Appendix 3:

eDNA Results

Client: [redacted]
FPCR Environment and Design

ADAS
Spring Lodge
172 Chester Road
Helsby
WA6 0AR

Tel: [redacted]
Email: [redacted]

www.adas.uk

Sample ID: ADAS-3590	Condition on Receipt: Algae Present	Volume: Passed
Client Identifier: P1, 9364	Description: pond water samples in preservative	
Date of Receipt: 20/05/2024	Material Tested: eDNA from pond water samples	

Determinant	**Result**	**Method**	**Date of Analysis**
Inhibition Control[†]	2 of 2	Real Time PCR	22/05/2024
Degradation Control[§]	Within Limits	Real Time PCR	22/05/2024
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	22/05/2024
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10^{-4} ng/µL)[#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by:	[redacted]	Report Issued by:	[redacted]
Signed:	[redacted]	Signed:	[redacted]
Position:	Director: Biotechnology	Position:	MD: Biotechnology
Date of preparation:	22/05/2024	Date of issue:	22/05/2024

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#]Additional positive controls (10^{-1}, 10^{-2}, 10^{-3} ng/µL) are also routinely run, results not shown here.

Appendix 1: Interpretation of results

Sample Condition

Upon sample receipt we score your samples according to quality: good, low sediment, medium sediment, high sediment, white precipitate, and presence of algae.

There are three reasons as to why sediment should be avoided:

1. It is possible for DNA to persist within the sediment for longer than it would if it was floating in the water which could lead to a false positive result i.e. in this case GCN not recently present but present a long time ago
2. In some cases sediment can cause inhibition of the PCR analysis used to detect GCN eDNA within samples which could lead to an indeterminate result.
3. In some cases sediment can interfere with the DNA extraction procedure resulting in poor recovery of the eDNA which in turn can lead to an indeterminate result.

Algae can make the DNA extraction more difficult to perform so if it can be avoided then this is helpful.

Sometimes samples contain a white precipitate which we have found makes the recovery of eDNA very difficult. This precipitate can be present in such high amounts that it interferes with the eDNA extraction process meaning that we cannot recover the degradation control (nor most likely the eDNA itself) at sufficient levels for the control to be within the acceptable limits for the assay, therefore we have to classify these type of samples as indeterminate.

What do my results mean?

A positive result means that great crested newts are present in the water or have been present in the water in the recent past (eDNA degrades over around 7-21 days).

A negative result means that DNA from the great crested newt has not been detected in your sample.

On occasion an inconclusive result will be issued. This occurs where the DNA from the great crested newt has not been detected but the controls have indicated that either: the sample has been degraded and/or the eDNA was not fully extracted (poor recovery); or the PCR inhibited in some way. This may be due to the water chemistry or may be due to the presence of high levels of sediment in samples which can interfere with the DNA extraction process. A re-test could be performed but a fresh sample would need to be obtained. We have successfully performed re-tests on samples which have had high sediment content on the first collection and low sediment content (through improved sample collection) on the re-test. If water chemistry was the cause of the indeterminate then a re-test would most likely also return an inconclusive result.

The results will be recorded as indeterminate if the GCN result is negative and the degradation result is recorded as:

1. evidence of decay - meaning that the degradation control was outside of accepted limits
2. evidence of degradation or residual inhibition - meaning that the degradation control was outside of accepted limits but that this could have been due to inhibitors not being removed sufficiently by the dilution of inhibited samples (according to the technical advice note)

Land North of Wilderness Lane, Great Barr

Habitat Management and Monitoring Plan

June 2024

Contents

Document Details

Document owner
FPCR Environment and Design Ltd Registered Office: Lockington Hall, Lockington, Derby DE74 2RH Company No. 07128076. [T] 01509 672772 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

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Map licence information

Version Control

Rev	Issue Status	Prepared by / Date	Approved by / Date
A	Draft	HEH / 25.10.23	LFR / 27.10.23
B	Final	HEH / 14.11.23	KG / 14.11.23
C	Final	HEH / 04.06.24	
D			

Summary

Project Information

Project Information	
Site or development name	Land North of Wilderness Lane, Great Barr
Period covered by this management plan	To be confirmed
Site or development location / address	Wilderness Lane, Great Barr, Birmingham
Development type	Outline Application
Planning authority	Sandwell Metropolitan Borough Council
Planning register reference (if available)	
Central OS grid reference	SP 03947 95508
Total Site Area	27 hectares

Summary of Habitats to be Created / Managed

The following Habitat Management & Monitoring Plan (HMMP) covers the greenspace outside of the proposed development area for the above scheme. Management of the habitats within the development footprint are detailed within the separate Biodiversity Net Gain Technical Note (FPCR, 2024).

The proposals include restoration of significant areas of currently species-poor grassland, the creation of new ponds and areas of mixed native scrub and the enhancement and creation of new species-rich hedgerows with trees.

The existing grassland field compartments have been used as to take a hay / silage crop for approximately 30 years with little active management and have declined in their botanical and structural diversity over this period. Within the last three years the grassland had been directly drilled with grass seed which is reflected in the species-poor grass dominated sward. The grassland will be enhanced through over-seeding with a bespoke native species rich seed mix to further improve botanical diversity throughout the sward, and / or through more targeted management practices including the introduction of a rotational annual hay cut.

New areas of native mixed scrub will be created to provide additional habitat diversity and buffer the existing hedgerows and new ponds will be created as part of the sustainable urban drainage scheme of the adjacent development which will be sensitively designed for wildlife.

The existing extensive mature hedgerow network will be brought under appropriate management and new species-rich hedgerows will be created to reinstate the historical hedgerow boundaries.

Summary of Timescales for Actions

The legal obligation for the end developer to manage the habitat for a 30-year period will begin once all Biodiversity Net Gain (BNG) habitat creation and enhancement works have been completed. The anticipated start date of proposed works is to be confirmed. Habitat enhancement and creation works of the greenspace will begin once the scheme is consented.

By Year 5, establishment management of the site will have been completed for most habitats, and post-establishment management and monitoring will then be undertaken.

Between Years 10-15, the site is expected to have largely achieved the targeted habitat condition scores. Long-term management will commence after initial establishment, continuing for a total of 30 years.

Summary of Monitoring Requirements

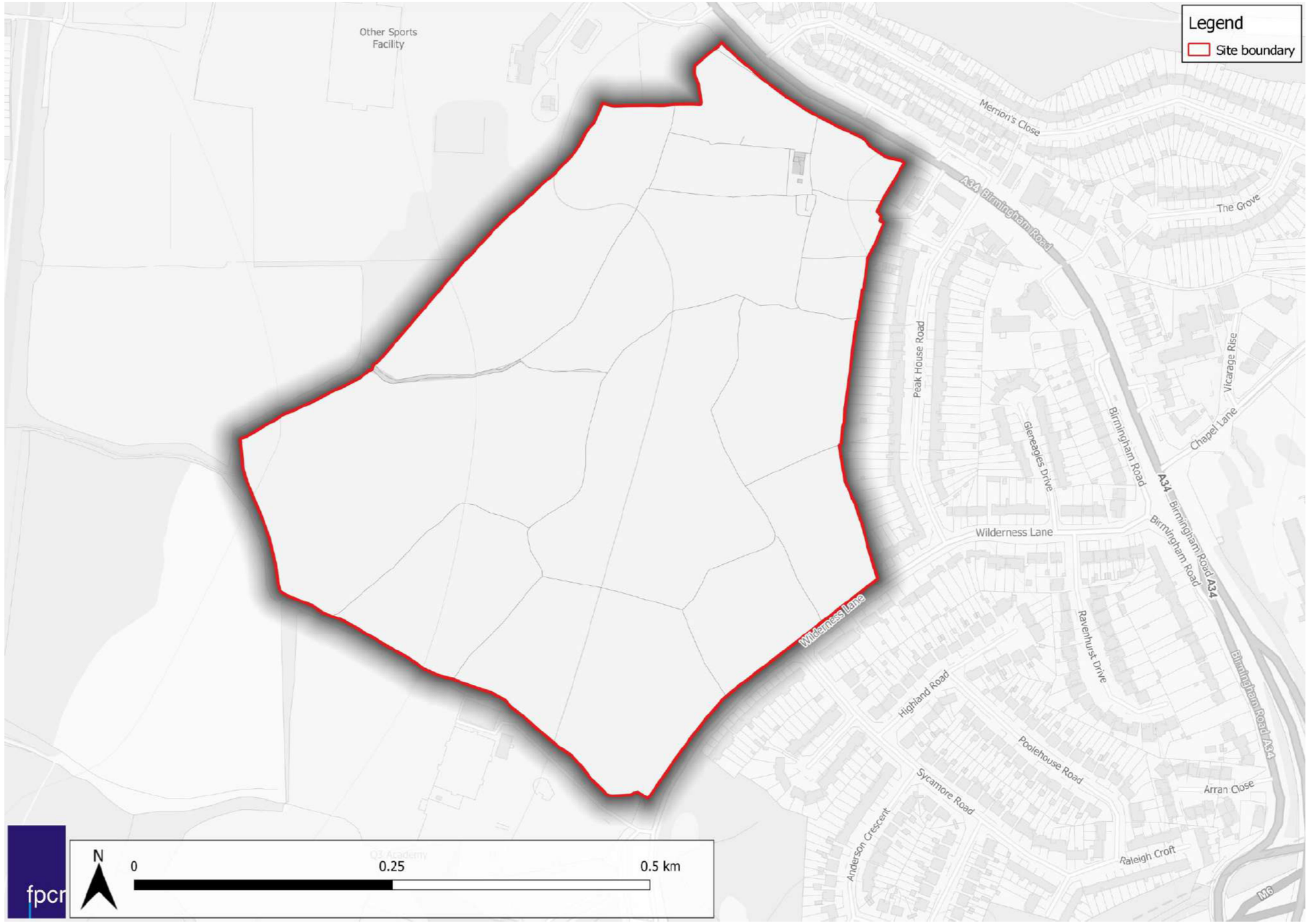
Monitoring will be undertaken in years 2, 3 & 5 during habitat establishment and then during the post establishment phase in years 7 and 10. Following this, monitoring will be undertaken every five years. The key aim of monitoring will be to track the success of targets for habitat creation/enhancement and to trigger remedial measures, where necessary.

This is an adaptive management plan; over time, it may be necessary to adjust management measures according to the success of the outcomes. This will be a process of monitoring, evaluating, and modifying the plan as required to reach the same desired outcomes. The responsible authority will be consulted if any significant changes are required.

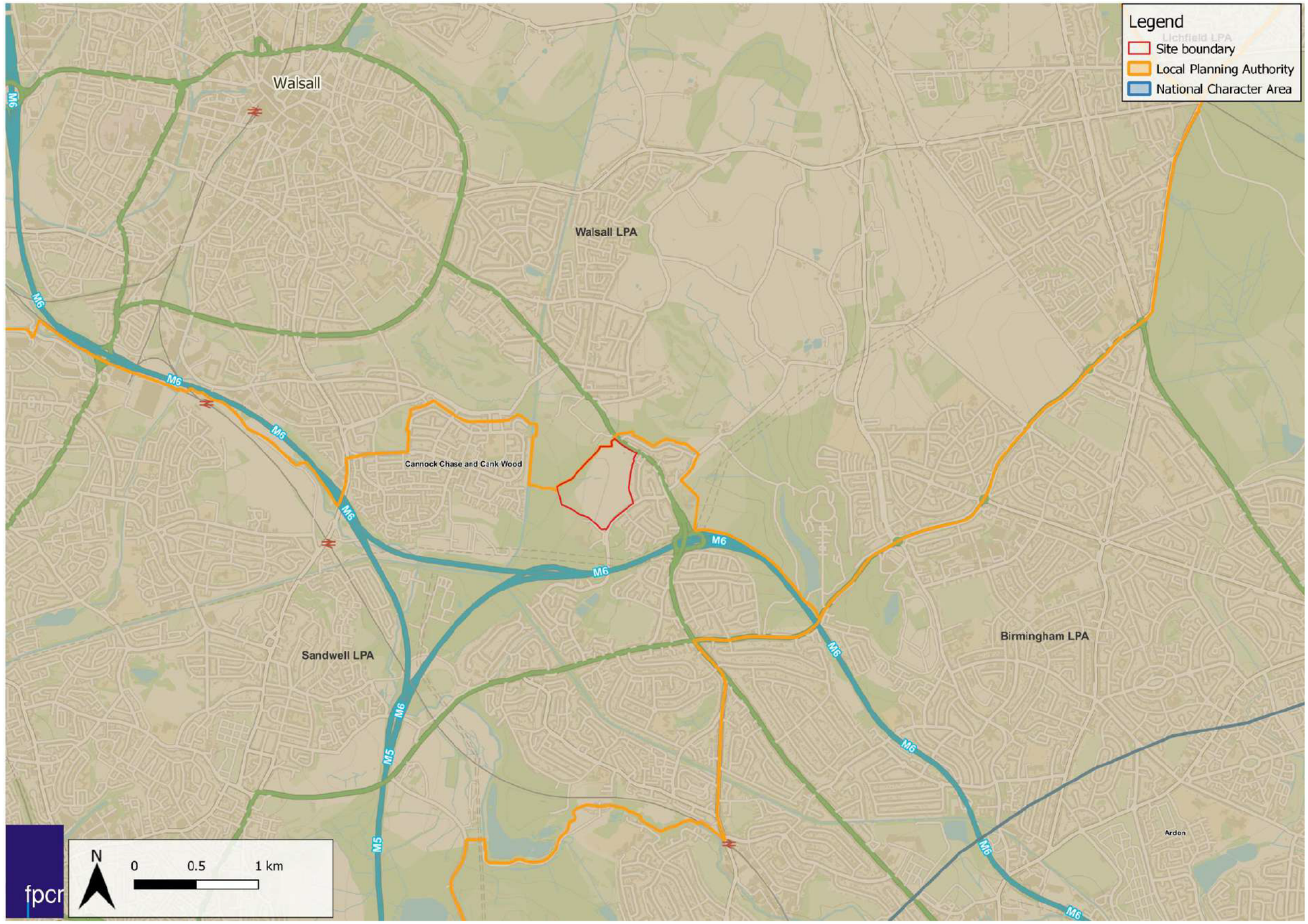
Summary of Required Consents & Licences

N/A

Site Boundary Plan



Site Context Plan



Site Summary

Summary of Site

The site is 27 hectares (ha) in size, located on the north-west edge of the town of Great Barr, Birmingham. The site comprises 14 field compartments, predominantly supporting other neutral grassland that has been used for hay / silage for approximately 30 years, with the northern most and some of the eastern compartments also previously used for horse grazing for circa 32 years. Mature native hedgerows bound the fields with smaller areas of mixed scrub and tall ruderal vegetation at the field peripheries, two ponds and mature trees.

