet grassland communities present on site are an increasingly rare habitat to the Tyne and Wear lowlands. Within the two site areas, these wet grassland areas appear exclusively in Westfield Pasture (no presence in Clara Vale). Fragments of these locally rare grassland habitats appear on the lower slopes of Westfield Pasture. The areas surrounding the ponds in both Westfield Pasture and Clara Vale have the potential to become species rich in terms of both flora and fauna, whilst increasing the value of the wet grassland communities. These flush communities of wetland were once dominated by hard and soft rush along with common-spotted orchid (*Dactylorhiza fuchsii*), marsh thistle (*Cirsium palustre*), meadowsweet (*Filipendula ulmaria*), ragged robin (*Lychnis flos-cuculi*), angelica (*Angelica sylvestris*) and

common sedge (*Carex nigra*). Previous management recordings revealed the presence of cowslip and primrose, found near the smaller ponds of Westfield Pasture.

### 2.2.2 Acid Grassland

The lowland dry acid grassland communities are not particularly common to the area. However, they are not locally rare unlike the wet grassland communities that are found on site. Previous management has taken place, but has caused the grassland to become overgrazed which has had detrimental effects on the flora of this grassland community; resulting in the spread of scrubland on to the grassland community whilst also increasing the spread of ragwort and creeping thistle. Within Westfield Pasture, the upper slopes of dry acid grassland supported a typical community of field woodrush (*Luzula campestris*), heath bedstraw (*Galium saxatile*), tormentil (*Potentilla erecta*), cats-ear (*Hypochaeris radicata*) and birds foot trefoil (*Lotus corniculatus*). However, overgrazing and the invasion of scrub such as gorse (*Ulex europaeus*) and Hawthorn scrub (*Crataegus monogyna*) has caused these once rich grassland communities to disappear. For the lowland dry acid grassland to maintain its rich species community and thrive, enhanced focus from management needs to be ensured.

### 2.2.3 Ponds

The site houses several ponds, there are both temporary and permanent ponds present. Within Clara Vale, the ponds are well established and home to a number of flora and fauna species. The established pond in Clara Vale supports a community of vegetation composed of Yellowflag (*Iris pseudacorus*), branched bur-reed (*Sparganium erectum*), lesser pond sedge (*Carex acutiformis*), reed canary grass (*Phalaris arundinacea*), water horsetail (*Equisetum fluviatile*) and water plantain (*Alisma plantago-aquatica*). Two species that are present in Clara Vale that are currently on the Durham Biodiversity Action Plan due to being rare or scarce in the area include Frogbit (*Hydrocharis morsus-ranae*) and Wood club rush (*Scirpus sylvaticus*). The pond in Clara Vale also used to support a good population of amphibians including Great Crested Newts and Toads (*Bufo bufo*); however they have not been identified at the site for a number of years. Although the ponds in Clara Vale are well established with a diverse community, in Westfield Pasture the ponds are unestablished and are currently unsuitable as a habitat for flora and fauna. Due to the wet grassland communities in the area being locally rare the ponds in Westfield Pasture need to be established to help support the growth of the wet grassland communities. Furthermore, maintenance of the ponds (Clara Vale) is a high priority for management as

these open water habitats are becoming increasingly scarce in the Tyne and Wear lowlands, and are recognised as priority habitats by both the Durham Biodiversity Action Plan and UK Biodiversity Action Plan.

Pond water quality is a vital factor in sustaining a balanced aquatic ecosystem and biodiversity, which are determined by dissolved oxygen, pH, phosphate and ammonia levels. Each of these attributes have different effects upon the ponds in the area. Dissolved oxygen is important for aquatic life respiration and for the decomposition of organic matter (Fondriest 2010), depletion of dissolved oxygen can occur should algal levels become too high and decomposition levels cannot be maintained by the dissolved oxygen (Aqua Sierra, 2016). The pH of water should be kept between 6.5 and 9 to successfully support aquatic life; pH level out of this range can stress aquatic systems and lower survival rates. Fluctuations in pH can occur from variations in photosynthesis, respiration and decomposition of organic matter (Fondriest, 2013). Phosphates are essential for aquatic life, however can act as a catalyst for eutrophication (USGS, 2016). High levels of ammonia in water can lead to toxic build up in aquatic life, and potential death (United States Environmental Protection Agency, 2013).

#### 2.2.4 Scrub land

Scrub is an important component of many of the UK Biodiversity Action Plan (BAP) Habitat and EU priority Habitats. Scrub land is part of the Durham BAP priorities with the vision for a balance to be struck between scrub removal for grassland restoration, and scrub retention for woodland regeneration. Also for an increased awareness of the importance of scrub for the needs of invertebrates and birds (NEENP, 2018). The species of scrub found on Westfield Pasture nature reserve is gorse and hawthorn. Both of these scrub species provide a refuge for breeding birds. The scrub on site has invaded considerably due to a lack of management from current and previous land users. Furthermore, the scrub on site is causing an adversity for some other important site features (including ponds and woodland). The spread of scrub can be sighted on the woodland floor. Although providing shelter and habitat for some mammals, flora which could be found in woodland areas is not due to the uncontrolled spread. The scrubland also has an effect on the lowland acid grassland areas as it disallows for certain grass species to grow.

## 2.2.5 Woodland

The broadleaved woodland is partially ancient and semi-natural but is not currently managed. The woodland cover is irregular, similar to other areas of the Tyne and Wear lowlands. Ancient semi-natural woodland is listed as a priority habitat in the Durham Biodiversity Action Plan (DBAP). The woodland is populated by mature oak (*Quercus robur*), with a semi-open canopy with an under-storey of holly (*Ilex aquifolium*), elder and rowan. There are a number of breeding birds and birds that are recognized as priorities in the UK BAP and appear on the red and amber lists, that will populate this woodland habitat. However, the woodland is a problem for other areas of the site including the Wet grassland area, which as seen in section 2.2.1 is locally rare to the Gateshead area. The woodland communities dry out the wetland areas whilst casting leaves and shade over the area. Therefore, management is required to allow the woodland area to provide habitats for birdlife whilst allowing the wet grassland communities to thrive in the area.

## 2.2.6 Breeding birds

Over 70 species of birds were found on site in the last 10 years. All birds are protected under the Wildlife and Countryside Act 1981, with Goshawk (*Accipiter gentilis*), Redwing (*Turdus ilacus*), Treecreeper (*Certhia Familiaris*), Fieldfare (*Turdus pilaris*) and Greenshank (*Tringa nebularia*) being protected under Schedule 1 Part 1, which does not allow intentional or reckless disturbance at or near an active nest. Due to the protection of all bird species it is important that management of habitats take place to allow for bird species to thrive in the area.

Through surveys conducted previously, a number of mammal and bird species have been identified as seen in Table 2. Data sets provided by ERIC (Education Resources Information Centre) helped to examine the bird present in Clara Vale and Westfield Pasture. Not all bird species found on site are presented in Table 2, only those that are nationally rare or locally rare. A full list of bird species found onsite (Provided by ERIC) can be seen in Appendix A Table 5.

<b>Species</b>	<b>Latin name</b>	<b>Nationally rare</b>	<b>Locally rare</b>	<b>Protected</b>
Black Headed gull	<i>Larus ridbundus</i>	Amber		Y
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber		Y
Common Gull	<i>Larus canus</i>	Amber		Y
Curlew	<i>Numenius arquata</i>	Red		Y
Dipper	<i>Cinclus cinclus</i>	Amber		Y
Dunlin	<i>Calidris alpina</i>	Amber		Y
Dunnock	<i>Prunella modularis</i>	Amber		Y
Fieldfare	<i>Turdus pilaris</i>	Red		Y
Goldeneye	<i>Bucephala clangula</i>	Amber		Y
Grasshopper warbler	<i>Locustella naevia</i>	Red	BAP	Y
House martin	<i>Delichon urbicum</i>	Amber		
House sparrow	<i>Passer domesticus</i>	Red	BAP	Y
Kestrel	<i>Falco tinnunculus</i>	Amber		Y
Kingfisher	<i>Alcedo atthis</i>	Amber		Y
Lesser redpoll	<i>Carduelis cabaret</i>	Red	BAP	
Mallard	<i>Anas platyrhynchos</i>	Amber		
Merlin	<i>Falco columbarius</i>	Red		Y
Mistle thrush	<i>Turdus viscivorus</i>	Red		
Redshank	<i>Tringa totanus</i>	Amber		
Redwing	<i>turdus ilacus</i>	Red		Y
Skylark	<i>Alauda arvensis</i>	Red		Y
Song thrush	<i>Turdus philomelos</i>	Red		Y
Spotted fly catcher	<i>Muscicapa striata</i>	Red		Y
Starling	<i>Sturnus vulgaris</i>	Red		Y
Stock dove	<i>Columba oenas</i>	Amber		
Swift	<i>Apus apus</i>	Amber		Y
Tree Sparrow	<i>Passer montanus</i>	Red	BAP	
Turtle dove	<i>Streptopelia turtur</i>	Red		Y

Willow tit	Poecile montana	Red		
Willow warbler	Phylloscopus trochilus	Amber		
Woodcock	Scolopax rusticola	Red		Y
Yellow hammer	Emberiza citrinella	Red	BAP	Y

Table 2: Important bird species found in Westfield Pasture Nature Reserve

### 2.2.7 House Sparrow

The house sparrow (*Passer domesticus*) has declined in the UK, with the population dropping between 1977 and 2008. The species is both part of the UK Biodiversity Action Plan and the UK conservation red list due to its decline. Although sightings have been recorded, the abundance of the sparrow is low suggesting that the number of House sparrows within the area are declining.

### 2.2.8 Yellowhammer

Declining in the UK due to the removal of hedgerows and bushes, the Yellowhammer (*Emberiza citrinella*) is now part of both the UK conservation red list and the UK Biodiversity Action Plan. Due to the large numbers of yellow hammer spotted at Westfield Pasture on numerous occasions, it is essential that management takes place to encourage the stay and repopulation of a declining species.