Existing residential areas dominate the surrounding landscape with Astone University Recreation Centre to the west and Q3 Academy to the south. Merrions Wood Local Nature Reserve (LNR) is situated to the north of the site on the opposite side of the A34. The Site falls within the Cannock Chase and Cank Wood National Character Area (NCA).

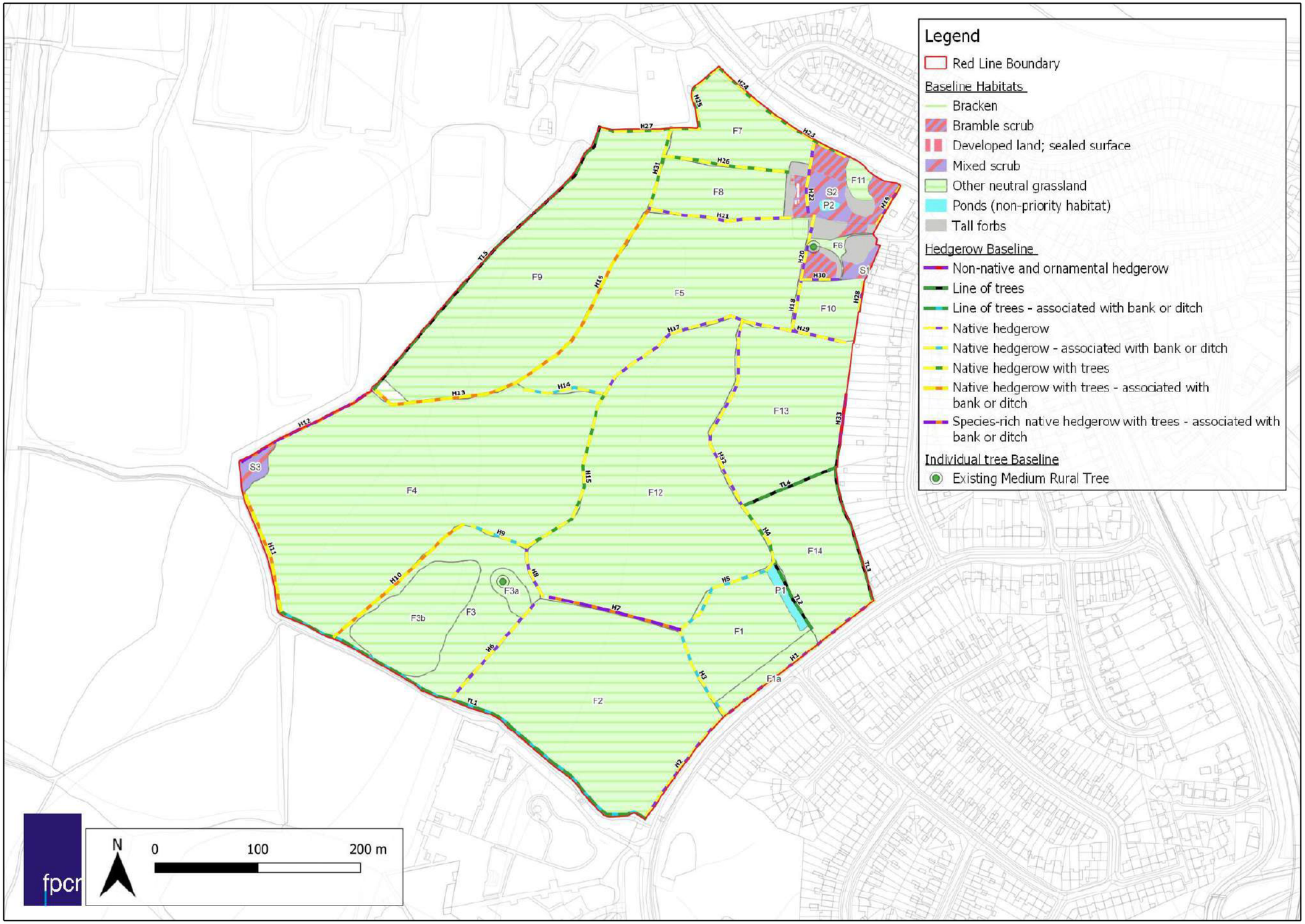
The whole of the site falls within the Peakhouse Farm Site of Importance for Nature Conservation (SINC). The initial SLINC designation was primarily for the network of hedgerows running across and around the site, as well as small field compartments in the north-east, pond P2 and surrounding habitat in the south-eastern corner. The upgraded SINC designation incorporated all habitats within the site boundary and network of grassland field compartments. Whilst all habitats are included within the designation, the grassland and the hedgerow network are considered to be those forming the reason for designation of the site.

Much of the grassland was considered to be relatively species-poor, though indicator species for NVC communities were relatively constant across the field compartments. The grassland is considered to be in decline, including the southernmost fields which supported a small number of lowland meadow indicator species with overall species richness and indicator species abundance having reduced in 2023 and 2024 in comparison to detailed surveys undertaken in 2020. Coarse grassland, scrub and ruderal herbs have encroached within most of the field compartments.

The Site has been assessed as having high strategic significance for nature conservation for the grassland, hedgerow and pond baseline habitats due to the SINC designation and location within a core ecological area as identified by the Brimingham and Black Country Nature Improvement Area ecological network mapping.

The proposals are for an Outline residential development located within the north and eastern extents of the site, within the areas of the least ecological value within approximately 6.31ha. The enhancement of retained habitats and creation of new habitats are proposed to offset the development and enhance a significant proportion of the existing grassland (approximately 16.53ha) and bring the existing hedgerow network under appropriate management to ensure the long-term biodiversity value is maximised and maintained.

Baseline Habitats Plan



Responsibilities, Policy & Legislation

Roles & Responsibilities

Ecologist Responsible for HMMP				
Name		[redacted] BSc, MSc, ACIEEM		
Organisation		FPCR Environment & Design Ltd.		
Responsibility	Start Date:	Upon start of development	End Date:	**TBC**
FPCR will be responsible for overseeing the preparation of this HMMP and for providing ecological advice on the delivery of the habitat establishment and management prescriptions provided. FPCR will also be responsible for ensuring the landowner/management organisation is aware of protected and / or notable species constraints potentially present on Site.				
Statement of Competency				
As one of the leading consultancies in the advancement and delivery of BNG, FPCR has worked with a broad range of landowners, Local Authorities, and government bodies to establish banks of biodiversity units. The experienced team at FPCR has a proven record and competency in delivering Habitat Banking schemes. This HMMP has been prepared by Principal Ecologist [redacted] an ecologist with more than 8 years' experience and quality assured by Associate Ecologist [redacted]. [redacted] is an associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and [redacted] is a full member.				

LPA / Regulating Body Responsible for Reviewing HMMP				
Name				
Organisation				
Responsibility	Start Date:		End Date:	
TBC based on consultation with the LPA				

Landowner Responsible for HMMP				
Name		TBC		
Organisation		TBC A management company will be appointed following planning permission.		
Responsibility	Start Date:	Upon commencement of development	End Date:	TBC
The end client will appoint a management company upon planning approval who will be responsible for the delivery of the habitat creation, enhancement and management prescriptions detailed within this report. They will also be responsible for ensuring that ongoing monitoring is undertaken and that monitoring reports are provided to Sandwell Metropolitan Borough Council on the dates specified within the document.				

Mechanism to Secure Delivery

Legal, Conservation Covenants & Funding Mechanisms

Provide a description of the legal mechanisms that are / will be in place and have been agreed with the LPA / responsible authority to secure the delivery of this HMMP.

To be confirmed following planning permission. Most likely to be a condition, S106 or a combination of the two.

LPA / Responsible Authority Review Process

It is recognised that there may be unforeseeable changes required during the life of this HMMP. Provide a description here of the review process that has been agreed with the relevant LPA / responsible authority to ensure that any changes made to the HMMP through its lifetime are subject to necessary agreements.

To be confirmed following planning permission.

Policy, Legislation & Consents

National Legislation & Policy

Legislation	Summary of Key Points	Description of the Relevance to this Project
The Environment Act 2021	The Environment Act 2021 came into force on 9th November 2021. Of particular relevance is the requirement for all developments subject to the Town and Country Planning Act to provide an at least 10% BNG, as calculated using a Biodiversity Metric and a Biodiversity Gain Plan, with habitat used for net gain to be secured for a minimum of 30 years. Delivery of BNG may be on site, off-site or undertaken using statutory biodiversity credits. The requirement for BNG does not over-ride the need to apply the mitigation hierarchy (avoidance, mitigation and compensation) when considering biodiversity assets and their loss, and does not change existing environmental and wildlife legal protection.	The Environment Act underpins the purpose of this project by requiring developments to seek a 10% net gain in biodiversity units either through on-site or, crucially to this project, off-site habitat creation and/or enhancement measures.
Conservation of Habitats and Species Regulations 2017[1] (as amended)	The Regulations transpose the European Commission Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. They enable the designation and protection of sites for rare and threatened species and habitats. Collectively across the European Union (EU) land area, these European sites form the Natura 2000 coordinated network of protected sites. The Regulations *"make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy or trade in the plants listed in Schedule 5".* However, in some circumstances these otherwise unlawful actions can be made lawful via a licence system.	The Site is located in an urbansetting. On-site habitats have potential to support a range of European Protected Species (EPS), including common and widespread bat species. Great crested newt have not been recorded on Site. Precautionary working methods are expected to avoid impacts to bats.
The Wildlife and Countryside Act 1981 (as amended).	This Act implements European legislation; the Bern Convention and the Birds Directive (now superseded by Directive 2009/147/EC). In very brief summary, the Act: • Provides protection for most wild birds from intentional killing and injury and protection of their nests and eggs; • Protects other animals listed in Schedule 5 from being intentionally killed, injured or taken, and prohibits interference of their places of shelter and intentional disturbance of the animals whilst they are in these places; • Makes it an offence to release animals listed in Schedule 9; • Makes it an offence to plant, or cause to grow in the wild plants listed in Schedule 9 • Provides legislation concerning Sites of Special Scientific Interest (SSSI).	Breeding wild birds are likely to be present on-site during the breeding season. A total of 36 species have been recorded, 15 of which were notable species. Seven species were confirmed breeders within the site and of these one was considered 'notable', which comprised dunnock *Prunella modularis*. There are likely to be Schedule 5 species resting, breeding and foraging within the Site, namely common and widespread bat species.. A single stand of a Schedule 9 species comprising Japanese knotweed *Reynoutria japonica* was present within the site and will require remediation. This is located within the development footprint area. Avoidance and licencing/mitigation measures may be required to ensure an offence is not committed under the Act.

[1] The Conservation of Habitats and Species Regulations 2017. (SI 1012). London: HMSO. [Online] [Accessed 08/02/2021] http://www.legislation.gov.uk/uksi/2017/1012/contents/made

Legislation	Summary of Key Points	Description of the Relevance to this Project
Protection of Badgers Act 1992	This Act makes it an offence to take, injure, sell, possess, kill or ill-treat a badger, or to damage, destroy or disturb a sett unless under the provisions of a Licence allowing otherwise.	No increase in disturbance is predicted to occur through the proposed management. New habitat creation may provide a benefit through additional foraging habitat. Precautions will be taken during works to ensure no breaches to the Act are made.
Hedgerow Regulations 1997 (as amended)	The Hedgerow Regulations 1997 were made under section 97 of the Environment Act 1995 and came into operation on 1st June 1997. Important hedgerows are afforded protection as defined under Schedule 1 part 2 of the regulations. Removal of hedgerows which are 20m or more in length or which meet another hedgerow at each end and are adjacent to certain land use types are covered by the regulations requiring notification to the Local Authority.	The hedgerows on Site are all traditional native style features and of existing high quality.

Local Policy

Policy	Summary of Key Points	Description of the Relevance to this Project
Black Country Core Strategy 2011 - 2026	Policy ENV1: Development within the Black Country will safeguard nature conservation, inside and outside its boundaries by ensuring that: • Development is not permitted where it would harm internationally (Special Areas of Conservation), nationally (Sites of Special Scientific Interest and National Nature Reserves) or regionally (Local Nature Reserve and Sites of Importance for Nature Conservation) designated nature conservation sites; • Locally designated nature conservation sites (Sites of Local Importance for Nature Conservation), important habitats and geological features are protected from development proposals which could negatively impact upon them; • The movement of wildlife within the Black Country and its adjoining areas, through both linear habitats (e.g. wildlife corridors) and the wider urban matrix (e.g. stepping stone sites) is not impeded by development; • Species which are legally protected, in decline, are rare within the Black Country or which are covered by national, regional or local Biodiversity Action Plans will not be harmed by development. All appropriate development should positively contribute to the natural environment of the Black Country by: • Extending nature conservation sites; • Improving wildlife movement; and/or	Development of the Site will secure the long-term favourable management of the grassland and hedgerow network across the Site and the proposals have been sensitively designed to avoid harm and minimise the loss of habitat within the SLINC. The Site will provide a net gain in both habitat and hedgerow biodiversity units as compensation and provides an ideal opportunity to support Policy ENV 1 by strengthening ecological networks and by expanding and improving the quality of foraging, sheltering and commuting pathways for protected and notable fauna such as bats, water vole, otter, amphibians, and a range of invertebrates and birds.

	• Restoring or creating habitats / geological features which actively contribute to the implementation of Biodiversity Action Plans (BAPs) and/or Geodiversity Action Plans (GAPs) at a national, region or local level.	

Consents & Licences

Type	Summary of Key Points	Description of the Relevance to this Project
European Protected Species Licence	The retained grassland in proximity to pond P1 is to be enhanced which had a negative eDNA result for the presence of great crested newt and so there will be no impacts on this species. No badger setts were found within the site.	N/A
Planning permission	New pond creation may require planning permission from the Local Planning Authority	An application has been submitted.