### 2.2.9 Bats

Several bat species have been recorded on site, including Whiskered bats (*Myotis mystacinus*) and Natterer's bat (*Myotis Nattereri*). The high volume of mature woodland provides good roost sites for bat species, so management of woodland areas should be a priority to encourage the species to use the area for breeding. Bats are recognised as a priority species in the DBAP and are protected under European legislation.

### 2.2.10 Badgers

Badgers (*Meles meles*) are known to inhabit the woodland, although their status is unknown within the area. They are recognised as a priority species in the DBAP and are protected under the Badgers

Protection Act 1992. Due to the badger's unknown status, there will be no inclusion of them as an important feature within the management plan. However, monitoring for badger presence will be taken into consideration when managing woodland and other areas.

#### [2.2.11 Hedgehogs](#)

Hedgehogs (*Erinaceus europaeus*) are protected under schedule 6 of the Wildlife Countryside Act 1981 and are listed under the Wild Mammals (Protection) Act 1996. In previous management plans, hedgehogs have been noted, however in recent years their presence has not been sighted. Consideration will be taken into account when managing other areas of the reserve; however, they will not be deemed an important feature within the management plan.

#### [2.2.12 Great crested newts](#)

The Great Crested Newt (*Triturus cristatus*), has disappeared from many British woodlands because of human activity including the loss of ponds through development. Although the Great Crested Newt, has not been sighted in Westfield Pasture Nature Reserve for over 13 years, the wetlands and ponds provided a suitable habitat for Great Crested Newts to be reintroduced to the reserve. The Great Crested Newt will be taken into account with the management of pond areas, but will not be seen as an important feature.

#### [2.2.13 Access](#)

The site is not easily accessed or signposted from the surrounding urban area of Ryton. The omission of a car park on site or rights of way has resulted in the site being inaccessible to the local community. If access to the nature reserve is required, then visitors have to navigate through the Tyneside golf course. Running through the golf course is a path that leads straight down to the entrance of Westfield Pasture however, there is no formal rights of way for this site. Towards the west of Westfield Pasture is a public footpath that runs in line with the railway across the Northern Edge of Clara Vale. The footpath is clear with a style being provided into Clara Vale with the route of the footpath following the western side of the site. Navigating within the site may prove more difficult for visitors that cannot easily traverse through steep slopes, overgrown vegetation and often waterlogged areas.

#### **2.2.14 Education**

The site has potential to gain a high educational value for visitors. With a vast range of habitats, the site offers the opportunities to study these in depth; in particular, the easier accessed wet grassland communities and dry acid grassland habitats. The site is large enough to support a school group; however, the poor access as detailed in section 2.2.13 makes visits difficult. The lack of facilities on site also indicates that promotion of awareness and enjoyment of the reserve is limited. Close proximity to the railway may raise a safety issue when traversing the eastern side of the site. Furthermore, there is opportunity to engage increasingly with the local communities of Ryton and Clara Vale.

#### **2.2.15 Legal**

In 2001, the Local Agenda 21 Strategy for Gateshead set a framework towards introducing sustainable development into the council, with part of the biodiversity action plan involving the purchase of Westfield Pasture. Ownership of the nature reserve is currently shared, as the site is owned by Gateshead City Council, but is leased by Durham Wildlife Trust as of 2014. Durham Wildlife Trust are currently in charge of management on site.

### **2.3 Confirmed list of features**

- Wet Grassland
- Acid grassland
- Ponds
- Scrubland
- Woodland
- Access
- Education
- Legal

## 3.0 Summary of factors which may influence features

### 3.1 Owners objectives

Durham Wildlife Trust require the site to be maintained in a favourable condition, and restored to a favourable condition where unfavourable. They desire to maintain the site as a nature reserve and designated local wildlife site, with predominant focus upon utilising valued wet grassland on site.

### 3.2 Internal natural factors

On site, the progression of scrub presents a threat to many areas of the reserve including woodland and grassland habitats. Acid and wet grassland habitats could eventually scrub over through succession if left without successful management. The development of thick understorey within the woodland also poses a threat to the ground flora and the badger sett. Within the woodland, sycamore growth has flourished. However, this species is not native to the region so may have an adverse effect upon any native woodland due to how quickly it spreads if left unmanaged leading to increased competition. Therefore, an attribute of woodland management should include sycamore removal periodically to stop the spread.

Woodland leaf litter also poses a problem for the wet grassland communities if unmanaged, as when leaf litter decomposes it will raise nutrient levels. In turn, this raises the level of substrate on the wet grassland communities, eventually drying out this community.

Fluctuations in pond water levels (in permanent ponds) may have an effect on aquatic plant and animal communities within Westfield Pasture and Clara Vale. Vegetation surrounding the ponds will also need controlling as it could affect the access for wading birds and provide hides for predators. Uncontrolled vegetation surrounding ponds could also detract from the vital water table that the pond is built upon.

Additionally, a large proportion of the site lies on a steep gradient, which may present an obstacle for management and maneuverability.

### 3.3 Internal human induced factors

Grazing by exmoor ponies already occurs on site, however has not been conservation grazing due to the occurrence of overgrazing. Conservation grazing should occur to help maintain the diversity among the grassland, but to also help with scrub encroachment.

The application of herbicides to scrub and invasive species may be used. Care should be taken if applied as management to ensure that the surrounding vegetation is not effected.

There are few visitors to the site so little damage is caused to paths through erosion and high volumes of people, and trampling does not appear to be an issue. Vandalism and wildfires are of low threat to the area, with no occurrence reports available. Due to poor access to the site the use of vehicles through the site is difficult, so it remains unaffected by motorbikes, horse riders or mountain bikes, which could have an adverse effect on paths or vegetation through erosion or vehicle emissions. Responsible dog ownership may be an issue for wildlife on the reserve, as there are a high number of legally protected birds recorded on site and both dog walkers and other members of the public can access habitats and pond margins inappropriately.

Any practical work carried out depends on the reserves section of the Durham Wildlife Trust, as work is dependent upon the availability of staff, volunteers and available equipment.

### 3.4 External natural factors

The site is in close proximity to the River Tyne, which can leave the site vulnerable should any extreme weather events lead to flooding. Storms and strong winds may present a danger to the railway line or access should a tree overturn, presenting both a safety risk and access risk. The area surrounding the site is used as a golf course, which may result in golf course management having an effect; with pesticide run off a possibility that could lead to soil contamination or eutrophication of pond water.

### 3.5 External human induced factors

Durham Wildlife Trust currently receive no funding to manage the site so requires the assistance of volunteers. The site is part of the Higher Level Stewardship scheme so should receive some funds which could be used to manage the site.

The deliberate release of species, both plant and animal, into ponds and grassland areas from the outside sources maybe a problem. The release of native and non-native species on to the site may result in the transmission of diseases or fungi that could adversely affect ecosystems.

Although some species and habitats have been identified, surveys have not been completed for a number of years. Additionally, little surveying has been completed regarding the mammals within the area. As a result of the lack of surveying at Westfield Pasture nature reserve there are gaps to be expected within the data and unpredictable species may be present which indicates surveying should carried out.

### [\*\*3.6 Factors arising from legislation/tradition\*\*](#)

Durham Wildlife Trust currently occupy the site through an agreement with Gateshead City Council, which was established in June 2014.

Many animal species found on site are protected under the Wildlife and Countryside Act 1981, therefore care should be taken to oblige with these laws.

The site is managed under the Higher Level Stewardship scheme. There may be conflicts with the HLS requirements and actions needed to improve unfavourable areas.

The Weeds Act 1959 is the control of noxious weeds including creeping thistle and ragwort, of which both are present in Clara Vale and Westfield Pasture. To comply with these regulations, management should include the control and stop the spread of these weeds.

## 4.0 Management objectives

### 4.1 Objective 1 - Wet grassland

**Objective 1.1:** Restore the wet grassland habitats

**Attributes:**

- Extent – No loss in the extent of the habitat
- Scrub presence is not >5% in wetland areas - see objective 4.3
- Disturbance minimisation from March to September due to breeding season for nesting birds
- Grazing pattern balanced to prevent overgrazing and trampling in wetland areas
- Vegetation around the edges of wetland ponds to be no less than 25%
- Sward to be no less than 10cm during the winter months

**Current condition:** 'Unfavourable'

Lack of management and succession of scrubland has meant that conditions within the wet grassland communities are poor and do not support a variety of Flora and Fauna, and does not supply a suitable habitat for nesting birds.

**Rationale:** The main threats to this site are overgrazing and trampling caused by existing management, the spread of scrubland and the loss of suitable habitats within the wet grassland.

The Wet grassland communities need to be restored as the lack of efficient management practices has resulted in the loss of important fauna and flora.

The restoration of such grassland communities would allow for a habitat that is suitable for wading birds such as Dunlin, Redshank and Woodcock, which have all, been present at the site within the last 10 years.

Scrub should be absent within the wetland areas as this allows for perches for predators and will remove moisture from the soil. The succession of scrubland into the wetland communities has also discouraged the variety of flora that was once present. If the management of scrubland within the wetland communities was to be managed and maintained so that its presence in was less than 5%,

then it is likely that the wetland could once again become dominated by common-spotted orchid (*Dactylorhiza fuchsii*), marsh thistle (*Cirsium palustre*), meadowsweet (*Filipendula ulmaria*), ragged robin (*Lychnis flos-cuculi*), angelica (*Angelica sylvestris*) and common sedge (*Carex nigra*).

**Future condition:** Once management has been applied, it is expected that the wet grassland areas be continued to be maintained and be home to a variety of habitats

**Monitoring/ Surveillance:**

- RF02/01 Survey the grassland community and the damage that has occurred to the grassland communities because of poor management.
- RF02/02 Survey the sward structure of the grassland community to determine succession and establishment of different species to allow proper management of the grassland communities to occur.
- RF03/01 Monitor the grassland community and sward structure to ensure that management is being effective in helping to restore the wet grassland communities.
- RA12/01 Visually survey the bird species that are present and using the wet grassland communities
- RA13/01 Monitoring the bird species on site to ensure that restoration of the wet grassland is increasing abundance of bird species monthly.
- MG20/01 Monitor the condition and health of the ponies whilst they graze the site.

**Action plan:**

- MH20/01 Control invasive species through the controlled grazing of exmoor ponies from August to October.
- MH22/01 Control invasive species through cutting the species so that there is no spread and that wading birds are free from predators.

- MH14/01      The wet grassland can be managed through the control of the scrub that is spreading throughout the site. For more information regarding scrub management, please see Objective 4.
- MG19/01      Manage the grassland by cutting the sward. Sward should not be cut below 10cm during the winter months, and some cuttings should be left for nesting birds.

**Objective 1.2:**      [Maintain wet grassland communities](#)

**Current condition:**      Unfavorable  
Lack of management and succession of scrubland has meant that conditions within the wet grassland communities are poor and do not support a variety of Flora and Fauna

**Rationale:**      Once restoration of the wet grassland communities has occurred, the grassland should be managed to allow the site to be favourable. Management should continue to allow for the spread of wading birds and other aquatic animals including the Great Crested newt. It is essential to manage colonizing plants to stop them from overtaking the whole area.  
Controlled grazing creates a mosaic of tussocks that is essential for wading birds and invertebrates.  
Scrub should be absent within the wetland areas as this allows for perches for predators and will remove moisture from the soil.

**Future condition:**      Once the site has been restored and a management plan is in place, the site can continue to be maintained to a standard that is favourable for wet grassland communities.

**Monitoring/ Surveillance:**

RF03/01      Continue monitoring the grassland community and the sward structure annually.

RA12/02 Continue to survey the bird species that are present, so that it can be assessed if the objective of maintaining a favourable habitat has been met annually.

MG20/01 Monitor the condition and health of the ponies whilst they graze the site.

**Action plan:**

MH20/01 Control invasive species through the controlled grazing of exmoor ponies from August to October.

MH22/01 Control invasive species through cutting the species so that there is no spread and that wading birds are free from predators.

MH14/01 The wet grassland can be managed through the control of the scrub that is spreading throughout the site. For more information regarding scrub management, please see Objective 4.

MG19/01 Manage the grassland by cutting the sward. Sward should not be cut below 10cm during the winter months, and some cuttings should be left for nesting birds.

## 4.2 Objective 2 - Acid Grassland

**Objective 2.1:** Restore the acid grassland habitats

**Attributes:**

- Extent – No loss in the extent of the habitat
- Scrub presence is not >15%- See objective 4.3
- Disturbance minimization between March and September (breeding season) of nesting birds
- Grazing pattern balanced to prevent overgrazing with sward height never reaching below 2cm.
- Negative indicator species to be < 10%
- Frequency of positive indicator species: At least 2 must be frequent and 2 must be occasional

**Current condition:** Unfavourable

**Rationale:** The main threats to this site are overgrazing and trampling caused by existing management, the spread of scrubland and invasive plant species (Ragwort and creeping thistle) and the loss of suitable habitats within the Acid grassland community.

Lowland acid grassland is not common in the area so must be restored and maintained to allow for the spread as it is currently being overtaken by scrub and coarse grasses.

The improvement to lowland acid grassland is essential for nesting birds. The removal and control of scrub and invasive species, the addition of grass seedlings and controlled grazing are desirable in increasing diversity. The timing and level of grazing should be suitable to remove annual plant growth and prevent the build-up of negative indicator species.

It is therefore necessary to employ a number of grassland management techniques across the site to improve the biodiversity value and maintain the lowland acid grassland within the area.

**Future condition:** Once management is in place it is expected that they will be in a favourable condition where maintenance of grassland continues.

**Monitoring/ Surveillance:**

RF02/03 Visually survey dry acid grassland community so the extent of scrub invasion and the spread of invasive species can be established.

RF03/02 Monitor dry acid grassland community to ensure that new management practices are allowing the community to be restored and returned to a favourable status.

RF02/04 Visually survey for positive indicator species. If indicator species are present at this stage then the grassland community is improving and becoming more favourable

RF02/05 Visually survey for negative indicator species such as ragwort and creeping thistle, which are invasive species. These are a sign of poor management.

RF03/03 Monitor the number of indicator species present with two frequent and two occasional species being the ideal.

MG20/01 Monitor the condition and health of the ponies whilst they graze the site.

**Action plan:**

MH10/01 Manage grassland through controlled grazing of exmoor ponies

MH14/01 The grassland can be managed through the control of the scrub that is spreading throughout the site. For more information regarding scrub management, please see Objective 4.

MH25/01 Control of invasive species through the use of spraying with herbicides. This is a last resort and the source of the problem (poor management) should be tackled first.

**Objective 2.2:** Maintain acid grassland communities

**Current condition:** Unfavourable

Current management practices although in place have been poor and have caused h lowland acid grassland to be overgrazed. This has lead to an increase in negative indicator species inducing ragwort and creeping thistle, whilst succession of scrubland has also occurred.

**Rationale:** Management of the grassland communities should be continued once the grassland has been restored to a favorable condition. Over grazing and the invasion of scrub/invasive plant species will continue to be a problem throughout the management of the grassland, so should be taken into account when maintaining the grassland. The removal and control of scrub (See objective 4 for more on scrub control) and invasive species, the addition of grass seedlings and controlled grazing are desirable in increasing diversity and should be continued to maintain the site. The timing and level of grazing should be suitable to remove annual plant growth and prevent the build-up of negative indicator species.

**Future condition:** The grassland community should be at the stage where management needs to continue to keep the current communities in a favourable condition. This would include the negative indicator species of ragwort and creeping thistle to be kept lower than 10% and for positive indicator species to be present.

**Monitoring:**

- RF02/06 Visually survey grassland to ensure that new management practices taking place have restored the grassland to allow it to be maintained by taking photographs at set points and comparing photographs each time.
- RF02/07 Visually survey structure and height of the sward to ensure that it is not being grazed lower than 2cm. An ideal sward height would be between 2cm and 5cm.
- RF02/08 Survey for any damage to sward components that may have been caused by overgrazing. Photographs should be taken to see if any damage has improved other the 5 years.
- RF02/09 Survey the extent of bare ground. Some bare ground is good for new seedlings but should be kept to a minimum with bare ground ideally being located round gates and water troughs. Records should be kept of the locations of bare ground so that over the 5 year period, it can be seen if bare ground has improved or declined in those areas.
- RF02/05 Visually survey for negative indicator species, which show that overgrazing is occurring.
- MG20/01 Monitor the condition and health of the ponies whilst they graze the site.
- RF03/04 Monitor the height of the sward structure to stop overgrazing and to maintain a healthy sward height.
- RF03/05 Monitor the damage that may have been caused by past and current management to ensure that further damage is not occurring.
- RF03/06 Monitor for negative indicator species, as this shows that management is poor and overgrazing is occurring.

**Action plan:**

MH10/01	Manage the grassland through controlled grazing of exmoor ponies.
MH13/01	Manage the grassland by the addition of new grass seedlings to allow for an increased diversity of native species throughout the site, especially if there is bare ground.
MH14/01	The grassland can be managed through the control of the scrub that is spreading throughout the site. For more information regarding scrub management, please see Objective 4.
MH25/02	Continue to spot spray negative indicator species if previous spraying has not worked. If negative indicator species begin to appear again then it shows signs of over grazing.

### 4.3 Objective 3 – Ponds

**Objective 3.1:** Restore Westfield Pasture (HQ 1/2) ponds to a favourable condition

**Attributes**

- No loss in the extent or depth of the habitat
- Scrub level does not exceed <10% of surrounding pond area
- Shading by overhanging trees and shrubs that are within 2m of pond banks are <10%
- Habitat quality (water quality and eutrophication) can efficiently support aquatic life
- No pollution outputs are entering the pond areas
- There is no evidence of siltation

**Current condition:** Unfavourable

Currently, within Westfield Pasture the ponds are unfavourable; surrounding the ponds (shown in Figure 6) are overgrown reed bed species (withering) which detract from the visual benefits of the pond. The water volume appears to not be deteriorating; however regular monitoring will confirm this. Eutrophication can be seen to be more prominent in Figure 6 (see section 1.4), suggesting that some ponds require increased attention than others as they have higher algal levels. The quality of water within the ponds is currently unknown.

**Rationale:** The benefits of pond management include enhancing wildlife (biodiversity), visual enhancement of the area, improved water quality, reduction in eutrophication and insurance of income from Higher Level Stewardship. The main threats to the pond habitat are the potential of variations in water depth which could lead to the pond drying out, water quality and poor water depth management. The small size of the pond habitat can be considered a threat; therefore surrounding flora that absorb large amounts of water should be controlled. The scrub and overgrown reed canary grass surrounding the ponds require reductions to allow the pond water table to be sustained whilst also improving the visual aspect of the pond and stopping succession. Additionally, siltation occurrence (the process of mineral particles dirtying water) may affect pond communities and lead to a pond drying out (Freshwater Habitats Trust, 2013).

Carrying out water quality tests to monitor dissolved oxygen, pH, phosphate and ammonia within the ponds can also be advantageous should equipment and funds be available to do so. If this is not the case, the (National) Pond Habitat Survey is also effective in characterising the ponds. An example is estimating water turbidity through valuing the pond on a scale from clear to turbid (such as 1-4). Additionally, the spread of aquatic plant cover can be estimated as a percentage cover of the whole pond, this is shown alongside other characteristics of a habitat survey in the Appendix.

**Future condition:** Following an established management system, all Westfield Pasture ponds should be of a high quality; able to support a healthy aquatic system.