Project Background

1. Introduction

Land Use Summary

Overview of Current Site Use
The Site totals an area of 27 ha divided into 14 field compartments and falls within the boundary of the Peak Farmhouse SINC. The Site was upgraded from a SLINC to a SINC as part of the Black Country Local Plan Review on the basis of the extensive network of hedgerows, moderate level of structural and botanical diversity and the populations of local fauna it supports. Full details are provided within the separate Ecological Impact Assessment Report (FPCR, 2023) and Grassland Survey Technical Note (FPCR, 2024). The predominant habitat is grassland which was recorded as 'other neutral grassland' in accordance with UKHabitat classification with indicator species for NVC communities relatively constant across the field compartments, though the swards were species-poor. Limited areas of increased species diversity were observed within the southern fields; however this was not identified as a habitat type that would be assessed at a level exceeding local importance. The northern and north-eastern fields have until recently been grazed by horses for approximately 32 years. The remaining field compartments have been mown for hay / silage for the past 30 years and have been sprayed and fertilised over this period. Within the last two years the grassland has been directly drilled with grass seed. A good network of hedgerows is present across the site, with the majority meeting the criteria to be classified as Habitats of Principle Importance (HPI). Given the extent of the hedgerow network, this network has been identified one of the key ecological features of interest across the Site. A number of mature trees are present across the Site, confined to the hedgerow network. A single Veteran tree is located adjacent to the southern pond which comprise a large English oak *Quercus robur* standard. Other habitats present included tree lines, scrub, tall forbs and two non-priority ponds. Full details of the baseline habitats across the Site are detailed at Appendix A. No Public Rights of Way (PRoW) cross the Site.

Overview of Proposed Site Use
The Site comprise a residential development and the associated green infrastructure within a Country Park and the restored grassland will be managed for a minimum period of up to 30 years. Habitats will include the restoration of the existing grassland resource, creation of new areas of mixed scrub, ponds and new and retained hedgerow habitats. This HMMP only applies to the significant areas of green infrastructure (see Proposed Habitat Plan on page 25). For full details of the development proposals please refer to the Planning Statement (Turley, 2023). All grasslands on Site will be manged through hay-cutting and rotational cutting. New ponds will be created and will require little management once established. Trees and hedgerows will be retained and enhanced where feasible with new hedgerows created along the historic hedgerow boundaries. There will be public access to the habitats within the wider green space, with habitats created and/or managed sensitively to maintain their access. New pedestrian footpath / cycleways will loop around the site to provide additional connects into the existing Public Right of Way (PRoW) network.

2. Baseline information

Environmental Information

Geology & Topography

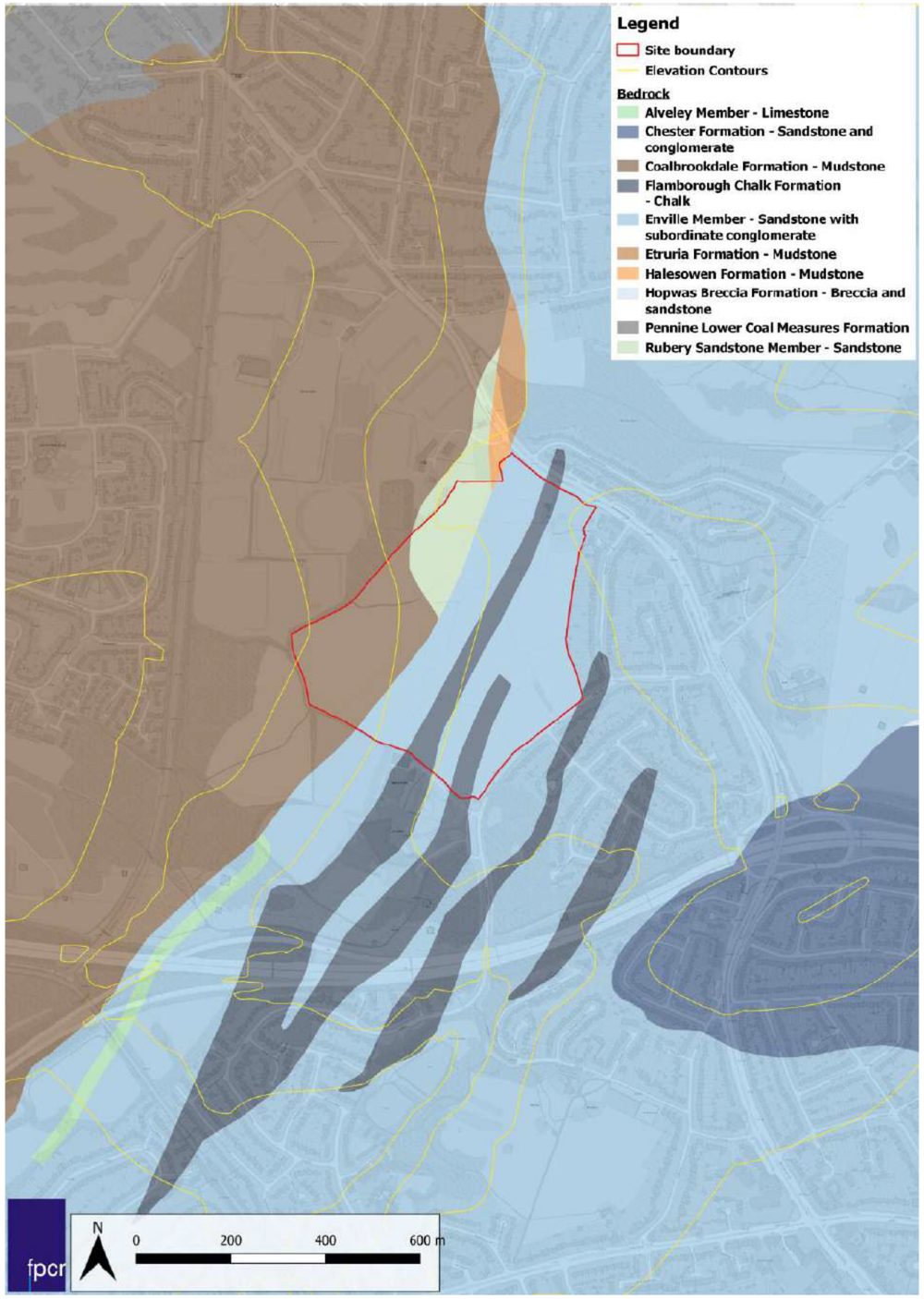
Geological Information
Most of the Site lies on Enville Member – Sandstone with subordinate conglomerate, which is prevalent within the West Midlands. The south-west corner of the site lies on Coalbrookdale Formation – Mudstone, a sedimentary bedrock, with a smaller area to the north on Rubery Sandstone Member – Sandstone.

Potential Impact to Scheme
Bedrock types across the Site are typical of those throughout the region and are unlikely to have any negative impacts on the proposals. The main bedrock type leads to freely draining soils that do not retain high nutrient loads which overall will benefit the scheme. The selection of seed mixes / planting mixes should be mindful of the clayey soils in the south-west which may dry out in summer and become seasonally waterlogged but overall, the geology is not thought to impact the scheme.

Topography
The site slopes from a high point of 158.5m above sea level in the north east to a low point of 129.5m in the south-west towards the boundary ditches.

Potential Impact to Scheme
The proposed habitats and the topography of the Site are both representative of the general area. Therefore, there will be no potential impact to the scheme due to topography. Several natural low points exist within the site which have been chosen for their opportunity for pond creation. Areas of higher ground are better suited to planted scrub, trees and drier grasslands, particularly within the north of the site.

Geology and Topography Plan



Soils & Substrates

Summary of Soils Information

The majority of Site soils are classified as slowly permeable, seasonally wet and slightly acidic but has base-rich loamy and clayey soils. The very western edge of the site was similarly classified as slowly permeable, seasonally wet acid loamy and clayey soils. Both are characteristic of lowland seasonally wet pasture and woodland semi-natural habitats (Soilscapes, 2023).

Soil sampling has demonstrated that the soil pH on the site for the most part is neutral to slightly acidic, with an area of more strongly acidic area located within field F1 along the south-eastern boundary. The more acidic soils have a pH of 5.8-5.9 however, which is still only slightly acidic, with field F1 at 4.9.

Soils nutrient sampling has demonstrated that potassium levels are very low with an index of 0, with magnesium levels also low supporting a magnesium index of 1 or 2. Phosphate levels are also consistently low across the site, with a low phosphate index ranging from 0 – 1.

Potential Impact on Project

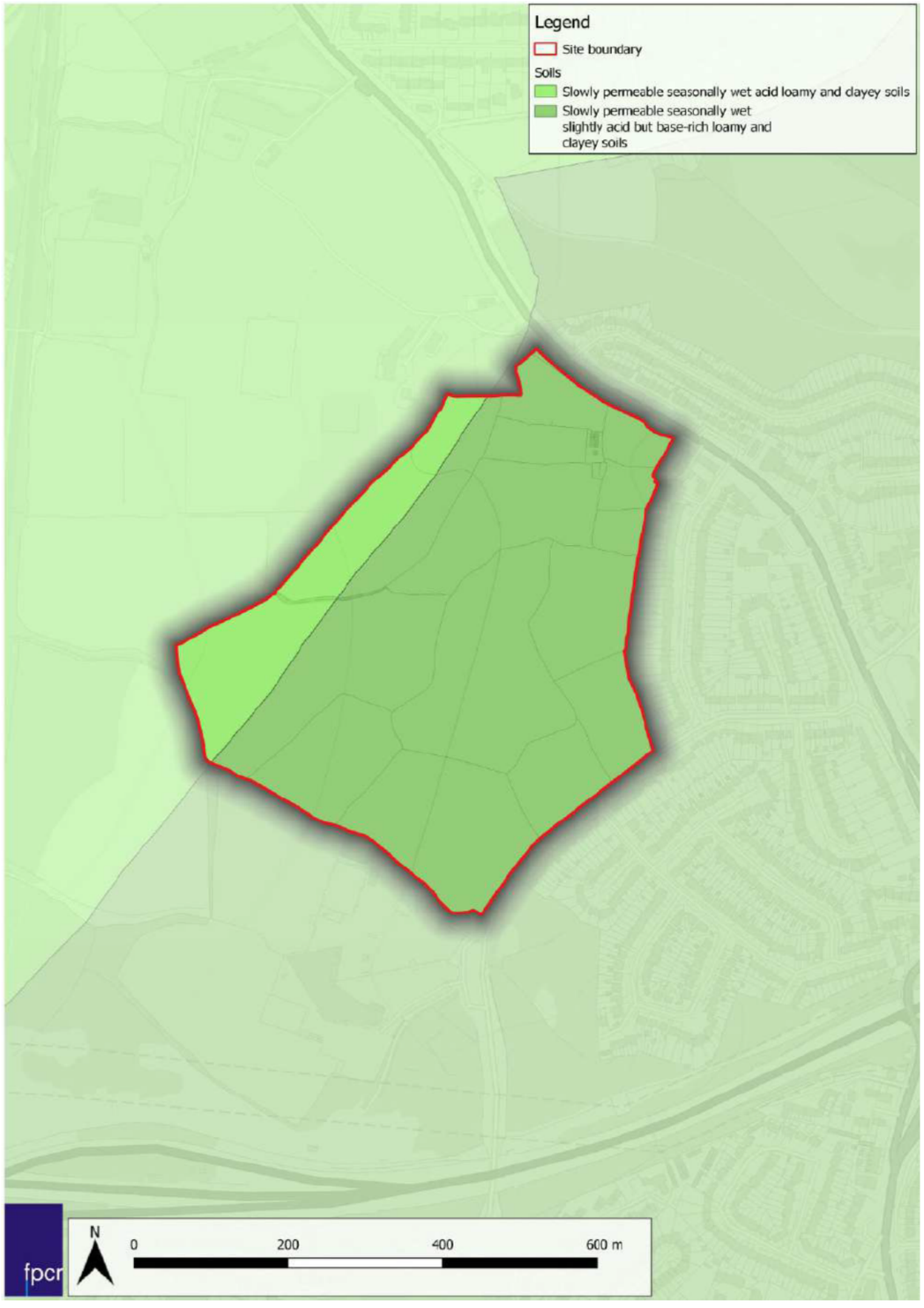
The soil types present across the Site are suitable for the proposals to create and enhance species rich grassland within the Site, with the opportunity to enhance / create wet grassland on suitable soils present in the South.

The pH of soils across the site will be suitable for the proposals to enhance existing modified grasslands to a more species rich neutral grassland sward as, while being slightly acidic in places, the majority of the compartments do not have a low enough pH level to support acid grassland habitats. Field compartment F1however does have some potential to support an acid sward, although this will not be targeted as part of the proposals.

Low magnesium levels will not constrain the proposals as magnesium will move freely in soils and phosphate levels are already relatively low which will be favourable for enhancing the grasslands and nutrient stripping will not be required to achieve a more species-rich sward.

Potassium levels of 1 are usually recommended for grassland restoration and low levels in sandy soils may need to increase levels in order to support plant growth as soils with potassium Indexes of 0 may not produce much herbage. As the soil is not sandy it is recommended that growth rates are monitored and if required, future management may need to include the application of fertiliser to maintain levels of potassium.

Soils & Substrate Plan



Landscape Character & Designations

Summary of Landscape Character & Designations

The majority of the site lies within the Cannock Chase and Cank Wood (NCA). The statements of Environmental Opportunity provided by Natural England for this NCA include:

- "SEO 1: Expand lowland heathland to increase habitat connectivity, improve resilience to climate change and improve water quality."
- "SEO 2: Manage, enhance and expand the network of green infrastructure, such as woodlands, restored mining sites, parklands and canal routes, to increase biodiversity, access and recreational use and increase understanding of the area's rich industrial heritage, particularly geodiversity."
- "SEO 3: Conserve and enhance the essential character of this varied landscape, which includes the Cannock Chase Area of Outstanding Natural Beauty, the Forest of Mercia and the urban conurbation of the Black Country, to maintain food and timber production where possible; enhance landscape, sense of place and tranquillity; and increase resilience to climate change."

Some key characteristics relevant to this assessment include:

- "Away from the unenclosed landscape of Cannock Chase, fields generally have a regular pattern and are frequently enclosed by mature hedgerows with some hedgerow trees. Here farming is generally mixed with arable cultivation in large fields. Livery is concentrated around the flanks of the Chase."
- "Heathland and associated acid grassland were once much more extensive, although significant tracts still remain. Post-industrial sites and remnant countryside within the urban areas provide a mosaic of additional valuable habitats."
- "Industrial archaeology from the industrial revolution is a characteristic feature."

The Site also lies within the SD02 'Newton, Hamstead and Great Barr' Black Country Historic Landscape Character Area. This character area is described as:

"This Character Area is situated in the north-east of the Borough and is situated on sandstone, mudstone and conglomerate, with coal measure only accessible at some depth. The modern character of the area is dominated by 20th century residential housing, with areas of surviving fields in the north-west of the character area that continue beyond the Borough boundary into Walsall (WL09).

Until the 20th century this area was largely agricultural, crossed by the Tame Valley Canal which opened in 1844. The only colliery in the Character Area was at Hamstead and the discovery of coal in this area prompted the expansion of the settlement of Hamstead in the 1880s. The eastern part of the Character Area was originally part of the Great Barr estate, and was taken over by the Walsall and West Bromwich Guardians in the 20th century. Some of this area has been developed for housing and the rest is now part of Walsall. The Red House Park is a public park in the centre of the Character Area."

The Site also forms part of the Areas of High Historic Landscape Value (AHHLV) 25 'Peak House Farm Field System' which is described as:

"The AHHLV contains a well-preserved example of a pre-enclosure field system. Evidence of ridge and furrow is visible across the site as cropmarks (but no earthworks appear to survive). Prehistoric finds have been recovered within this area and cropmarks indicative of below-ground archaeological remains have also been identified, highlighting the archaeological potential of the area. Many of the field boundaries are marked by drainage ditches linked to the moated site to the south (APA 23) and a number of hedgerows are recorded as ancient hedgerows. LiDAR shows a small mound in the AHHLV (NGR 403764 295377).

The field system is well preserved and contains cropmark remains and findspots suggestive of archaeological potential from Roman or prehistoric times. Drainage ditches in field boundaries link to a possible moated site.

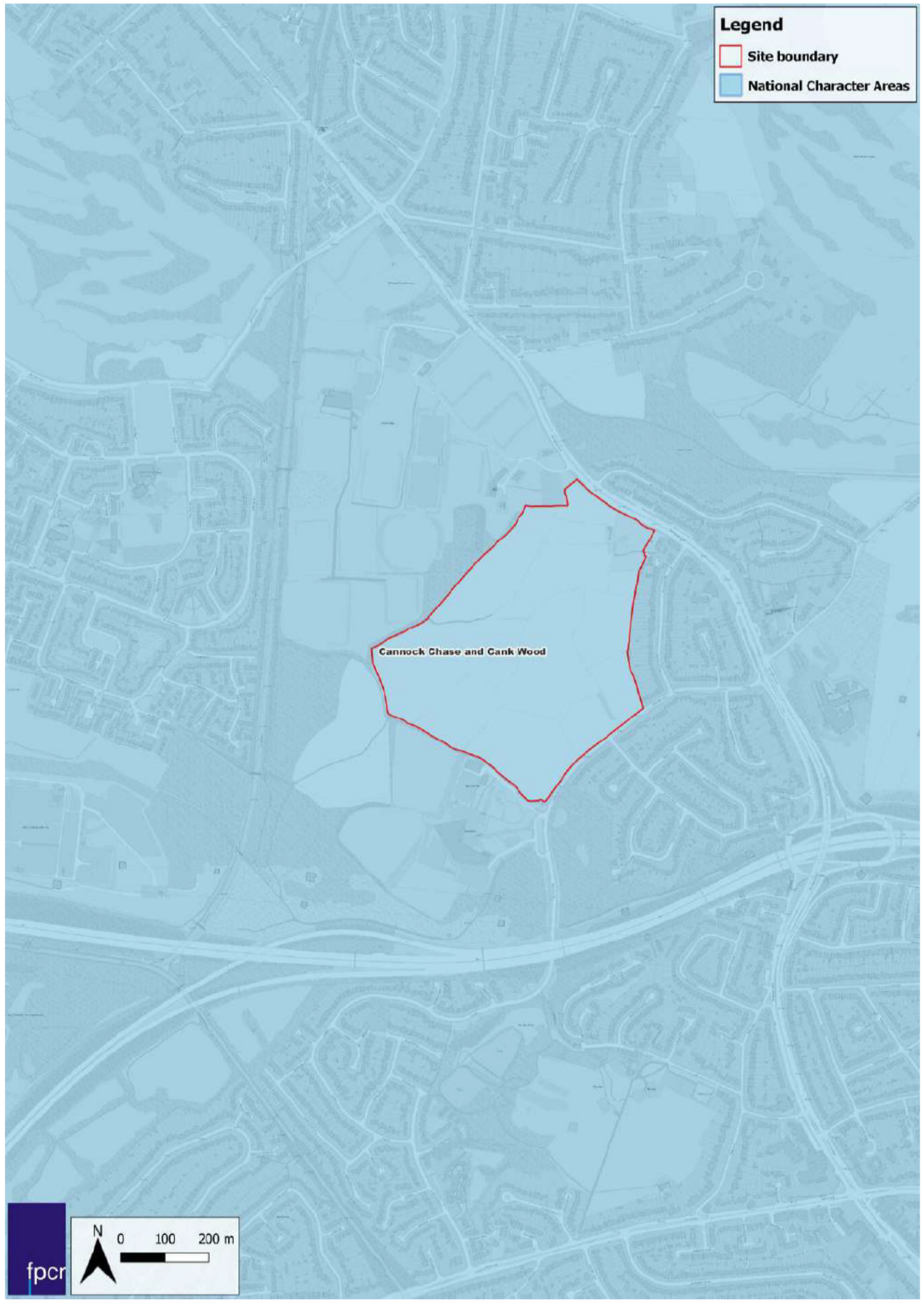
Archaeological Interests: Rarity

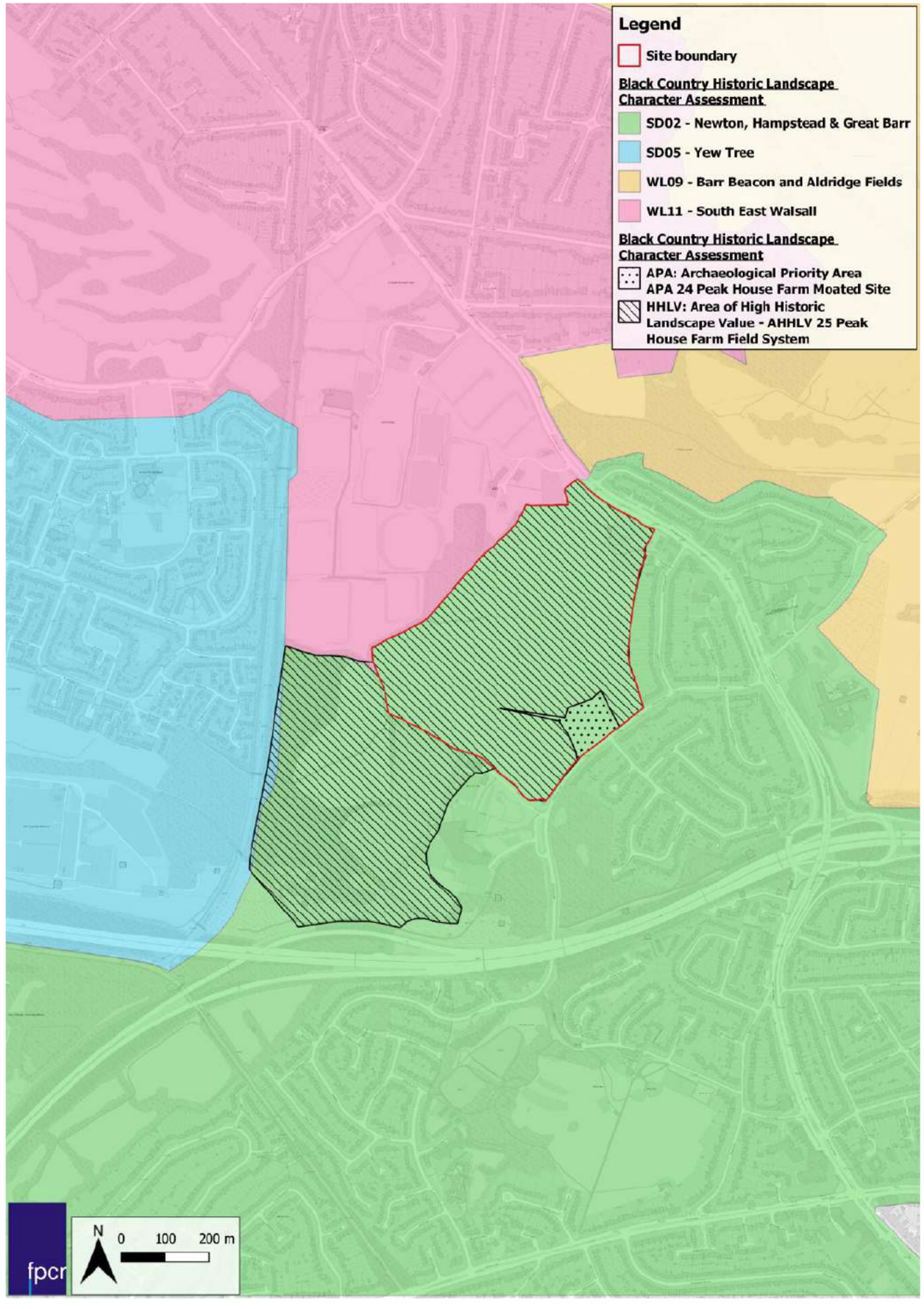
The AHHLV contains a locally rare example of early non-parliamentary field pattern. Prehistoric deposits as indicated by the cropmark remains are rare within Sandwell as is the possible moated site which lies in the southern part of the AHHLV."

Potential Impact on Project

This project includes a range of opportunities to contribute significantly to both the NCA and historic LCA characteristics and / or environmental opportunities through the enhancement of grassland within the wider green infrastructure and enhancement and long-term management of the hedgerow network forming the historic pre-enclosure field system.

Landscape Character & Designations Plans





Strategic Significance

Summary of Strategic Significance

The Local Nature Recovery Strategy (LNRS) for the West Midlands, which will identify areas of strategic significance within the region, is yet to be published. Nevertheless, it is considered that the Site is of strategic importance to nature recovery due to potential to contribute to numerous local and national environmental objectives. The whole of the site also lies within the Peakhouse Farm SINC designation.

Although priority habitat 'Good quality semi-improved grassland' is mapped within the central and western extent of the site on the Priority Habitat Inventory, detailed botanical survey has confirmed that this is no longer the case and the grassland within the site is in decline.

A number of woodland areas are identified in proximity to the site within the National Forest Inventory and Priority Habitats Inventory and includes an area adjacent to the western boundary and Merrion Wood Local Nature Reserve (LNR) to the north. Rushal canal is located 230m to the west.

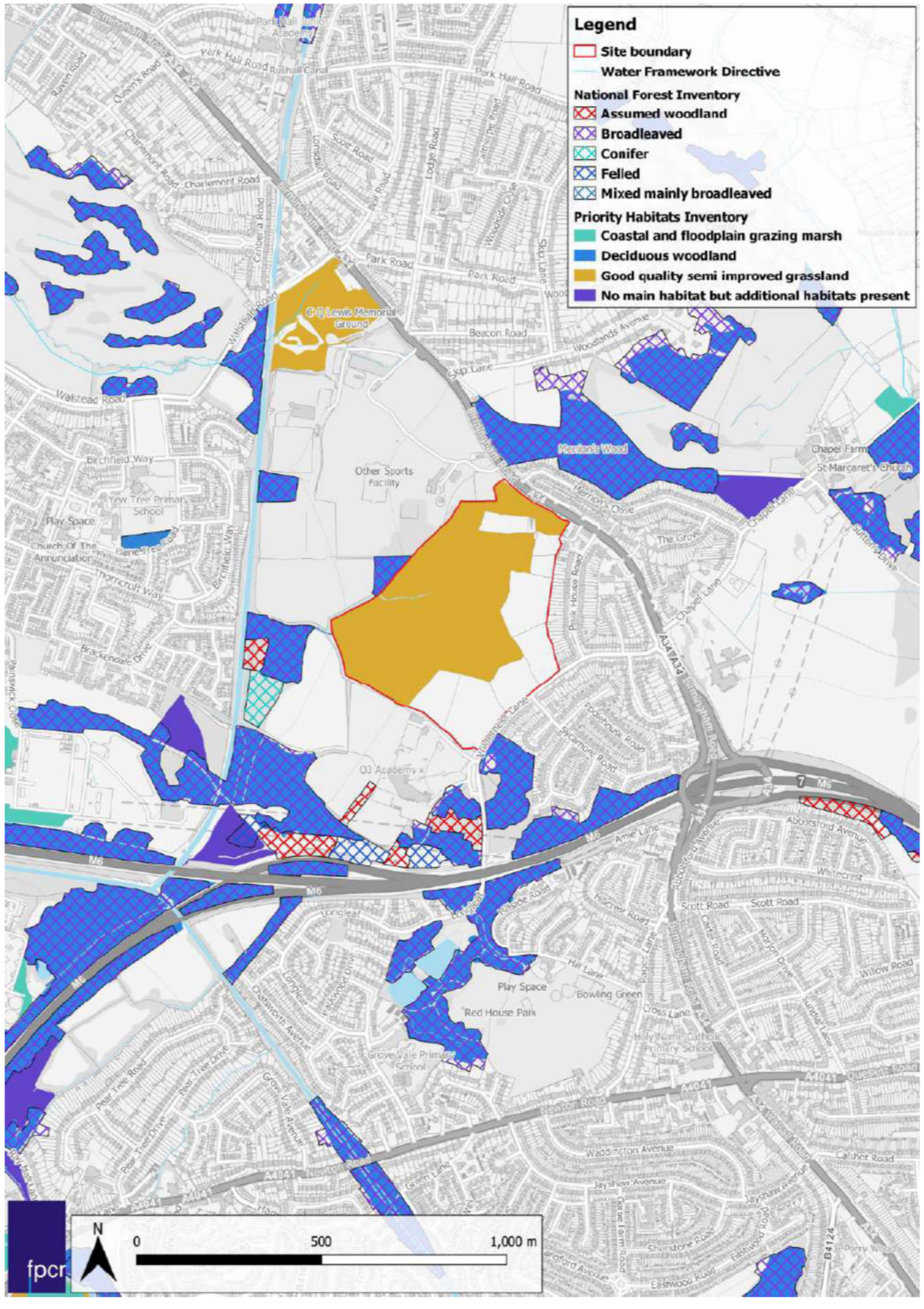
Potential Impact on Project

The above features of the Site have demonstrated its ability to contribute a significant positive impact on the environment and align well with the aims of the Black Country Local Plan with its position within a core ecological area of the Birmingham and Black Country Nature Improvement Area. The proposed restoration of the current grassland resource to flower-rich grassland will help to increase the overall potential value to biodiversity of the Site and continue to provide an important grassland resource within an urbanised area

The large area of habitats beneficial to wildlife within the Site, will allow the significantly improved connectivity between other habitats of value to biodiversity in the surrounding urban area, which would contribute towards local nature recovery strategies. In particular the long-term management and reinstatement of historical hedgerow boundaries will enhance connectivity around the Site and between the Sandwell Valley and existing residential areas to the wider countryside.