**Monitoring:**

RF03/07 Monitor the spread of aquatic plant species through carrying out the Pond Habitat survey

RF03/08 Monitor shading effects from pond side trees and shrubs annually through a canopy cover method

RA02/01 Monitor the habitat areas for Great Crested Newt Presence annually through the habitat suitability method

- RP13/01 Monitor water levels seasonally
- RP13/02 Monitor water quality every two years by visual surveying. Further sampling for dissolved oxygen, pH, phosphate and ammonia levels is suggested if equipment is available and funds are permitting
- RP13/03 Monitor algal levels seasonally
- RP43/01 Monitor siltation around ponds

**Action plan (dependent upon monitoring results):**

- MH60/01 Manage water levels of permanent ponds that are depleting
- MH63/01 Manage pollution inputs into pond water
- MH64/01 Manually dredge ponds where siltation has adversely affected aquatic life
- MH65/01 Clear surrounding overgrown vegetation upon affected ponds

*Management is recommended to be carried out during Autumn as water levels and life are at their lowest.*

**Objective 3.2:** [Maintain a favourable condition of Clara Vale Pond \(HQ 1/2\)](#)

**Current condition:** Favourable  
 Currently, Clara Vale Pond is managed to a favourable status. The Clara Vale Pond habitat maintains a sufficient volume of water and is clear of invasive species and overgrowth that could impede the water table surrounding the pond. The ponds within Clara Vale Pond area should continue a similar management focus to maintain their favourable status. Pictured in Figure 5 (see section 1.4 Photographic Coverage), is one of the site's temporary ponds which are also important to the site as when occasional drought occurs and fish predators are eradicated; other species can thrive (Freshwater Habitats Trust, n.d.).

**Rationale:** The main threats to the Clara Vale Pond remain the same as previously. It is vital to continue to maintain a favourable condition of Clara Vale Pond to support

aquatic communities. However, temporary ponds that are present on the site should be left to drain out and top up naturally.

**Future condition:** Following an established management system, all Clara Vale Pond area ponds should be of a high quality; able to support a healthy aquatic system.

**Monitoring:**

- |         |   |
|---------|---|
| RF03/07 | Monitor the spread of aquatic plant species through carrying out the Pond Habitat survey  |
| RF03/08 | Monitor shading effects from pond side trees and shrubs annually through a canopy cover method  |
| RA02/01 | Monitor the habitat areas for predicting Great Crested Newt Presence through the habitat suitability index  |
| RP13/01 | Monitor water levels seasonally (if applicable)   |
| RP13/02 | Monitor water quality every two years by visual surveying. Further sampling for dissolved oxygen, pH, phosphate and ammonia levels is suggested if equipment is available and funds are permitting. |
| RP13/03 | Monitor algal levels seasonally   |
| RP43/01 | Monitor siltation around ponds  |

**Action plan (dependent upon monitoring results):**

- |         |   |
|---------|---|
| MH60/01 | Manage water levels of permanent ponds that are depleting                 |
| MH63/01 | Manage pollution inputs into pond water                                   |
| MH64/01 | Manually dredge ponds where siltation has adversely affected aquatic life |
| MH65/01 | Clear surrounding overgrown vegetation upon affected ponds                |

*Management is recommended to be carried out during Autumn as water levels and life are at their lowest.*

#### 4.4 Objective 4 - Scrub

**Objective 4.1:** To reduce the invading scrub in the acid grassland (area 3) to prevent it from further invading the habitat.

**Attributes:**

- Extent = loss only where necessary of the habitat area 3
- Access to scrub is minimised to ensure disturbance to nesting birds is low area 2  
Bird nesting season is from 1<sup>st</sup> March until 31<sup>st</sup> July<sup>1</sup>
- Scrub is maintained with a sparse ground flora and open understorey to create good flight lines
- Grazing pattern to be balanced and to occur only during nonbreeding season, area 2

**Current condition:** Unfavourable.

The current condition for the scrub area is currently unfavourable due to the habitat invading the acid grassland in area 3. This is due to a lack of management and succession occurring overtime.

**Rationale:** Reducing invading scrub in area 3 to prevent it from invading other habitats is important because whilst scrub is a valuable habitat if not controlled it can reduce the ecological value of an area. In this case, it has invaded the acid grassland area 3 and it has become dominated by gorse and hawthorn scrub. This has occurred through the process of secondary succession due to the limiting factor an ecological restraint e.g. grazing or burning. Once the acceptable levels of reduction are achieved then maintenance management will be needed to keep the scrub in those limits.

**Future condition:** Once management has been applied it is expected that scrubland area will be classed as favourable and no longer invading dry acid grassland area.

**Monitoring:**

RF13/01 Monitor the scrub height, density and extent

RF03/09 Monitor scrub invasion by taking fixed point photographs of the grassland at 2-year intervals to indicate the rate of scrub invasion over a set time period.

**Action plan:**

MH14/01 Clear any encroaching scrub from the grassland November and February. The scrub should then be burnt at a specific location off/on site. This occurs to prevent the breakdown of scrub which releases nutrients that change the chemistry of the soil and increases the organic content. Herbicide to be used on the cut down stumps of the scrub and marked accordingly to distinguish between treated stumps from untreated stumps.

MH10/02 Reduce the scrub by controlled grazing annually from August until October.

Table below shows the time period in which certain actions can take place

Date	J	F	M	A	M	J	J	A	S	O	N	D	Stock
1 <sup>st</sup> March – 31 <sup>st</sup> July													Bird nesting/roosting period
Late summer – Autumn													Exmoor ponies
November and February													Herbicide
December – January													Yellow Hammer

Table 3 Timetable of when activities should take place in relation to nesting birds and the presence of protected species

**Objective 4.2:** To maintain the scrub in a favourable condition, suitable for nesting birds in area 2

**Current condition:** Favourable

The scrub once reduced is in a favourable condition due to it not encroaching on the dry acid grassland but still being a suitable habitat for a variety of wildlife.

**Rationale:** The structure of scrub habitat is important in providing nesting/roosting sites for willow warbler, yellowhammer, linnet and lesser whitethroat, which is a scarce breeding bird in Gateshead. Different species are adapted to the different stages of scrub growth, from pioneer bushes through to the point where it develops into woodland (Scrub management handbook, 2011). The Yellow hammers on site use low scattered bushes (area 2) whereas Warblers are associated with the near woodland scrub stages (area 1).

Therefore, the scrub in this area is of a high conservation value because it supports several rare/local and legally protected species of bird. This is why the scrub needs to be maintained. Maintenance is needed for the scrub to strike a balance with other high valuable habitats in the area (grassland).

**Future condition:** Ongoing management on site will ensure that area 2 continues to be classed as favourable due to the number of nesting and roosting birds present. It shows that the area is being maintained as a suitable habitat.

**Monitoring:**

- RA14/01 Conduct a breeding bird survey to determine what species roost/nest on site
- RA13/02 Monitor the nesting/roosting birds
- RF13/01 Monitor the scrub height, density and extent

**Action plan:**

- MH00/01 Coppice selected areas of scrub on a rotational basis every 3 years to prevent succession to woodland.

## 4.5 Objective 5 - Woodland

**Objective:** To maintain this area of open woodland in a favorable condition where the following attributes achieved:

**Attributes:**

- Extent – No loss in the extent of the habitat
- At least one standing dead wood per ha plus 2 fallen logs per ha
- Trees continue to develop with healthy growth, with semi-regular check-ups upon their health
- The railway line and the road running simultaneously to the site is protected from potential falling trees
- Removal of non-native species (Sycamore)

**Current condition:** Unknown

The current condition of the woodland is classed as unknown due to the lack of information and data on the habitat. Surveys are needed to establish the tree communities present in the woodland and then a current condition can be decided upon.

**Rationale:** Maintaining the woodland on site is a priority because it consists of both ancient woodland and semi-natural broadleaved woodland. The ancient woodland is important because of the length of time it has taken to develop and the presence of certain species that are not found in most recent woodland. It is also a priority habitat for Durham Biodiversity Action Plan.

Due to the small size of the woodland, there is little opportunity for dead wood of any great volume. Therefore, dead wood and logs is encouraged to be left to rot to develop habitat for associated organisms like invertebrates and fungi. It is favourable to use sycamore to create standing dead wood because this would fit into the removal of the non-native sycamore. The importance of the presence of dead wood is highlighted in the DBAP.

An issue with the woodland is it is situated along the railway line. Therefore, the woodland needs to be continuously monitored to ensure the conservation of the ancient woodland and ensure the duty of care for safety in the woodland and for the use of the railway. Dead wood within the area of the railway and road should be discouraged and monitored.

**Future condition:** Favourable

The woodland will be classed as favourable once initial surveys have been carried out and the non-native sycamore has been managed and used for dead wood in the area. The woodland should be maintained on a regular basis once all the conservation objectives have been met.

**Monitoring:**

RF01/01 Monitor dead wood.

RF02/10 Conduct a NVC survey of the woodland to establish the communities present.

- RF10/01 Map the distribution of sycamore in the section of woodland.
- RF13/02 Monitor the extent of non-native species regeneration.
- RF13/03 Monitor the degree of native broadleaved species regeneration.
- RF12/01 Carry out 2 tree surveys per year to identify any dangerous trees adjacent to the railway line and road.
- RF14/01 Monitor the trees distributed near the railway lines, estimate and measure if the trees are safe.

**Action Plan:**

- MH02/01 Selectively thin woodland by felling non-native mature sycamore
- MH02/02 Where appropriate, ringbark sycamore [at location] to create standing dead wood.
- MH08/01 Leave sycamore dead wood to rot down in situ.

## 4.6 Objective 6 – Access

**Objective:** Maintain the current access routes and structures in a good and safe serviceable condition, where the following attributes are achieved, and where doing so it will not adversely affect the conservation interest of the area.

**Attributes:**

- Access routes should have a minimum width of 2m free from encroaching vegetation
- Condition of fencing to be maintained
- Visitors to made aware of grazing animals

**Current condition:** Unfavourable

The access at Westfield pasture is unfavourable due to there been no formal rights of way and no signs present for grazing animals on site.