As such the habitat creation measures have been designated as ecologically desirable in the strategic significance multiplier within the metric.

Habitat Connectivity Plan



Aims & Design Principles

3. Aims and Design Principles

Aims & Objectives

Management Plan Aims & Objectives

The management objectives describe the overall ecological aims and outcomes of the project. The objectives will be achieved by following the carefully prescribed management prescriptions in this management plan. The management prescriptions should be adaptable throughout the life of the project and amended, where necessary, to achieve the objectives. The management objectives are directly connected to the habitat descriptions and condition assessments outlined in part 1 which underpin the Biodiversity Unit value of the Site. The management objectives are the deliverable outcomes which are monitored against in the monitoring plan.

Overall Management Plan Aims

The proposals for the Site include provision of a net gain in biodiversity across the site through habitat creation as well as the enhancement of existing habitats.

The long-term vision is to enhance the retained grassland habitat, improving the botanical and structural diversity across the scheme to ultimately benefit biodiversity and target a good condition. The creation of further scrub habitat, pond and hedgerow planting will provide additional habitat resources and strengthen the connectivity across the Site.

Management Objectives

Grassland, Ponds (P1 & P2), Hedgerows, Line of Trees and Free-standing Trees Retention

The ponds (P1-P2), hedgerows, line of trees and free-standing trees identified across the Site will all be retained throughout the proposals. Trees and hedgerows will be retained to maintain the Landscape Character of the area. Where these excessively shade and detract from the quality and condition of the grassland, they will be managed, and scrub such as bramble may be removed.

The scrub community S3 which was assessed as being in poor condition and due to the small size and self-set nature there is little scope in improvement from a Biodiversity Net Gain perspective and so will be retained as it is.

Areas of grassland along the western edges of fields F4 and F9 will be retained in poor and moderate condition where a permissive public footpath is proposed. The central area of grassland within field F3 (area F3b) will also be retained and maintained in good condition. Long-term management including re-seeding where necessary will ensure they are retained as they are.

Both existing ponds (P1 & P2) were assessed as being in moderate condition and therefore there is little scope in improvement from a Biodiversity Net Gain perspective and so will be retained as they are.

Other Neutral Grassland Enhancement (Field compartments F1 & F9)

Existing areas of other neutral grassland within field compartments F1 and F9 will be enhanced from poor to good condition. These fields supported a neutral grassland community that resembled a species-poor MG6b community and will be enhanced through over-seeding with a bespoke seed mix. The ongoing management of these communities will focus on enhancing species-richness and delivering a structurally divers sward by implementing a late-summer hay cut on rotation, creating a varied sward height, and leaving some tall tussocky areas uncut to provide overwintering habitat. Management will also focus on prevention of encroachment by bramble and bracken, in addition to provide more areas of bare ground to encourage colonisation of less rigorous plant species (ensuring this does not exceed 5% of the area).

Other Neutral Grassland Enhancement (Field compartments F4 & F5)

Existing areas of other neutral grassland communities within compartments F4 and F5 will be enhanced from fairly poor to good condition and also supported a species-poor MG6b community. This will be achieved by adding to the existing species diversity through seeding with an appropriate species-mix as above to help improve botanical diversity and to encourage a more resilient grassland that can adapt to environmental changes as a result of climate change.

Following establishment, the communities will be managed in the same way as the adjacent enhanced grassland, with rotational cutting.

Other Neutral Grassland Enhancement (Field compartments F2, F3, F3a, F3b & F12)

Existing areas of other neutral grassland communities within compartments F2, F3, F3a, F3b, F4 & F12 will be enhanced from moderate to good condition. Fields F2, F3, and F12 supported communities that affiliated to a species-poor MG6b community and had higher abundances of the indicator species than other swards. These will also be enhanced through over-seeding and managed as above.

The areas F3a and F3b were categorised as a damp grassland community and will also be enhanced though over-seeding and rotational cutting.

Other Neutral Grassland Creation (F5)

The creation of species rich neutral grassland is proposed with the northern part of field F5 to re-instate the grassland surrounding the newly created ponds. This will focus on creating a species-rich sward that will follow the same management as the adjacent retained and enhanced area. Seed will be introduced to ensure the sward meets the UKHab category definition for other neutral grassland. As it surrounds the ponds and may be more subject to disturbance through access to manage the ponds, this area will be targeted to re-instate the moderate condition sward.

Mixed Scrub Creation

New areas of mixed scrub will be created to provide habitat for invertebrates, reptiles, amphibians, small mammals and birds and create a transitional habitat between the hedgerow and grassland on Site. These will be created by planting a range of woody native shrub species within grassland areas in organic, naturalistic shapes with scalloped edges.

New and retained areas of scrub will be managed for wildlife by creating well-developed edges by created a buffer where tall tussocky grassland can grow. Area will be monitored for non-native invasives.

Pond (non-priority) Creation

A series of ponds will be created. These will be created at natural low points within the grassland compartments F5 and F12. These features will be created through lowering the ground levels to sit below the water table to ensure they hold water year-round, but with allowance for naturally fluctuating water levels. They will be designed with sinuous edges that will encourage varied microclimates

across the ponds. They will target moderate condition and will be planted with a range of marginal, emergent and aquatic plants.

Hedgerow Creation

Three new lengths of native species-rich hedgerow with trees will be reinstated along historical hedgerow boundaries that have since been removed. Additional lengths will also be incorporated around the central development footprint.

Hedgerows will be planted to ensue they diverse range of species along their length. In particular, these will target the southern boundary to link the existing retained hedgerows and provide a continuous feature linking the treeline along the western boundary and area of offsite woodland.

Design Principles

Design Principles Informed by Baseline Information

The key principles that have guided the site include landscape character and soil conditions. Each has been carefully considered at the design stage of the habitat creation proposals to ensure their feasibility and likelihood of success.

Landscape Character

The design of habitat creation and management will create habitats that accord and match with the Cannock Chase Character Area and its desired opportunities. Post delivery, the project will ensure that the site remains a good example of a pre-enclosure field system with a mature hedgerow network.

Soils

The majority of the Site's soils are comprised of as slowly permeable, seasonally wet and slightly acidic but has base-rich loamy and clayey soils, which provide a good substrate for the creation and enhancement of species-rich grassland.

The soil analysis data has identified low nutrient levels across the site. Particularly low potassium levels, though soils are loamy and clayey and therefore low levels should not impact grassland enhancement. It is recommended that growth rates are monitored.

Soil pH across the site mostly ranges from mildly acid to neutral. These conditions are suitable for the proposed other neutral grassland swards as pH levels are not low enough to target acid grasslands. One area supports high acidic soils, however as an acidic grassland sward is currently not present this will not be targeted.

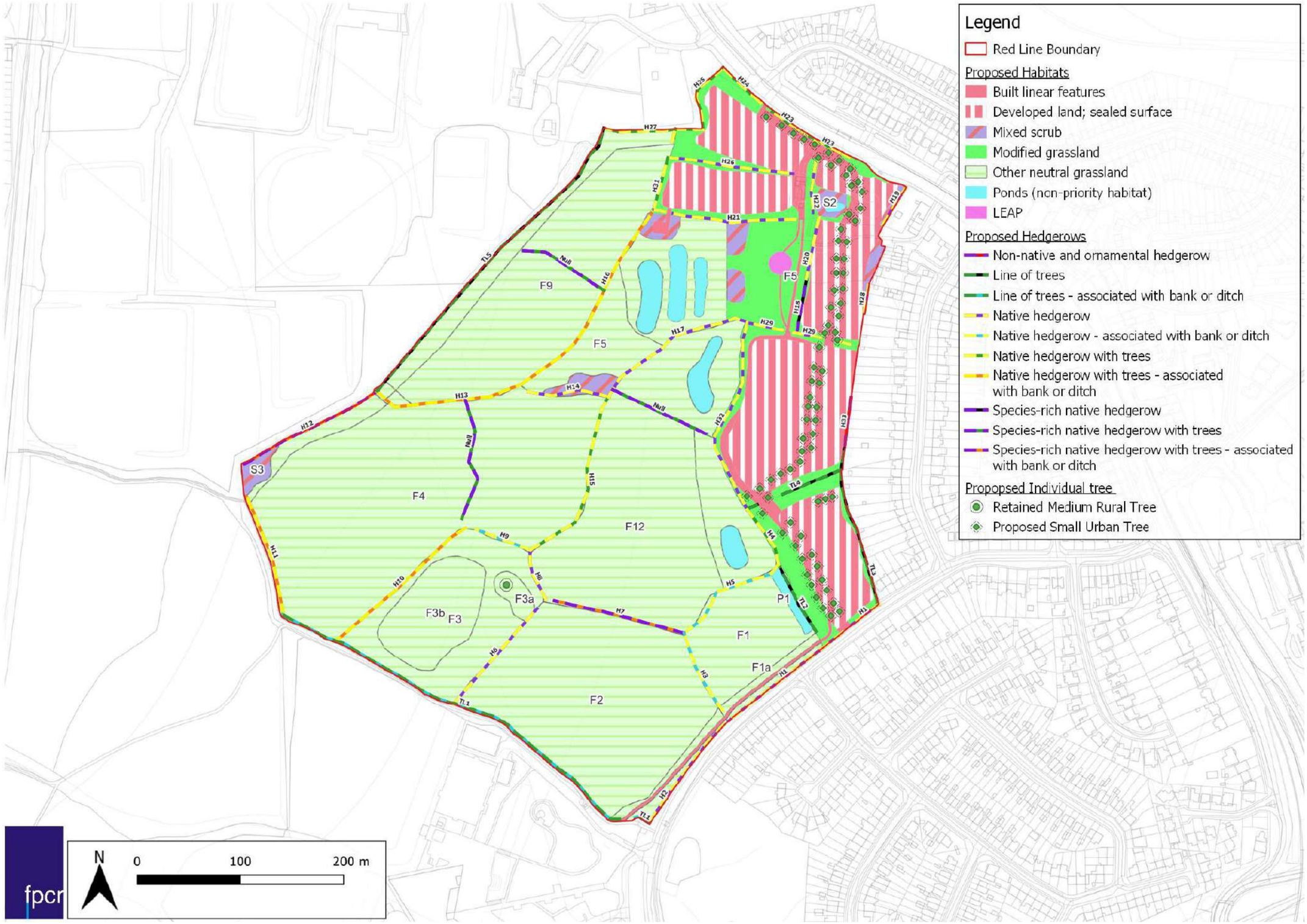
Public Access

The site currently does not support any public access or PRoW. The proposals will include the relocation of the Beacon Way Long Distance Path (LDP) along the edge of the western boundary, as well as a footpath along the south-eastern boundary linking to the central development area. The western footpath will be informal and the south-eastern hard surfaced and signage will be provided to encourage the public to stick to the footpaths. Habitat enhancement and creation measures have also been designed sympathetically in the locations of the footpaths.

Topography

The site gently slopes to the south-west. Localised low points are the focal point for damp grassland creation.

Habitat Creation and Enhancement Map



Habitat & Conservation Targets

This table presents a record of what has been proposed to be delivered based on the biodiversity metric. These habitat condition targets form the basis of the management plan and the core targets that it will set out to achieve. Include the area, hedgerow, and watercourse types to be delivered by the plan throughout the 30-year period and beyond, where relevant.

Baseline Habitat Type	Target Habitat Type	Parcel / Feature Refs	Baseline Condition	Targeted Condition	Years to Targeted Condition	Classification & Condition Assessment Targets	Comments
Other Neutral Grassland	Other Neutral Grassland (Enhancement)	F1, F9	Poor	Good	15	All criterion A – F to be targeted. In order to maintain the classification of other neutral grassland areas will be managed to support a minimum of 10 species per m^2, and ensure that more than 20% cover is broadleaved herbs and sedges. The presence of perennial ryegrass and white clover will be monitored to ensure less than 30% of cover is these species.	Good condition will be achieved when five to six criteria are passed. Criterion A and F must be achieved to assess as good condition.
Other Neutral Grassland	Other Neutral Grassland (Enhancement)	F4 & F5	Fairly Poor	Good	12	All criterion A – F to be targeted. In order to maintain the classification of other neutral grassland areas will be managed to support a minimum of 10 species per m^2, and ensure that more than 20% cover is broadleaved herbs and sedges. The presence of perennial ryegrass and white clover will be monitored to ensure less than 30% of cover is these species.	Good condition will be achieved when five to six criteria are passed. Criterion A and F must be achieved to assess as good condition.
Other Neutral Grassland	Other Neutral Grassland (Enhancement)	F2, F3, F3a, F3b, F4, F12	Moderate	Good	10	All criterion A – F to be targeted. In order to maintain the classification of other neutral grassland areas will be managed to support a minimum of 10 species per m^2, and ensure that more than 20% cover is broadleaved herbs and sedges. The presence of perennial ryegrass and white clover will be monitored to ensure less than 30% of cover is these species.	Good condition will be achieved when five to six criteria are passed. Criterion A and F must be achieved to assess as good condition.
Other Neutral Grassland	Other Neutral Grassland (Creation)	F5	Fairly Poor	Moderate	5	All criterion A – F to be targeted. In order to maintain the classification of other neutral grassland areas will be managed to support a minimum of 10 species per m^2, and ensure that more than 20% cover is broadleaved herbs and sedges. The presence of perennial ryegrass and white clover will be monitored to ensure less than 30% of cover is these species.	Moderate condition will be achieved when three criteria are passed. Criterion A must be achieved to assess as moderate condition.
Other Neutral Grassland	Mixed scrub		N/A	Moderate	5	All criterion A – E to be targeted. Scrub will be rotationally coppiced once established to maintain structural diversity and the edges of scrub blocks will be managed through mowing no more than once per year. Rotational coppicing will be undertaken every 3 years, on a cycle. Monitoring will ensure that invasive species do not established and	Moderate condition will be achieved when three criteria are passed.

						that those indicative of sub-optimal condition do not become prevalent. At least 5 species of native scrub plants will be present within each scrub block with no single species comprising more than 75%.	
Other Neutral Grassland	Ponds (non-priority)		N/A	Moderate	3	All criterion A-I to be targeted.	Moderate condition will be achieved when six criteria are passed.
Native Hedgerow – associated bank or ditch	Native Hedgerow – associated bank or ditch	H3	Moderate	Good	2	All criterion A1-D2 to be targeted	Good condition will be achieved when there are no more than 2 failures in total; and no more than 1 failure in any functional group.
Native Hedgerow	Native Hedgerow	H20, H28	Moderate	Good	2	All criterion A1-D2 to be targeted	Good condition will be achieved when there are no more than 2 failures in total; and no more than 1 failure in any functional group.
Native Hedgerow with Trees	Native Hedgerow with Trees	H15, H23	Moderate	Good	4	All criterion A1-E2 to be targeted	Good condition will be achieved when there are no more than 2 failures in total; and no more than 1 failure in any functional group.
Species-rich Native Hedgerow with Trees	Species-rich Native Hedgerow with Trees – associated with bank or ditch	H12	Moderate	Good	4	All criterion A1-E2 to be targeted	Good condition will be achieved when there are no more than 2 failures in total; and no more than 1 failure in any functional group.
N/A	Species-rich Native Hedgerow with Trees		N/A	Good	12	All criterion A1-D2 to be targeted	Good condition will be achieved when there are no more than 2 failures in total; and no more than 1 failure in any functional group.

Establishment & Management

4. Establishment & Management

Retained & Enhanced Habitats Protection Measures

Measures to be Implemented to Protect and Secure Retained and Enhanced Habitats
All the current hedgerows will be preserved as part of the proposals (except for the loss of small sections to facilitate access where necessary). They will be managed appropriately and where possible enhanced from moderate to good condition. The proposals are for habitat management and enhancement and although these will be located adjacent to a new residential area, the risk of retained habitats being damaged intentionally or accidentally are relatively low. It is therefore not considered necessary nor appropriate to implement protective measures such as additional fencing around habitats. Indeed, additional fencing could be detrimental to the aims of this project by restricting movements of protected / notable species.
Specification of Protective Measures to be Used

Creation, Enhancement and Management Targets and Prescriptions

Grassland (Medium, High, and Very High Distinctiveness)

Enhancement & Management Summary

Provide details of the approach to delivering each of the targeted condition criteria and habitat. Conditions from Biodiversity Metric habitat condition assessment sheets – Sheet 6. Grassland Med High & V. High.

Targeted UKHab Community:		Other Neutral Grassland g3c6 *Lolium-Cynosurus* neutral grassland enhancement			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Enhancement Approach**	**Management Approach**
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description – the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. **Note – this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only**	Yes	F1, F2, F3, F4, F5, F9, F12	The existing areas of other neutral grassland will be chain harrowed and yellow-rattle seed applied to help reduce the competitiveness of grass in the autumn of the first year. Following this, the application of a native species rich seed mix in the autumn of year 2 will introduce a diverse range of native wildflowers and grasses. The seed mix will not include any undesirable species. In these compartments drier soil conditions are anticipated and a RE1 Traditional Hay Meadow (MG5 Grassland) seed mix will be used (or similar approved) to target characteristic grass and wildflower indicator species of the grassland communities which are currently present. Grass species will include crested dog's-tail, yellow oat-grass and meadow fescue. Wildflower species will include yarrow, common sorrel, oxeye daisy, ribwort plantain, agrimony, bird's-foot trefoil, red clover and common knapweed (see Table below for full species list).	Ongoing management will be achieved through rotational cutting. Variability will be introduced through a flexible cutting date of the grassland, which allows for different species to set seed from year to year. The annual hay cut will be undertaken flexibly from July through August (with the exact cutting date determined by weather conditions and conditions of the sward). If Site conditions allow, a late season cut should be taken in late August- September, one year in every four. Any arisings from the hay cut will be removed. This management will help maintain a diverse sward characteristic of good quality neutral grasslands. It will increase the variety of indicator species present within the sward, as well as their abundance with at least two frequent and two occasional to frequent indicator species present and less than 30% cover of perennial rye-grass.
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Yes	F1, F2, F3, F4, F5, F9, F12	Management will be through appropriate cutting once grassland has been established.	Management through a rotational annual hay-cut c will help to establish a varied sward height. Monitoring will track the sward diversity and may influence the frequency where necessary to promote structural diversity in the sward or the requirement to leave a proportion of the sward unmown on rotation from year to year.
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens.	Yes	F1, F2, F3, F4, F5, F9, F12	N/A	Improving the grassland and reducing the intensity of management will attract rabbits and other mammals which will help to create and maintain 1% - 5% bare ground. Where bare ground is not created naturally, intervention will take place by creating small areas of scrapes.
D	Cover of bracken *Pteridium aquilinum* is less than 20% and cover of scrub (including	Yes	F1, F2, F3, F4,	N/A – existing grassland areas do not contain any bracken and have less than 5% cover of bramble	The annual hay cut and grazing management will prevent scrub and bracken from establishing. Regular monitoring will track where scrub or

Targeted UKHab Community:		Other Neutral Grassland g3c6 *Lolium-Cynosurus* neutral grassland enhancement			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Enhancement Approach**	**Management Approach**
	bramble *Rubus fruticosus agg.*) is less than 5%.		F5, F9, F12		bracken encroachment has occurred and will trigger remedial action where necessary.
E	Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Yes	F1, F2, F3, F4, F5, F9, F12	During the enhancement care will be taken to prevent the physical damage from machinery or storage.	Fertiliser input onto the site will cease and will be prohibited throughout the life of this management plan to prevent the soil condition becoming favourable for pernicious species, unless occasional application is required to increase potassium levels. Regular monitoring will track the presence of invasive non-native species or those indicative of sub-optimal condition and will trigger remedial action where necessary to remove or reduce their presence respectively.
F	There are 10 or more vascular plant species per m2 present, including forbs that are characteristic of the habitat type (species indicative of sub-optimal conditions and invasive species cannot contribute towards this count). **Note – this criterion is essential for achieving Good condition for non-acid grassland types only**	Yes	F1, F2, F3, F4, F5, F9, F12	The selected seed mix contains 17 herbaceous species and 7 grass species that will ensure that a minimum of 10 species establish per m^2 and will introduce a range of additional wildflowers and indicator species.	Management through hay cutting will help to maintain a diverse sward. Regular monitoring will track the number of species present and additional seed will be applied where considered necessary.

Other Neutral Grassland Management Detailed Methods

Action	Relevant Parcels	Timing	Prescriptions
Apply yellow rattle seed	F1, F2, F3, F4, F5, F9, F12	Year 1	After an autumn cut, chain harrow the grassland three times in immediate succession and in a different direction each time. After chain harrowing, broadcast yellow rattle seed at a rate of 5kg/ha (overseeding), then roll immediately with a flat roll. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded. In years 3 and 4 take a hay crop at the first suitable opportunity after yellow rattle has set seed.
Apply RE1 Traditional Hay Meadow (MG5 Grassland) Seed Mixture	F1, F2, F3, F4, F5, F9, F12	Year 2	If yellow-rattle seed establishment has proven successful in the autumn of year 2, the site will be cut in Autumn. Following this cut, chain harrow the grassland three times in succession and in a different direction each time. Where yellow-rattle establishment has not proven successful, the 'Apply yellow-rattle seed' action will be repeated and the following prescriptions will be set back. Broadcast seed mix. RE1 Traditional Hay Meadow (MG5 Grassland) seed mix will be used to ensure it contains a mix of wildflower species characteristic of MG6 neutral grassland. Seed will be oversown at a rate of 35kg/ha. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded. After sowing, seed will be bedded in by rolling.
Establishment Management	F1, F2, F3, F4, F5, F9, F12	Year 3	The sward will be kept short during the first year of establishment. This will be achieved through a cut and collect approach. All Arisings will be removed from the site. Mow/top the grassland once per month during the growing season to encourage perennial species propagation and control vigorous growth of weeds/grasses. Mowing/topping before July in the first year should be done above the height of germinated yellow rattle plants to allow this annual species to flower and seed. No fertiliser to be applied.
Short-term Management	F1, F2, F3, F4, F5, F9, F12	Year 3, Year 4, Year 5, year 6	In year 3 to 7 after the successful implementation of the establishment management stage, take a hay crop at the first opportunity that weather conditions allow from July onwards after wildflower seeds have set. No fertiliser to be applied.
Long-term Management	F1, F2, F3, F4, F5, F9, F12	Year 3-30	Continue to manage by the above methods in perpetuity unless a management review indicates a need to manage otherwise to ensure that the condition of the grassland is maintained. Where pernicious and/or invasive weed species establish mowing, targeted cutting prior to setting seed in late summer will be undertaken. Where this management does not prove effective, stands of pernicious and/or invasive weeds will be spot treated using glyphosate spray as appropriate.
Supplementary Seeding	F1, F2, F3, F4, F5, F9, F12	Year 3+ (as required)	Spread supplementary locally sourced native wildflower seeds as necessary in response to poor uptake of establishment by broadcasting seeds, plug plants or green hay of a nearby species rich meadow on similar soils. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded.

Grassland (Medium, High, and Very High Distinctiveness) Species Lists

Species / mix to be confirmed at the detailed design stage.

Common Name	Scientific Name	Abundance / %	Comments
Yarrow	*Achillea millefolium*	1.1	
Common sorrel	*Rumex acetosa*	1.0	
Lady's bedstraw	*Gallim verum*	0.1	
Oxeye daisy	*Leucanthemum vulgare*	1.4	
Ribwort plantain	*Plantago laceolata*	1.5	
Agrimony	*Agrimonia eupatorium*	0.8	
Selfheal	*Prunella vulgaris*	1.0	
Meadowsweet	*Filipendula ulmaria*	0.2	
Salad burnet	*Sanguisorba minor*	2.0	
Bird's-foot trefoil	*Lotus corniculatus*	1.0	
White clover	*Trifolium repens*	2.0	
Red clover	*Trifolium pratense*	2.0	
Yellow rattle	*Rhinanthus major*	0.5	
Burnett saxifrage	*Pimpinell saxifrage*	0.2	
Greater knapweed	*Centaurea scabiosa*	0.3	
Dandelion	*Taraxacum officinale*	0.3	
Common knapweed	*Centaurea scabiosa*	3.0	
Strong creeping red fescue	*Festuca rubra rubra*	30.0	
Crested dog's-tail	*Cynosurus cristatus*	25.0	
Yellow oat-grass	*Trisetum flavescens*	5.0	
Meadow fescue	*Festuca pratensis*	5.0	
Sheeps fescue	*Festuca ovina*	6.5	
Common bent	*Agrostis capillaris*	3.5	
Quaking grass	*Briza media*	5.0	

What Does Good Look Like?

Establishment & Management Summary

Targeted UKHab Community:		Other Neutral Grassland F3a g3c8 H*olcus-Juncus* neutral grassland and F3 g3c6 *Lolium-Cynosurus* neutral grassland enhancement			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Enhancement Approach**	**Management Approach**
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description – the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. **Note – this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only**	Yes	F3a, F3b	<u>F3a</u> Within area F3a enhancement will target a wet pasture habitat, similar to a species-rich example of a g3c8 Holcus-Juncus Neutral Grassland Sward. The existing sward will be enhanced by topping the existing denser areas of rush before introducing additional seed into the sward. Enhancement will be undertaken following establishment recommendations, with the grassland chain-harrowed, yellow-rattle seed applied and then the Emorsgate Meadow Mixture for Wetlands (EM8) (or similar) will be applied. Small areas of rushes will be avoid during the chain harrowing process to maintain some cover of rushes throughout the proposals. <u>F3b</u> Field F3b supported the highest abundance of lowland meadow indicator species, most notable being frequent patches of great burnet. This area, particularly the southern extent, also supported areas of damp grassland with small areas locally dominated by rushes. Management will follow the same prescriptions as detailed above.	Ongoing management will be achieved through rotational cutting. Variability will be introduced through a flexible cutting date of the grassland, which allows for different species to set seed from year to year. The annual hay cut will be undertaken flexibly from July through August (with the exact cutting date determined by weather conditions and conditions of the sward). If Site conditions allow, a late season cut should be taken in late August- September, one year in every four. Any arisings from the hay cut will be removed. Cutting will avoid areas of established rushes to allow the retention of these habitat features unless rushes begin to dominate. This management will help maintain a diverse sward characteristic of good quality neutral grasslands. It will increase the variability of indicator species present within the sward, as well as their abundance with at least two frequent and two occasional to frequent indicator species present.
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Yes	F3a, F3b	Management will be through appropriate cutting once grassland has been established.	Management through a rotational annual hay-cut will help to establish a varied sward height. Monitoring will track the sward diversity and may influence the frequency where necessary to promote structural diversity in the sward or the requirement to leave a proportion of the sward unmown on rotation from year to year.
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens.	Yes	F3a, F3b	N/A	Improving the grassland and reducing the intensity of management will attract rabbits and other mammals which will help to create and maintain 1% - 5% bare ground. Where bare ground is not created naturally, intervention will take place by creating small areas of scrapes.
D	Cover of bracken *Pteridium aquilinum* is less than 20% and cover of scrub (including	Yes	F3a, F3b	N/A – existing grassland areas do not contain any bracken and have less than 5% cover of bramble	The annual hay cut management will prevent scrub and bracken from establishing. Regular monitoring will track where scrub or bracken

Targeted UKHab Community:		Other Neutral Grassland F3a g3c8 H*olcus-Juncus* neutral grassland and F3 g3c6 *Lolium-Cynosurus* neutral grassland enhancement			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Enhancement Approach**	**Management Approach**
	bramble *Rubus fruticosus agg.*) is less than 5%.				encroachment has occurred and will trigger remedial action where necessary.
E	Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Yes	F3a, F3b	During the enhancement care will be taken to prevent the physical damage from machinery or storage.	Fertiliser input onto the site will cease and will be prohibited throughout the life of this management plan to prevent the soil condition becoming favourable for pernicious species, unless occasional application is required to increase potassium levels. Regular monitoring will track the presence of invasive non-native species or those indicative of sub-optimal condition and will trigger remedial action where necessary to remove or reduce their presence respectively.
F	There are 10 or more vascular plant species per m2 present, including forbs that are characteristic of the habitat type (species indicative of sub-optimal conditions and invasive species cannot contribute towards this count). **Note – this criterion is essential for achieving Good condition for non-acid grassland types only**	Yes	F3a, F3b	The selected seed mix contains 22 herbaceous species and 8 grass species that will ensure that a minimum of 10 species establish per m^2 and will introduce a range of additional wildflowers and indicator species.	Management through hay cutting will help to maintain a diverse sward. Regular monitoring will track the number of species present and additional seed will be applied where considered necessary.