**Rationale:** Currently the reserve has no pathways within it and only consists of informal routes across the reserve. There are some steep slopes at lower part of the reserve and becomes waterlogged in some areas.

Continual maintenance of entrance gates and squeeze gaps is required to ensure safe access throughout the Westfield pasture nature reserve and Clara vale pond. The condition of the fences on site need to be monitored to prevent The Durham Wildlife Trust should install reserve signs to make any visitors to the site aware of any grazing animals present on the site with indications to what month the animals will be present (Exmoor ponies in late summer and autumn). This is required to ensure the safety of any of the reserves visitors.

**Future condition:** At the end of the 5 years it is hoped that access on site will be in a favourable condition due to the addition of reserve signs regarding the grazing animals.

**Monitoring:**

- |         |  |
|---------|--|
| RH02/01 | Monitor the conditions of the fencing                            |
| RF13/04 | Monitor presence of overgrown vegetation along the access points |

**Action Plan:**

- |          |   |
|----------|---|
| ME40/01  | Maintain access – clear footpaths from overgrown vegetation   |
| ME02/01  | Maintain the squeeze gaps and gates   |
| MI150/01 | Install reserve signage for when there are grazing animals present (including health and safety information). |
| ME00/01  | Maintain reserve signage  |

#### 4.7 Objective 7 - Higher level stewardship scheme

**Objective 7:** Continue to meet the requirements of Higher Level Stewardship throughout the site and sign up to new areas of the scheme

**Current Condition:** Favourable

Currently, the site is agreed to cover the objectives HK15 (maintenance of grassland for target features), HR1 (grazing supplement for cattle) and HR2 (grazing supplement for native breeds at risk). This currently equates up to a £235 income per hectare per annum (considering the site is meeting their targets).

**Rationale:** Meeting the targets of Higher Level Stewardship ensures the site is kept in a favourable condition whilst earning a recurring income that can be beneficial to the trust for managing and improving areas of Westfield Pasture that may require additional funding. With an increase in habitats participating in the scheme, there will be an increase in funding from year two onwards. Higher Level Stewardships should enhance each habitat to its full potential. Higher Level Stewardship follows aims to conserve wildlife, maintain and enhance the landscape quality and character, protect natural resources and the historic environment, and promote public access and understanding of the countryside (Stocks, 2017). Following additional Higher Level Stewardship targets will also allow for current habitats under an unfavourable condition to improve.

The target areas with their respective targets are displayed below in Table 4:

Area and income	Targets (as stated by Higher Level Stewardship)
1. Woodland (HC7) - £100 per ha/annum	<ul style="list-style-type: none"> <li>1. Protect existing and newly established trees from livestock damage</li> <li>2. No use of fertiliser, ploughing or breaking of soil</li> <li>3. Grazing to maintain areas of closely grazed turf is interspersed with taller tussocks</li> </ul>
2. Scrub (HC15) - £100 per ha/annum	<ul style="list-style-type: none"> <li>1. Allowing scrub to develop naturally</li> <li>2. Extensively graze on part, or all of site</li> <li>3. Exclusion of livestock and coppicing</li> </ul>
3. Ponds (HQ1 and HQ2) - £90 (<100m <sup>2</sup> ) and £180 (>100m <sup>2</sup> ) per pond/annum	<ul style="list-style-type: none"> <li>1. Retain the present pond profile</li> <li>2. Retain submerged deadwood, allowing natural draw down to occur</li> </ul>

	<ul style="list-style-type: none"> <li>3. Ensure no introduction of additional plants, animals or waterfowl</li> <li>4. Ensure no pesticides are used within 6m of ponds</li> <li>5. Ensure water is not unnaturally topped up and drainage is not altered</li> </ul>
<b>4. Grazing (HR1 and HR2) - up to £35 for cattle and up to £70 for native breeds at risk (Exmoor ponies) per ha/annum</b>	<ul style="list-style-type: none"> <li>1. Use Exmoor ponies for grazing on the site, with potential to aid with other management objectives</li> </ul>
<b>5. Wet Grassland (HK9 and HK10) - £335 per ha/annum (breeding waders) and £255 per ha/annum (wintering waders)</b>	<ul style="list-style-type: none"> <li>1. Maintaining the habitat for breeding and wintering waders through controlling field water levels in spring and summer</li> <li>2. Maintaining the ditches and field drainage systems</li> <li>3. Ensuring minimal disturbance through non-essential activities</li> <li>4. Ensuring there is no grazing throughout winter months</li> </ul>
<b>6. Semi-natural acidic grassland (HK6) - £200 per ha/annum</b>	<ul style="list-style-type: none"> <li>1. The habitat should be grazed regularly</li> <li>2. Ensuring there is no ploughing, re-seeding or installation of new-drainage and no poaching</li> </ul>
<b>7. Maintenance of semi-improved or rough grassland for target species (HK15) - £130 per ha/annum</b>	<ul style="list-style-type: none"> <li>1. Management must include grazing and/or cutting for hay. Other management such as fertiliser or supplementary feeding is dependent on a site to site basis</li> </ul>

Table 4 Higher Level stewardship target areas

## Monitoring

RV0/01 Have documents readily available that regard higher level stewardship targets

## Action plan

MS30/01 Ensure exmoor ponies are present on site and grazing, which affects HC7, HC15, HR1, HR2, HK6, HK15

MS30/02 Ensure exmoor ponies are not grazing during winter months, this affects HK9 and HK10

*Most actions covered in other objectives.*

## 4.8 Objective 8 – Education

**Objective:** To utilise the resource of Westfield pasture Nature Reserve to its potential for education.

**Current condition:** Unfavourable

The site is not currently used for educational purposes due to the access of the site and there being no formal rights of way.

**Rationale:** The reserve is not currently used for educational purposes. Due to the location in Gateshead it may attract school visits, however, it is currently inaccessible with no formal rights of way. An agreement could be put in place between the Golf Club and Durham Wildlife trust to allow small school visits. Although the site contains high educational values, e.g. the rich flora and the presence of the mining remains, the reserve is not used by educational visits at the moment. Education is a good way to raise public awareness, which is an important task of the DWT. The size of the site and the narrow footpaths make Westfield pasture nature reserve not suitable for frequent group visits or large groups. To prevent disturbance of wildlife and flora, no more than 10 group visits between the 1<sup>st</sup> of April and the 1<sup>st</sup> of September should take place with no more than 15 people per group. To inform the visitors about the wetland, woodland and bird species two interpretation boards should be erected.

**Future condition:** In the future it would be ideal if the site was used for more educational visits due to the presence of locally rare wetlands, as well as been open to the public.

### Monitoring/ Surveillance:

RH34/01 Collect data regarding public use of the site

### Action plan:

MI10/01 Inform visitors of the educational value of Westfield pasture nature reserve.

MI10/02 Provide onsite information about Westfield pasture through the use of notice boards

RH02/02 Monitor condition of interpretation boards

- MI20/01                   Erect two interpretation boards to provide information about the sites  
MH09/01                   Repair interpretation boards if necessary

#### 4.9 Objective 9 - Legal

**Objective:**           To Maintain legal protection of species and conditions of the lease

**Current condition:**   Favourable

The conditions of the lease of the site are being met with the lease being up to date. There is currently no illegal activities taking place on site which effect protected species

**Rationale:**           The site is managed by Durham Wildlife trust under an agreement with Gateshead City council, so they must comply with tenancy requirements. Health and safety laws must also be followed due to the site being located next to the railway line and a road.  
  
Many species that are found in the nature reserve are protected under legislation against many illegal activities. When completing any work on site care should be taken due to protected species. All work that is undertaken should work around bird breeding season to avoid disturbance.

#### Monitoring/surveillance:

- RF13/05                   Tree safety check twice a year  
RH07/01                   Monitor presence of litter  
RH90/01                   Check boundary structures twice a year

#### Action plan:

- ML00/01                   Liase with Gateshead council regarding lease extension  
RF13/05                   Tree safety check twice a year  
RH90/01                   Check boundary structures twice a year  
MH09/02                   Remove hazardous trees and branches where necessary.  
ME01/01                   Maintain boundary structures in a good condition

- |         |  |
|---------|--|
| ME04/01 | Remove litter  |
| AA20/01 | Increase protection of the site by negotiating the existing agreement with Tyneside Golf club. |
| ML40/01 | Liaise with council and Golf Club to make access to the site from the golf course.             |

## 5.0 Project register and work program

### 5.1 Project register

#### Recording

- |                |   |
|----------------|---|
| <b>RA02/01</b> | Monitor the habitat areas for Great crested newt presence annually  |
| <b>RA12/01</b> | Visually survey bird species that are present and using the wet grassland community   |
| <b>RA12/02</b> | Survey the bird species present, so that assessment of management can take place to see if a favourable habitat is being maintained   |
| <b>RA13/01</b> | Monitor the bird species on site to ensure that the restoration of the wet grassland is proving beneficial as a habitat for breeding and wading birds.                            |
| <b>RA13/02</b> | Monitor the nesting/roosting birds  |
| <b>RA14/01</b> | Conduct a breeding bird survey to determine what species roost/nest on site   |
| <b>RF01/01</b> | Monitor dead wood   |
| <b>RF02/01</b> | Survey the grassland community and the damage that has occurred to the grassland as a result of poor management   |
| <b>RF02/02</b> | Survey the sward structure of the grassland community to determine succession and the establishment of the different species to allow proper management of the grassland to occur |
| <b>RF02/03</b> | Survey dry acid grassland community so the extent of scrub invasion and the spread of invasive species can be established   |
| <b>RF02/04</b> | Survey grassland to for positive indicator species.   |