Other Neutral Grassland (F3a, F3b) Enhancement & Management Detailed Methods

Action	Relevant Parcels	Timing	Prescriptions
Apply yellow rattle seed	F3a, F3b	Year 1	After an autumn cut, chain harrow the grassland three times in immediate succession and in a different direction each time. After chain harrowing, broadcast yellow rattle seed at a rate of 5kg/ha (overseeding), then roll immediately with a flat roll. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded. In years 3 and 4 take a hay crop at the first suitable opportunity after yellow rattle has set seed.
Apply Emorsgate Meadow Mixture for Wetlands (EM8) seed mix	F3a, F3b	Year 2	If yellow-rattle seed establishment has proven successful in the autumn of year 2, the site will be cut in Autumn. Following this cut, chain harrow the grassland three times in succession and in a different direction each time. Where yellow-rattle establishment has not proven successful, the 'Apply yellow-rattle seed' action will be repeated and the following prescriptions will be set back. Broadcast seed mix. The Emorsgate Meadow Mixture for Wetlands (EM8) seed mix will be used as it contains a mix of wildflower species characteristic of neutral soils suited to the drainage condition of these parcels. Seed will be oversown at a rate of 35kg/ha. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded. After sowing, seed will be bedded in by rolling.
Establishment Management	F3a, F3b	Year 3	The sward will be kept short during the first year of establishment. This will be achieved through a cut and collect approach. All Arisings will be removed from the site. Mow/top the grassland once per month during the growing season to encourage perennial species propagation and control vigorous growth of weeds/grasses. Mowing/topping before July in the first year should be done above the height of germinated yellow rattle plants to allow this annual species to flower and seed. No fertiliser to be applied unless required to increase potassium levels within the soil
Short-term Management	F3a, F3b	Year 3, Year 4, Year 5, year 6	In year 3 to 7 after the successful implementation of the establishment management stage, take a hay crop at the first opportunity that weather conditions allow from July onwards after wildflower seeds have set. No fertiliser to be applied.
Long-term Management	F3a, F3b	Year 3-30	Continue to manage by the above methods in perpetuity unless a management review indicates a need to manage otherwise to ensure that the condition of the grassland is maintained. Where pernicious and/or invasive weed species establish mowing, targeted cutting prior to setting seed in late summer will be undertaken. Where this management does not prove effective, stands of pernicious and/or invasive weeds will be spot treated using glyphosate spray as appropriate.
Supplementary Seeding	F3a, F3b	Year 3+ (as required)	Spread supplementary locally sourced native wildflower seeds as necessary in response to poor uptake of establishment by broadcasting seeds, plug plants or green hay of a nearby species rich meadow on similar soils. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded.

Grassland (Medium, High, and Very High Distinctiveness) Species Lists

Species / mix to be confirmed at the detailed design stage.

Common Name	Scientific Name	Abundance / %	Comments
Yarrow	*Achillea millefolim*	2.0	
Agrimony	*Agrimonia eupatorium*	0.6	
Common knapweed	*Centaurea scabiosa*	3.6	
Meadowsweet	*Fillipendula ularia*	1.0	
Lady's bedstraw	*Galium verum*	2.0	
Water avens	*Geum rivale*	0.2	
Meadow vetchling	*Lathyrus pratensis*	0.5	
Rough hawkbit	*Leontodon hispidus*	0.1	
Oxeye daisy	*Leucanthemum vulgare*	1.2	
Bird's-foot trefoil	*Lotus corniculatus*	0.1	
Greater bird's-foot trefoil	*Lotus pedunculatus*	0.4	
Ribwort plantain	*Plantago laceolata*	3.2	
Cowslip	*Primula vulgaris*	0.2	
Selfheal	*Prunella vulgaris*	0.1	
Meadow buttercup	*Ranunculus acris*	0.4	
Yellow rattle	*Rhinanthus major*	1.4	
Common sorrel	*Rumex acetosa*	1.2	
Great burnet	*Sanguisorba officinalis*	1.0	
Ragged robin	*Silene flos-cuculi*	0.3	
Devil's-bit scabious	*Succisa pratensis*	0.1	
Tufted vetch	*Vicia cracca*	0.4	
Common bent	*Agrostis capillaris*	4.0	
Sweet vernal grass	*Anthoxanthum odoratum*	4.0	
Grey sedge	*Carex divulsa subsp. Divulsa*	2.0	
Crested dog's-tail	*Cynosurus cristatus*	38.40	
Tufted hair-grass	*Deschampisa cespitosa*	1.6	
Red fescue	*Festuca rubra*	20.00	
Meadow barley	*Hordeum secalinum*	4.00	
Rough meadow-grass	*Poa trivilis*	8.00	
Tall fescue	*Schedonorus arundinaceus*	2.4	

What Does Good Look Like?

Creation & Management Summary

Targeted UKHab Community:		Other Neutral Grassland (g3c6 *Lolium-Cynosurus* neutral grassland) creation			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Creation Approach**	**Management Approach**
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description – the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. **Note – this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only**	Yes	F5	Grassland around the ponds will be re-established following pond creation. The field will be prepared through chain harrowing of any existing grassland before yellow-rattle seed applied to help reduce the competitiveness of grass in the autumn of the first year. Following this, the application of a native species rich seed mix in the autumn of year 2 will introduce a diverse range of native wildflowers and grasses. The seed mix will not include any undesirable species. The grassland will surround the ponds with historical data suggesting that this field compartment previously supported a damp grassland community with areas dominated by rushes. It is proposed that a wet tolerant grassland mix will be sown around the edges of the proposed ponds. However overall in these compartments drier soil conditions are anticipated and a RE1 Traditional Hay Meadow (MG5 Grassland) seed mix will be used (or similar approved) to target characteristic grass and wildflower indicator species of the grassland communities which are currently present. Grass species will include crested dog's-tail, yellow oat-grass and meadow fescue. Wildflower species will include yarrow, common sorrel, oxeye daisy, ribwort plantain, agrimony, bird's-foot trefoil, red clover and common knapweed (see Table below for full species list).	Ongoing management will be achieved through rotational cutting. Variability will be introduced through a flexible cutting date of the grassland, which allows for different species to set seed from year to year. The annual hay cut will be undertaken flexibly from July through August (with the exact cutting date determined by weather conditions and conditions of the sward). If Site conditions allow, a late season cut should be taken in late August- September, one year in every four. Any arisings from the hay cut will be removed. This management will help maintain a diverse sward characteristic of good quality neutral grasslands. It will increase the variability of indicator species present within the sward, as well as their abundance with at least two frequent and two occasional to frequent indicator species present.
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Yes	F5	The selected seed mix will introduce a range of grass and herbaceous species that will promote the establishment of a diverse sward.	Management through a rotational annual hay-cut c will help to establish a varied sward height. Monitoring will track the sward diversity and may influence the frequency where necessary to promote structural diversity in the sward or the requirement to leave a proportion of the sward unmown on rotation from year to year.
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens.	Yes	F5	N/A	Improving the grassland and reducing the intensity of management will attract rabbits and other mammals which will help to create and maintain 1% - 5% bare ground. Where bare ground is not created naturally, intervention will take place by creating small areas of scrapes.

Targeted UKHab Community:		Other Neutral Grassland (g3c6 *Lolium-Cynosurus* neutral grassland) creation			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Creation Approach**	**Management Approach**
D	Cover of bracken *Pteridium aquilinum* is less than 20% and cover of scrub (including bramble *Rubus fruticosus agg.*) is less than 5%.	Yes	F5	N/A	The annual hay cut and grazing management will prevent scrub and bracken from establishing. Regular monitoring will track where scrub or bracken encroachment has occurred and will trigger remedial action where necessary.
E	Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Yes	F5	During creation care will be taken to prevent the physical damage from machinery or storage.	Fertiliser input onto the site will cease and will be prohibited throughout the life of this management plan to prevent the soil condition becoming favourable for pernicious species. Regular monitoring will track the presence of invasive non-native species or those indicative of sub-optimal condition and will trigger remedial action where necessary to remove or reduce their presence respectively.
F	There are 10 or more vascular plant species per m2 present, including forbs that are characteristic of the habitat type (species indicative of sub-optimal conditions and invasive species cannot contribute towards this count). **Note – this criterion is essential for achieving Good condition for non-acid grassland types only**	Yes	F5	The selected seed mix contains 22 herbaceous species and 8 grass species that will ensure that a minimum of 10 species establish per m^2 and will introduce a range of additional wildflowers and indicator species.	Management through hay cutting will help to maintain a diverse sward. Regular monitoring will track the number of species present and additional seed will be applied where considered necessary.

Other Neutral Grassland (F5) Creation & Management Detailed Methods

Action	Relevant Parcels	Timing	Prescriptions
Apply yellow rattle seed	F5	Year 1	After an autumn cut, chain harrow the grassland three times in immediate succession and in a different direction each time. After chain harrowing, broadcast yellow rattle seed at a rate of 5kg/ha (overseeding), then roll immediately with a flat roll. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded. In years 3 and 4 take a hay crop at the first suitable opportunity after yellow rattle has set seed.
Apply Emorsgate Meadow Mixture for Wetlands (EM8) seed mix	F5	Year 2	If yellow-rattle seed establishment has proven successful in the autumn of year 2, the site will be cut in Autumn. Following this cut, chain harrow the grassland three times in succession and in a different direction each time. Where yellow-rattle establishment has not proven successful, the 'Apply yellow-rattle seed' action will be repeated and the following prescriptions will be set back. Broadcast seed mix. The Emorsgate Meadow Mixture for Wetlands (EM8) seed mix will be used as it contains a mix of wildflower species characteristic of neutral soils suited to the drainage condition of these parcels. Seed will be oversown at a rate of 35kg/ha. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded. After sowing, seed will be bedded in by rolling.
Establishment Management	F5	Year 3	The sward will be kept short during the first year of establishment. This will be achieved through a cut and collect approach. All Arisings will be removed from the site. Mow/top the grassland once per month during the growing season to encourage perennial species propagation and control vigorous growth of weeds/grasses. Mowing/topping before July in the first year should be done above the height of germinated yellow rattle plants to allow this annual species to flower and seed. No fertiliser to be applied.
Short-term Management	F5	Year 3, Year 4, Year 5, year 6	In year 3 to 7 after the successful implementation of the establishment management stage, take a hay crop at the first opportunity that weather conditions allow from July onwards after wildflower seeds have set. No fertiliser to be applied.
Long-term Management	F5	Year 3-30	Continue to manage by the above methods in perpetuity unless a management review indicates a need to manage otherwise to ensure that the condition of the grassland is maintained. Where pernicious and/or invasive weed species establish mowing, targeted cutting prior to setting seed in late summer will be undertaken. Where this management does not prove effective, stands of pernicious and/or invasive weeds will be spot treated using glyphosate spray as appropriate.

Grassland (Medium, High, and Very High Distinctiveness) Species Lists

Species / mix to be confirmed at the detailed design stage.

Common Name	Scientific Name	Abundance / %	Comments
Yarrow	*Achillea millefolim*	2.0	
Agrimony	*Agrimonia eupatorium*	0.6	
Common knapweed	*Centaurea scabiosa*	3.6	
Meadowsweet	*Fillipendula ularia*	1.0	
Lady's bedstraw	*Galium verum*	2.0	
Water avens	*Geum rivale*	0.2	
Meadow vetchling	*Lathyrus pratensis*	0.5	
Rough hawkbit	*Leontodon hispidus*	0.1	
Oxeye daisy	*Leucanthemum vulgare*	1.2	
Bird's-foot trefoil	*Lotus corniculatus*	0.1	
Greater bird's-foot trefoil	*Lotus pedunculatus*	0.4	
Ribwort plantain	*Plantago laceolata*	3.2	
Cowslip	*Primula vulgaris*	0.2	
Selfheal	*Prunella vulgaris*	0.1	
Meadow buttercup	*Ranunculus acris*	0.4	
Yellow rattle	*Rhinanthus major*	1.4	
Common sorrel	*Rumex acetosa*	1.2	
Great burnet	*Sanguisorba officinalis*	1.0	
Ragged robin	*Silene flos-cuculi*	0.3	
Devil's-bit scabious	*Succisa pratensis*	0.1	
Tufted vetch	*Vicia cracca*	0.4	
Common bent	*Agrostis capillaris*	4.0	
Sweet vernal grass	*Anthoxanthum odoratum*	4.0	
Grey sedge	*Carex divulsa subsp. Divulsa*	2.0	
Crested dog's-tail	*Cynosurus cristatus*	38.40	
Tufted hair-grass	*Deschampisa cespitosa*	1.6	
Red fescue	*Festuca rubra*	20.00	
Meadow barley	*Hordeum secalinum*	4.00	
Rough meadow-grass	*Poa trivilis*	8.00	
Tall fescue	*Schedonorus arundinaceus*	2.4	

What Does Good Look Like?

Scrub

Creation & Management Summary

Target UKHab Community:			Mixed Scrub – h3h		
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Creation Approach**	**Management Approach**
1	Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).	Yes	F5	Planting will be include a minimum of five native woody species in each new scrub block, with no one species comprising more than 50% of the planted specimens. This will allow a diverse area of mixed scrub to establish.	Scrub edges will be managed through a combination of rotational coppicing undertaken every three years, with no more than 1/5th of the total scrub area of the site cleared at any one time and pruning depending on the species. Hawthorn and blackthorn will be managed through regular pruning using a tractor mounted hedge trimmer, to prevent them becoming too tall and dominating the canopies of scrub blocks. These species will also be selectively thinned where they are dominant and supplementary planting of locally appropriate species undertaken. Where appropriate, scrub will be coppiced through selective thinning of blocks to ensure that the coppicing does not lead to one species dominating more than 75% of the canopy of the remaining scrub block. These two different management approaches will help to create a structurally diverse habitat.
2	There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.	Yes	F5	N/A	Rotational coppicing and the pruning of scrub will ensure that diverse age ranges are present across the site. the margins of scrub blocks will be rotationally coppiced as well to ensure that in addition to the site wide resource of scrub supporting a diverse age range, this will also be the case within each scrub block present across the site.
3	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981 (as amended) and species indicative of sub-optimal condition make up less than 5% of ground cover.	Yes	F5	No fertiliser will be used during planting of the scrub to prevent eutrophication of the soil.	Regular monitoring will track the presence of invasive non-native species or those indicative of sub-optimal condition and will trigger remedial action where necessary to remove or reduce their presence respectively.
4	The scrub has a well-developed edge with scattered scrub and tall grassland and / or herbs present between the scrub and adjacent habitat(s).	Yes	F5	Scrub will not be seeded, and it will be managed to allow a natural ecotone to establish. To aid in the establishment of diverse edges, planting will ensure hawthorn and blackthorn (which do not respond well to coppicing) are no planted along the edges of scrub blocks. Rather, these species will be planted more centrally within scrub blocks	Scrub edges will be managed in accordance with adjacent grassland habitats with an annual hay cut. Rotational coppicing of the margins scrub blocks will aim to create scalloped edges and bays along the boundaries between scrub and grasslands to maximise the ecotone habitats present.