- RF02/05** Survey for negative indicator species such as ragwort and creeping thistle, which are invasive.
- RF02/06** Survey grassland to ensure that new management practices taking place have restored the grassland to allow it to be maintained.
- RF02/07** Survey structure and height of sward to ensure that it is not being grazed lower than 2cm. An ideal sward height should be between 2cm and 5 cm.
- RF02/08** Survey for any damage to sward component as a result of overgrazing
- RF02/09** Survey the extent of bare ground. Some bare ground is good for new seedlings but should be kept to a minimum, with bare ground ideally being situated only around gateways and water troughs.
- RF02/10** Conduct an NVC survey of the woodland to establish present communities
- RF03/01** Monitor the grassland community and the sward structure to ensure that management is being effective in helping to restore the wet grassland community
- RF03/02** Monitor dry acid grassland community to ensure that new management practices are allowing the grassland to be restored to a favourable condition
- RF03/03** Monitor the number of indicator species present with two frequent and two occasional being the ideal
- RF03/04** Monitor the height of the sward structure to stop overgrazing and to maintain a healthy sward
- RF03/05** Monitor the damage that may be a result of past and current management and to ensure that further damage doesn't occur
- RF03/06** Monitor the negative indicator species to ensure that overgrazing is no longer occurring and that current management practices are improving the grassland community.
- RF03/07** Monitor the spread of aquatic plant species through casual observation annually

- RF03/08** Monitor shading effects from pond side trees and shrubs annually through a canopy cover method
- RF03/09** Monitor scrub invasion by taking fixed point photographs of the grassland at 2 year intervals to indicate the rate of scrub invasion over a set period of time
- RF10/01** Map the distribution of sycamore in woodland
- RF12/01** Carry out 2 tree surveys per year to identify any dangerous
- RF13/01** Complete a tree safety check twice a year to ensure safety to the public
- RF13/02** Monitor the extent of non-native species regeneration
- RF13/03** Monitor the degree of native broadleaved species regeneration
- RF13/04** Monitor presence of overgrown vegetation
- RF13/05** Complete a tree safety check twice a year to ensure safety to the public
- RF14/01** Monitor the trees distributed near the railway lines, estimate and measure if the trees are safe.
- RH02/01** Monitor the conditions of the fencing
- RH02/02** Monitor the condition of the interpretation boards
- RH07/01** Monitor presence of litter
- RH34/01** Collect data regarding the public use of the site, i.e. what it's used for and how many people visit
- RH90/01** Check boundary Structures twice a year
- RP13/01** Monitor water levels seasonally
- RP13/02** Monitor water quality every two years by sampling for dissolved oxygen, pH, phosphate and ammonia levels
- RP13/03** Monitor algal levels seasonally
- RP43/01** Monitor siltation around ponds
- RVO/01** Have documents readily available that regard higher level stewardship targets

## **Management**

- ME00/01** Maintain reserve signage
- ME01/01** Maintain boundary structures in good conditions to make sure that grazing animals are kept safe at all time
- ME02/01** Maintain squeeze gaps and gates
- ME04/01** Remove litter to ensure that habitats and wildlife are not effected
- ME40/01** Maintain access- clear footpaths from overgrown vegetation
- ME150/01** Install reserve signage for when there are grazing animals present
- MG19/01** Manage the grassland by cutting the sward. Sward should not be cut below 10cm in the winter months, and some cuttings should be left for nesting birds
- MG20/01** Manage grazing ponies to ensure that over grazing does not occur, but also providing them with a water supply and food if necessary.
- MH00/01** Coppice selected areas of scrub on a rotational basis every 3 years to prevent succession to woodland.
- MH02/01** Selectively thin woodland by felling non-native mature sycamore
- MH02/02** Where appropriate, Ring bark sycamore to create standing dead wood
- MH08/01** Leave sycamore deadwood to rot down in situ
- MH09/01** Repair the interpretation boards in necessary
- MH09/02** Remove hazardous trees and branches where necessary to ensure that boundary structures, road and railway are not effected by any dangerous branches.
- MH10/01** Manage the grassland by controlled grazing of exmoor ponies
- MH10/02** Provide onsite information about Westfield pasture nature reserve through the use of notice boards. This also includes notifying the users that ponies graze on site during certain periods of the year

- MH13/01** Manage the grassland by the addition of new grass seedlings to allow for an increased diversity of native species throughout the site.
- MH14/01** The grassland can be managed through the control of the scrub that is spreading throughout the site. For more information regarding scrub management, please see Objective 4.
- MH20/01** Control of invasive species with controlled grazing of exmoor ponies
- MH22/01** Control invasive species through cutting the species so that there is no spread into other areas, and so that wading birds are free from predators
- MH25/01** Control of invasive species (Ragwort and creeping thistle) through the use of spraying with herbicides
- MH25/02** Continue to spot spray negative indicator species if previous spraying has not shown improvements. If negative indicator species begin to reappear then it shows signs of overgrazing, so grazing pattern should be examined.
- MH60/01** Manage water levels of permanent ponds that are depleting
- MH63/01** Manage pollution inputs into pond water
- MH64/01** Dredge ponds where siltation has adversely effected aquatic life
- MH65/01** Clear surrounding area of overgrown vegetation that could impact the ponds
- MI10/01** Inform visitors of educational value of Westfield pasture nature reserve
- MI10/02** Provide onsite information about Westfield pasture nature reserve through the use of notice boards. This also includes notifying the users that ponies graze on site during certain periods of the year
- MI20/01** Erect two interpretation boards, one in Clara Vale and one in Westfield Pasture to provide information about the sites
- ML00/01** Liaise with Gateshead council regarding an extension to the lease
- ML40/01** Liaise with Gateshead council and Tyneside golf club to allow public access to the nature reserve

**MS30/01** Ensure exmoor ponies are present on site and grazing which complies with HC7, HC15, HR1, HR2, HK6 and HK15

**MS30/02** Ensure exmoor ponies are not grazing during winter months as this effects HK9 and HK10

**Administration**

**AA20/01** Increase protection on site by negotiating the existing agreement with Tyneside Golf Club

## 5.2 Work program







shows signs of overgrazing, so grazing pattern should be examined.

RA02/01	Monitor the habitat areas for predicting Great Crested Newt presence through the habitat suitability index preceding management												
RP13/01	Monitor water levels seasonally to see any depth variations (If applicable)				Blue			Blue		Blue		Red	Red
RP13/02	Monitor water quality every two years by visual surveying (I.e. pond habitat survey)		Blue									White	Red
RP13/03	Monitor algal levels seasonally			Blue			Blue		Blue		Blue	Red	Red
RP43/01	Monitor siltation around ponds			Blue								Red	Red
MH60/01	Manage water levels of permanent ponds				Blue	Blue	Blue	Blue				Red	Red
MH63/01	Manage pollution inputs into pond water	Blue	Red	Red									
MH64/01	Dredge ponds where siltation has adversely affected aquatic life by manual labour				Blue	Blue	Blue	Blue				White	Red
MH65/01	Clear surrounding area of overgrown vegetation that could impact the ponds				Blue	Blue	Blue	Blue				Red	Red

<b>Project</b>	<b>Description of works</b>	<b>Month</b>	<b>Year 2018 -2023</b>
----------------	-----------------------------	--------------	------------------------





## 6.0 References

- Aqua Sierra, (2016). Causes of Low Dissolved Oxygen and Impact to Fish [Available at: <http://www.aqua-sierra.com/causes-of-low-dissolved-oxygen-and-impact-to-fish/> ]
- Day, J., Symes, N. and Robertson, P. (2003). *Scrub Management Handbook*. [ebook] The Forum for the Application of Conservation Techniques (FACT), with the assistance of English Nature. [Available at: <http://publications.naturalengland.org.uk/publication/72031> ].
- Durham Wildlife trust (2017) Westfield Pasture Nature Reserve [Available at: <https://durhamwt.com/reserves/westfield-pasture-nature-reserve/> ]
- Freshwater Habitats Trust, (n.d.). Temporary ponds [Available at: <https://freshwaterhabitats.org.uk/habitats/pond/temporary-ponds/> ]
- Freshwater Habitats Trust, (2013). *Silted up ponds*. [Available at: <https://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/Silted-up-ponds-and-dredging-1.pdf> ]
- Freshwater Habitats Trust, (2015). Pond Habitat Survey. [Available at: <https://freshwaterhabitats.org.uk/wp-content/uploads/2015/03/ENVIRONMENTAL2.pdf> ]
- Fondriest, (2010). What is dissolved oxygen in water?, [Available at: <http://www.fondriest.com/news/whatisdissolvedoxygen.htm> ]
- Fondriest, (2013). PH of Water [Available at: <http://www.fondriest.com/environmental-measurements/parameters/water-quality/ph/> ]
- National Amphibian and Reptile Recording Scheme, (n.d.). Great Crested Newt Habitat Suitability Index. [Available at: <http://www.narrs.org.uk/documents/HSI%20guidance.pdf> ]
- Natural England (2013) Tyne and Wear lowlands. [Available at: <http://publications.naturalengland.org.uk/file/5130054698795008> ]
- Natural England, (2015). Great crested newts: protection and licences [Available at: <https://www.gov.uk/guidance/great-crested-newts-protection-surveys-and-licences#pond-management>]
- Natural England, (2015). Great crested newts: surveys and mitigation for development projects [Available at: <https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects> ]
- North East England Nature Partnership (NEENP) (2018) Woodland and Scrub Action Plan, [Available at <http://neenp.org.uk/natural-environment/durham-priority-habitats/woodland-and-scrub-action-plan/> ]
- Stocks, C., (2017). All you need to know... about Higher Level Stewardship [Available at: <http://www.fwi.co.uk/business/all-you-need-to-know-about-higher-level-stewardship.htm> ]

United States Geological Survey, (2016). Phosphorus and Water [Available at:  
<https://water.usgs.gov/edu/phosphorus.html>]

United States Environmental Protection Agency, (2016). Aquatic Life Criteria – Ammonia, [Available at:  
<https://www.epa.gov/wqc/aquatic-life-criteria-ammonia> ]

1:50 000 Scale Colour Raster [Shape geospatial data], Scale 1:, Tile(s): Westfield Pasture, Updated: January 2018, Ordnance Survey, Using: EDINA Digimap Ordnance Survey Service, + URL + , Downloaded: January 2018

“1850s map of Westfield Pasture and surrounding area”, [PNG map], Scale 1:2,500, Ordnance Survey County Series 2<sup>nd</sup> Revision, Published 1858, Landmark Information Group, UK. Using: EDINA Historic Digimap Service, <<http://edina.ac.uk/digimap>>, Created: February 2018

“1920s map of Westfield Pasture and surrounding area”, [PNG map], Scale 1:2,500, Ordnance Survey County Series 1<sup>st</sup> Edition, Published 1919, Landmark Information Group, UK. Using: EDINA Historic Digimap Service, <<http://edina.ac.uk/digimap>>, Created: February 2018

“1960s map of Westfield Pasture and surrounding area”, [PNG map], Scale 1:2,500, Ordnance Survey County Series 1<sup>st</sup> Edition, Published 1963, Landmark Information Group, UK. Using: EDINA Historic Digimap Service, <<http://edina.ac.uk/digimap>>, Created: February 2018

## 7.0 Appendix A

Table 5 All bird species recorded by ERIC between 2008 and 2018

Species	Latin name	Last seen
Black Stork	<i>Ciconia nigra</i>	11/08/2008
Black bird	<i>Turdus Merula</i>	17/04/2011
Black Headed gull	<i>Larus ridbundus</i>	20/01/2010
Blue tit	<i>Cyanistes Caeruleus</i>	12/09/2013
Brambling	<i>Fringilla montifringilla</i>	04/04/2013
Bullfinch	<i>Pyrrhula pyrrhula</i>	13/12/2013
Buzzard	<i>Buteo Buteo</i>	12/01/2012
Carrion crow	<i>Corvus corone</i>	12/09/2013
Coal tit	<i>Periparus ater</i>	12/09/2013
Collared dove	<i>Streptopelia decaocto</i>	28/04/2013
Common Gull	<i>Larus canus</i>	12/12/2010
Coot	<i>Fulica atra</i>	30/11/2009
Cormorant	<i>Phalacrocorax carbo</i>	26/01/2010
Curlew	<i>Numenius arquata</i>	10/02/2012
Dipper	<i>Cinclus cinclus</i>	01/03/2012
Dunlin	<i>Calidris alpina</i>	30/11/2009
Dunnock	<i>Prunella modularis</i>	13/11/2013
Fieldfare	<i>Turdus pilaris</i>	03/01/2011
Gold crest	<i>Regulus regulus</i>	10/05/2008
Goldeneye	<i>Bucephala clangula</i>	18/01/2013
Goldfinch	<i>Carduelis Carduelis</i>	30/01/2011
Goosander	<i>Mergus merganser</i>	14/03/2013
Goshawk	<i>Accipiter gentilis</i>	08/01/2012
Grasshopper warbler	<i>Locustella naevia</i>	19/04/2011
Great spotted woodpecker	<i>Dendrocopos major</i>	30/01/2011
Great tit	<i>Parus Major</i>	12/09/2013
Green woodpecker	<i>Picus viridis</i>	02/01/2011
Greenfinch	<i>Carduelis chloris</i>	17/04/2011
Greenshank	<i>tringa nebularia</i>	30/08/2012
Grey heron	<i>Ardea cinerea</i>	09/01/2011
House martin	<i>Delichon urbicum</i>	12/09/2013
House sparrow	<i>Passer domesticus</i>	20/02/2008
Jackdaw	<i>Corvus monedula</i>	17/04/2011
Jay	<i>Garrulus glandarius</i>	17/04/2011
Owl	<i>Athene noctua</i>	05/03/2013
Kestrel	<i>Falco tinnunculus</i>	12/09/2013

Kingfisher	<i>Alcedo atthis</i>	14/02/2010
Lesser redpoll	<i>Carduelis cabaret</i>	09/01/2011
Mallard	<i>Anas platyrhynchos</i>	17/04/2011
Merlin	<i>Falco columbarius</i>	12/12/2010
Mistle thrush	<i>Turdus viscivorus</i>	12/12/2010
Moorhen	<i>Gallinula chloropus</i>	12/09/2013
Nuthatch	<i>Sitta europaea</i>	16/01/2011
Pheasant	<i>Phasianus colchicus</i>	16/01/2011
Magpie	<i>Pica Pica subsp. Pica</i>	16/01/2011
Red kite	<i>Milvus milvus</i>	02/03/2010
Redpoll	<i>Carduelis Flammea</i>	24/01/2010
Redshank	<i>Tringa totanus</i>	17/04/2011
Redwing	<i>turdus ilacus</i>	20/02/2010
Robin	<i>Erithacus rubecula</i>	17/04/2011
Rock dove	<i>Columba livia</i>	30/11/2009
Rook	<i>Corvus frugilegus</i>	12/09/2013
Sandmartin	<i>riparia riparia</i>	10/05/2008
Song thrush	<i>Turdus philomelos</i>	10/05/2008
Spotted fly catcher	<i>Muscicapa striata</i>	11/09/2012
Skylark	<i>Alauda arvensis</i>	10/05/2008
Sparrowhawk	<i>Accipiter nisus</i>	16/01/2011
Starling	<i>Sturnus vulgaris</i>	01/01/2011
Stock dove	<i>Columba oenas</i>	17/04/2011
Swallow	<i>Hirundo rustica</i>	17/04/2011
Swift	<i>Apus apus</i>	10/05/2008
Tree creeper	<i>Certhia familiaris</i>	09/01/2011
Tree Sparrow	<i>Passer montanus</i>	01/12/2013
Turtle dove	<i>Streptopelia turtur</i>	29/05/2009
Water rail	<i>Rallus aquaticus</i>	16/01/2011
Waxwing	<i>Bombycilla garrulus</i>	15/11/2008
White throat	<i>Sylvia communis</i>	27/07/2008
Willow tit	<i>Poecile montana</i>	17/04/2011
Willow warbler	<i>Phylloscopus trochilus</i>	10/04/2009
Woodcock	<i>Scolopax rusticola</i>	12/12/2010
wood pigeon	<i>Columba palumbus</i>	12/09/2013
Wren	<i>Troglodytes troglodytes</i>	12/09/2013
Yellow hammer	<i>Emberiza citrinella</i>	02/01/2011

## 8.0 Appendix B

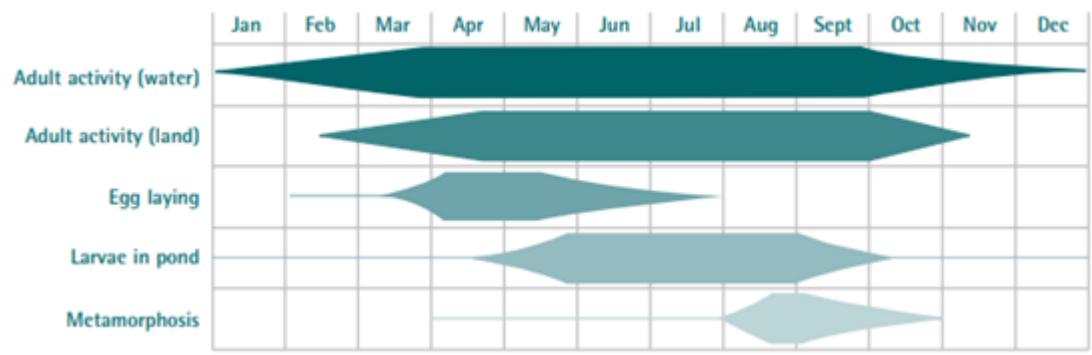


Figure 8 Great Crested Newt activities over a year calendar

## 9.0 Appendix C

**POND HABITAT SURVEY  
RECORDING FORM**

Your name \_\_\_\_\_ Date \_\_\_\_\_

**Square:** 4 figure grid reference e.g. SP1243 (see your map) **Pond:** 8 figure grid ref e.g. SP 1235 4325 (see your map)

Pond name \_\_\_\_\_ Pond altitude (see your map) m

Please complete a POND HABITAT SURVEY sheet for each pond surveyed in your 1 km grid square.

The aim is to collect environmental data from each survey pond between June and September. You can learn all the skills needed from our pond habitat survey guide and online video. Before you begin, it's also worth checking to see if environmental data has previously been collected from the pond. This can save you time, since some factors rarely change, and you can download (and later upload) a sheet with these factors auto-filled.

Go to: [www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats](http://www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats) for survey guides and more information.

Once completed, please don't forget to enter the results online: [www.freshwaterhabitats.org.uk/projects/waternet/](http://www.freshwaterhabitats.org.uk/projects/waternet/). Note that you can also upload photos or a sketch map of the pond, to provide a useful visual record of the site.

Shaded boxes indicate essential factors to complete for a PSYM assessment (see website for more information).  
 Hatched boxes indicate factors used to calculate an HSI score for Great Crested Newts (see website for more info).

Is this a new pond? i.e. is pond less than 10 yrs old (choose one option - yes, no, unknown) \_\_\_\_\_ What year was the pond created? (unknown, exact date or nearest decade) \_\_\_\_\_

**Pond area** Note: This is the surface area of the pond when the water is at its highest level (usually in early spring). It will probably not be the current water level of the pond. The high water level line should be evident from wetland vegetation like rushes at the pond's outer edge. Measure by pacing (single pace = 0.6-1m) or use online maps.  
 m<sup>2</sup>

**Pond dries?**: choose one option 1 = never dries, 2 = rarely dries, 3 = sometimes dries, 4 = dries annually  
 Never; Rarely: no more than 2 years in 10, or only in drought; Sometimes: dries between 3 years in 10 to most years; Annually: deduce pond permanence from local knowledge (e.g. landowner) and personal judgement e.g. water level at the time of the survey. Ponds that dry out annually usually have a hard base.

**Overhanging trees & shrubs:** This is an estimate of how much of the pond is directly overhung by trees and shrubs, i.e. that would be shaded if the sun was overhead (use the diagram (right) as a guide).  
 % of pond overhung by trees and shrubs  
 % pond margin overhung to at least 1m out from the pond margin

**Fish presence:** choose one option 1 = major, 2 = minor, 3 = possible, 4 = absent  
 Major: dense populations; Minor: small numbers of e.g. goldfish, stickleback; Possible: no fish seen, but local evidence suggests present; Absent: no records of fish stocking, no fish found during survey.

**Waterfowl impact:** choose one option: 1 = major, 2 = minor, 3 = none  
 Major = severe impact e.g. few or no submerged plants, water turbid, pond banks have bare patches, feed put down; Minor = waterfowl present, but little impact on vegetation, pond still supports submerged plants and banks are not denuded of vegetation; None = no evidence of waterfowl impact (moorhens may be present).

**Aquatic vegetation:**  
 % of the whole pond (wet and dry) occupied by emergent vegetation – incl. plants like grasses, water mint and rushes, but not floating (e.g. duckweeds) or submerged (e.g. water-crowfoot) species - to see a list of emergent species look at the survey guide [www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats](http://www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats).  
 % of pond water surface area covered by all vegetation (emergent, floating (excl. duckweed) and submerged),

**Water left in the pond:**  
 % of water area in pond relative to area at maximum water level  
 cm Drawdown (see diagram) height drop from maximum water level

**Grazing:**  
 Tick if there is evidence the pond is grazed by livestock. If yes complete the following boxes:  
 % of whole pond grazed (note that stock can wade into shallow ponds to graze)  
 % of pond perimeter grazed (note: stock can wade into shallow ponds to graze otherwise inaccessible edges)  
 Grazing intensity: rank 1-5 (1=infrequent or low intensity to 5 = margins heavily poached and almost bare)

**Pond management (tick):** use tick boxes to list management within the last 12 months. Use 'other' box for any extra info.  
 Fully dredged     Partly dredged     >5% vegetation removed     <5% vegetation removed  
 Trees planted     Trees clear-felled     Trees cut back / coppiced     Pond changed shape / size  
 Plants introduced     Bank plants mown     Structural work e.g. to dam     Straw added

Add other or more detail \_\_\_\_\_

Figure 9 Example of a Pond habitat survey (Freshwater Habitats Trust, 2015)

Turbidity / water clarity: Estimate turbidity looking down into c.20cm depth of water in the pond.

1 = clear; 2 = moderately clear; 3 = moderately turbid; 4 = turbid

Inflows and outflows: (tick if inflow or outflow present or leave blank)

Inflow present

Outflow present



Water chemistry: If suitable kits and meters are available (or leave blank)

pH

Conductivity ( $\mu\text{S cm}^{-1}$ )

Nitrate ( $\text{NO}_3^-\text{-N ppm}$ ): PPW kits provided by FHT

Phosphate ( $\text{PO}_4^{3-}\text{-P ppm}$ ): PPW kits provided by FHT

(tick one from the following range categories)

(tick one from the following range categories)

<0.2 0.2-0.5 0.5-1 1-2 2-5 5-10 10+

<0.02 0.02-0.05 0.05-0.1 0.1-0.2 0.2-0.5 0.5-1 1+

--	--	--	--	--	--

Nitrate (other kit - give kit name  
and unit of measurement)

--	--	--	--	--	--

Phosphate (other kit - give kit  
name and unit of measurement)

#### Pond base:

This refers to the geology (i.e. rock-type) that immediately underlies the pond. You may know, or be able to see the underlying geology in the base or banks of the pond, especially in new ponds. If not, check a geology map or leave this section blank.

Choose one of the following to categorise the % composition of each pond base: 1= 0-32%, 2= 33-66%, 3= 67-100%

Silt/ clay

Sand, gravel, cobbles

Hard rock

Peat

Other (please specify)

#### Surrounding land use:

Estimate the percentage of surrounding land-use in distance zones from the pond perimeter (i.e. the maximum winter water level) used to assess pond area. In many ponds the 0-5m zone will include surrounding trees/scrub.

Habitat	0-5m	0-100m	Examples
Trees, woodland & scrub	%	%	Deciduous and coniferous woodland, individual trees, scrub and hedgerows.
Heath & moorland			Lowland and upland heathland, moorland and mountain; includes bracken.
Rank vegetation			Unmanaged grass, neglected and abandoned land, set-aside, verges and buffer strips.
Unimproved grassland			Herb-rich, calcareous and acid grassland (good quality plant indicators usually present). Low percentage of agricultural grasses. Not fertilised, little or no drainage.
Semi-improved grassland			A transition category. Grasslands modified by fertilisers, drainage, herbicides or intensive grazing, but retaining elements of natural grassland types in the area.
Improved grassland			Fertile agricultural grass, often bright green and lush; including parks and golf greens.
Arable			All crops. Includes flower and fruit crops (e.g. strawberries) and ploughed land.
Urban buildings & gardens			Areas in curtilage (associated with buildings); including glass-houses and farm yards.
Roads, tracks & paths			Including car-parks and footpaths.
Rock, stone & gravel			Cliffs, rock-outcrops, gravel-pits, quarries, areas of sand and gravel or stone.
Bog, fen, marsh & flush			Wetland vegetation and blanket bog.
Ponds & lakes			Permanent and seasonal waterbodies; including trackway pools.
Streams & ditches			Rivers, streams, ditches, springs and canals
Other (state)			E.g. maritime vegetation, saltmarsh, sand-dune, orchards and railways.

Is the pond in a protected area? (e.g. nature reserve, SSSI, etc)  
(choose one option - yes, no, unknown)

Location score for Great Crested Newts (select pond location based on map to right)

A (optimal), B (marginal) or C (unsuitable)

Number of ponds: Note: ponds are <2ha in size - to help you calculate the total use the PondNet map, an OS map, Google maps, or other mapping tool:

Number of other ponds (exclude the survey pond) in a 1km radius circle centred on the pond centre. Omit ponds separated by amphibian barriers e.g. large rivers or roads.

If there are more than 12 ponds present in the 1km radius, you can just tick this box.



Habitat quality for amphibians: (choose one option - 1 = none, 2 = poor, 3 = moderate, 4 = good)

None = clearly no suitable habitat within immediate pond locale; Poor = habitat with poor structure that offers limited opportunities for foraging and shelter (e.g. amenity grassland); Moderate = offers opportunities for foraging and shelter, but may not be extensive; Good = extensive habitat that offers good opportunities for foraging and shelter completely surrounds pond e.g. rough grassland, scrub or woodland.

Water quality for amphibians: (choose one option - 1 = bad, 2 = poor, 3 = moderate, 4 = good)

Bad = clearly polluted, only pollution-tolerant invertebrates, no submerged plants; Poor = low invertebrate diversity, few submerged plants; Moderate = moderate invertebrate diversity; Good = abundant and diverse invertebrate community, often surrounded by semi-natural land e.g. grassland, heath, woodland.

How much of pond perimeter could be surveyed? Note areas of pond not accessible.

--

Comments box: e.g. new ownership, changes since previous visit, any other information.

--

Figure 9 continued...

## 10.0 Appendix D

### Habitat Suitability Index

The Habitat Suitability Index (HSI) was developed in 2000 by Oldham et al. The HSI is a scoring system used to determine the suitability of a habitat for the great crested newt, ranked between 0 and 1 and taking into account habitat quality and quantity. Pond with higher HIS scores are more likely to support great crested newts. They can serve as a predecessor to a great crested newt survey (National Amphibian and Reptile Recording Scheme, n.d.). The scoring system is shown below.

#### **Summary of scoring system**

SI <sub>1</sub> Location		
Field score	SI	
A (optimal)	1	
B (marginal)	0.5	
C (unsuitable)	0.01	

SI <sub>2</sub> Pond area		
Field score	SI	
Measure pond surface area (m <sup>2</sup> ) and round to nearest 50 m <sup>2</sup>		Read off graph.

SI <sub>3</sub> Pond drying		
Field score	SI	Criteria
Never	0.9	Never dries
Rarely	1.0	Dries no more than two years in ten or only in drought.
Sometimes	0.5	Dries between three years in ten to most years
Annually	0.1	Dries annually

SI <sub>4</sub> Water quality		
Field score	SI	Criteria
Good	1.0	Abundant and diverse invertebrate community.
Moderate	0.67	Moderate invertebrate diversity
Poor	0.33	Low invertebrate diversity, few submerged plants
Bad	0.01	Clearly polluted, only pollution-tolerant invertebrates, no submerged plants.

SI <sub>5</sub> Shade		
Field score	SI	
Estimate percentage perimeter shaded to at least 1 m from shore.		Read off graph.

SI <sub>6</sub> Fowl		
Field score	SI	Criteria
Absent	1	No evidence of water fowl (although moorhen may be present)
Minor	0.67	Waterfowl present, but little sign of impacts
Major	0.01	Severe impact of waterfowl

SI <sub>7</sub> Fish		
Category	SI	Criteria
Absent	1	No records of fish stocking and no fish revealed during survey.
Possible	0.67	No evidence of fish, but local conditions suggest that they may be present.
Minor	0.33	Small numbers of crucian carp, goldfish or stickleback known to be present.
Major	0.01	Dense populations of fish known to be present.

SI <sub>8</sub> Ponds		
Field score	SI	
Count the number of ponds within 1 km of survey pond, not separated by major barriers, and divide by 3.14. This can be done from maps rather than in the field.		Read off graph.

SI <sub>9</sub> Terrestrial habitat		
Field score	SI	
Good	1	
Moderate	0.67	
Poor	0.33	
None	0.01	

SI <sub>10</sub> Macrophytes		
Field score	SI	
Estimate the percentage of the pond surface area occupied by macrophyte cover (between May and the end of September)		Read off graph.

*Figure 10 The habitat Suitability index criteria (National Amphibian and Reptile Recording Scheme, n.d.)*