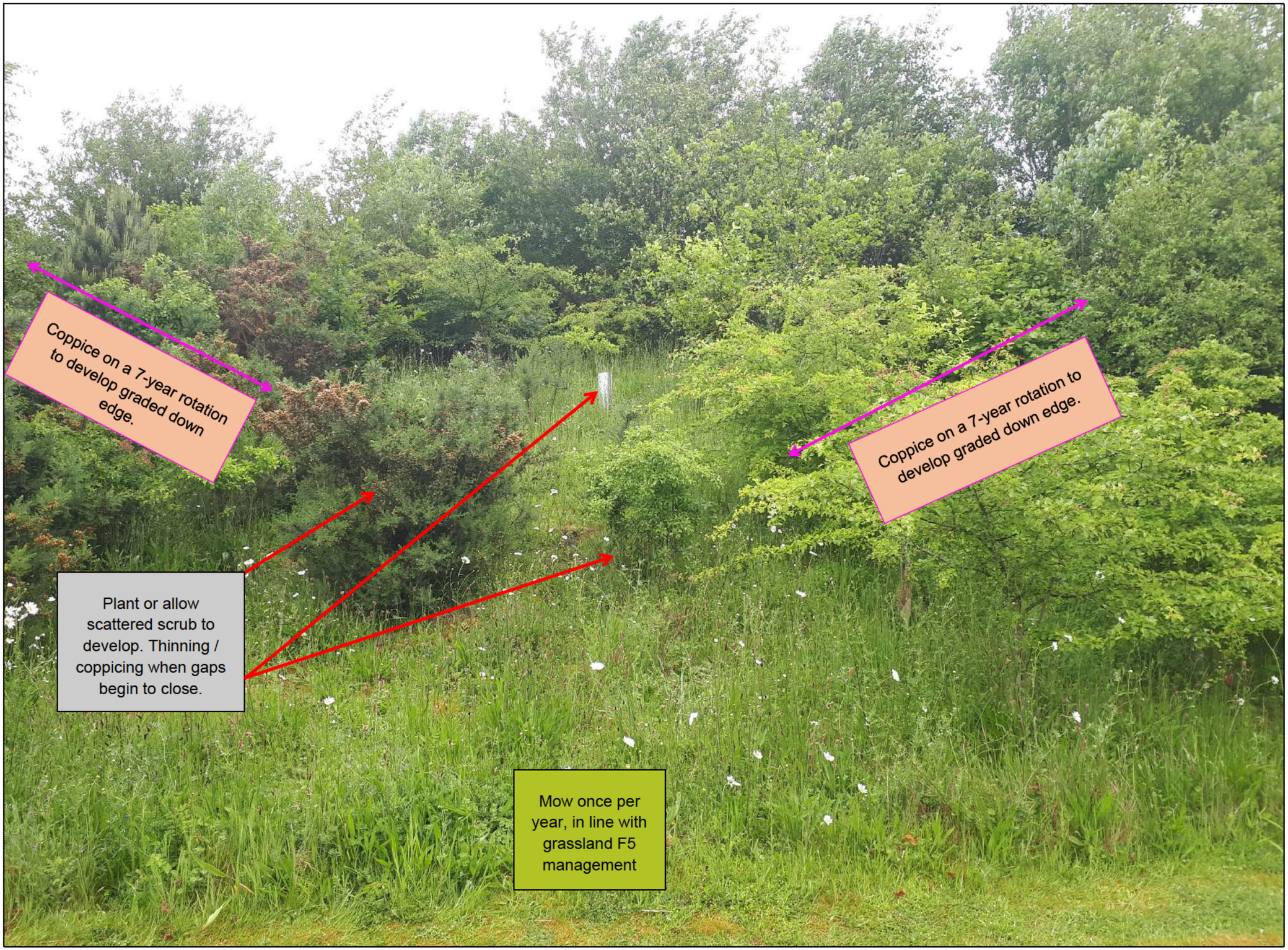
Target UKHab Community:			Mixed Scrub – h3h		
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Creation Approach**	**Management Approach**
5	There are clearings, glades or rides present within the scrub, providing sheltered edges.	No	F5	N/A – it is acknowledged that the areas will be too small to support clearing and glades although a scalloped edge to provide sheltered edges will be targeted.	N/A

Scrub Management Detailed Methods

Action	Relevant Parcels	Timing	Prescriptions
Ground Preparation	F5	Year 1	Apply herbicide to control weed growth/docks prior to planting (if required). An appropriate herbicide will be selected by an appropriately qualified contractor. Any chemicals will be used in accordance with the product label.
Introduce native scrub whip planting	F5	Year 1	Planting will be undertaken extensively within newly proposed scrub blocks within field F5. The soil will be harrowed to create an even bed. Any evidence of existing soil compaction will be remediated before planting to ensure the soil is able to support establishment and growth. Native scrub species planted between November and March in a naturalistic pattern including gaps for natural regeneration (covering 70-80% of total area) and protected from rabbits with spiral guards as conditions on site require. Scrub planting will aim at approximately 1,000 whips per ha. Group planting will be employed with 1-3 species of similar growth rates planted together. Hawthorn and blackthorn will be planted in small single-species clumps through the scrub blocks, ensuring that blocks of each species are sufficiently spaced apart to prevent either dominating the canopy. Honeysuckle planting will be undertaken intermittently between scrub plants within rows. Scrub planting will as far as possible be designed to create significant areas of edge habitats and structural diversity. The planting pit dug will be a shallow square, larger than the root ball of the whip. Backfilling of soil will utilise existing excavated soils only with no compost or fertiliser application. It will be important to ensure the tree is not planted lower than the surrounding ground level. The aim of planting will be to ensure that the level that the tree base meets the soil level will be slightly above ground level, aiming for 25mm above. Tree guards will be installed around establishing whips to prevent them becoming browsed.
Establishment – Weed suppression if required		Following planting in year 1 to year 5	Spray a 1m diameter circle around each tree using an appropriate herbicide, glyphosate is typically used. Typically, one application is made in spring and, depending on the vigour of the weeds, another in mid-late summer.
Spot treating pernicious weeds		Year 1-5	Spot treatment of species indicative of sub-optimal condition will be undertaken on existing scrub blocks in year 1 to reduce the competitiveness of pernicious species. This will be undertaken again in years 2-5 as required.
Long-term management		Year 5+	A programme of selective thinning will begin in year 5, with rotational coppicing and pruning undertaken every 3 years with 1/5th of the total scrub resource in each block coppiced on each cycle. This will be undertaken in select areas through scrub blocks to enhance ground flora and continue the presence of glades at an approximate coverage of 70-80 scrub.. Hawthorn and blackthorn will be pruned as required as these species do not respond well to coppicing, while the remaining species to be planted will be managed through coppicing. During coppicing and pruning, Retain at least 25% of brash and deadwood in-situ.
Scrub edge management	F5	Years 1-30	The margins of the scrub and the herbaceous vegetation within the scalloped edges and glades, will be subject to an annual cut, in line with the yearly management of the adjacent grassland NG6.

Trimming	F5	Years 3, 6, 9, 12, 15, 18, 21, 24, 27	Dense stands of hawthorn and blackthorn will be pruned as required on a three-year cycle to maintain edge with a graded margin down to field layer (tapering edge from canopy height to 20cm). Trimming to take place November to early March using a tractor mounted hedge trimmer.
Coppicing	F5	Year 7, 14, 21, 28	If required, A programme of selective thinning and coppicing will begin in year 7, to maintain the scalloped edges created in year one and where appropriate open up new areas. In total, no more than 1/5th of the total scrub resource in total should be thinned each cycle. Stools subject to coppice management will be cut just above ground level with clean, slightly sloping cuts to encourage water to drain off the cut surfaces. Coppicing should be undertaken in the period November-early March. Brash arisings from coppicing will be used to surround cut stools to protect them from deer browse (1-2m wide rings), with any surplus chipped and spread thinly through the woodland.

Example Scalloped edge scrub habitat



Scrub Species Lists

An example species list for the habitat to be created. Species to be confirmed at the detailed design stage.

Common Name	Scientific Name	Abundance / %	Comments
Hawthorn	*Crataegus monogyna*	20%	Native Whip
Blackthorn	*Prunus spinosa*	15%	Native Whip
Elder	*Sambucus nigra*	15%	Native Whip
Hazel	*Corylus avellana*	25%	Native Whip
Guelder rose	*Viburnum opulus*	10%	Native Whip
Wild Privet	*Ligustrum vulgare*	10%	Native Whip
Goat willow	*Salix caprea*	5%	Native Whip

Other Supporting Information

Supporting Information
24-1063-03-04scrub management (Page 1) (rspb.org.uk)

What Does Success Look Like?

Pond (non-priority)

Creation, Enhancement & Management Summary

Target Pond Type			Ponds (non-priority)			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Creation Approach**	**Enhancement Approach**	**Management Approach**
A	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if pond is grazed by livestock.	Yes	F5, F12, P1, P2	Ponds will be allowed to fill naturally with rainwater. Allowing ponds to fill naturally reduces the risk of eutrophication or pollution incidents as a result of artificial filling.	N/A	Fertiliser application will not be used across the adjacent grassland habitat bank which will prevent run-off from entering newly created ponds leading to eutrophication.
B	There is semi-natural habitat (i.e. moderate distinctiveness or above) for at least 10 m from the pond edge.	Yes	F5, F12, P1, P2	All ponds have been designed to sit within F5 and F12 which are proposed as other neutral grasslands, managed through hay cutting and, creating a semi-natural surrounding for the ponds.	N/A	The management of surrounding grassland habitats as described above will maintain the presence of this 10m semi-natural habitat buffer around the proposed pools
C	Less than 10% of the pond is covered with duckweed or filamentous algae.	Yes	F5, F12, P1, P2	As ponds will be allowed to fill naturally and fertiliser applications will be prohibited across the site, this will reduce the risk of eutrophication.	N/A	Fertiliser application will be prohibited across the site which will prevent run-off from entering newly created ponds leading to eutrophication that can lead to algal blooms or the establishment of duckweed.
D	The pond is not artificially connected to other waterbodies, either via streams, ditches or artificial pipework.	No	F5, F12, P1, P2	Not targeted. Ponds will act as attenuation basins with swales leading to existing drainage ditches.	N/A	N/A
E	Pond water levels should be able to fluctuate naturally throughout the year. No obvious dams, pumps or pipework.	Yes	F5, F12, P1, P2	The ponds will be designed to be allowed to drain or fill naturally. The ponds will not be lined unless necessary to hold water and no dams, pumps or pipework will feature in their design.		N/A
F	There is an absence of non-native plant and animal species.	Yes	F5, F12, P1, P2	All marginal and water plants will be native. When creating the pond, biosecurity to ensure non-native plant or animal species is inadvertently spread to new pond	When carrying work in or on the water's edge – biosecurity to ensure non-native plant or animal species is inadvertently spread to the pond	Regular monitoring will track the presence of invasive non-native species or trigger remedial action where necessary to remove their presence.
G	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a	Yes	F5, F12, P1, P2	The ponds will not be stocked with fish.	Ponds P1 and P2 do not support fish and will not be stocked.	N/A

Target Pond Type			Ponds (non-priority)			
Condition Assessment Criteria		**Targeted**	**Relevant Parcels**	**Creation Approach**	**Enhancement Approach**	**Management Approach**
	native fish assemblage at low densities.					
H	In non-woodland ponds, plants, be they emergent, submerged or floating (excluding duckweeds)[3], should cover at least 50% of the pond area that is less than 3 m deep. (only applicable to non-woodland ponds)	Yes	F5, F12, P1, P2	The pond margins will be seeded along with recommendations for other neutral grassland. This will include the application of a native species-rich pond edge mix such as the Habitat Aid Pond Edge Seed Mix (or similar approved) which will introduce a diverse range of native wildflowers and grasses. This will be supplemented with a range of marginal, emergent and aquatic plants that will thrive in inundated soil conditions and open water. This seed mix will not include non-native plant species.	N/A – Pond P2 is largely dry and P1 already passes this condition.	Ponds will require minimal management once established.
9	The surface of non-woodland ponds is no more than 50% shaded by woody bankside species. (only applicable to non-woodland ponds)	Yes	F5, F12, P1, P2	Tree and scrub planting will not be undertaken along the banks of any of the newly created pools.	N/A – Pond P2 is surrounded by dense scrub and pond P1 is located next to a line of trees which are to be retained.	All ponds will be created within open grassland habitats. Annual hay cut management of these grassland and of the pools will prevent scrub or trees from establishing at the banks of the pools to prevent shading.

Pond Creation & Management Detailed Methods

Action	Relevant Parcels	Timing	Prescriptions
Pond Creation	F5, F12	Year 1 (year minus 1 for ponds within NG7a)	Ponds will be dug in Autumn using a 360 digger with all spoil collected. Ponds will be dug to a maximum depth of 1500mm and will be designed to have a shallow gradient with a varied topography to introduce small scale variations in water depth across these features. These ponds will be shaped to provide shallow bank profiles, which will grade into extensive drawdown zones of seasonally wet mud that are suitable for a variety of invertebrates and plants. The drawdown zone of the ponds, will comprise the edges that will likely support shallow water (10mm-300mm deep) or dry out over the summer months but will support standing water during winter or following periods of inundation. These edge habitats support rich biodiversity and so to achieve this, ponds will be dug with gradients varying from 15º - 25º from horizontal and will be enhanced by the excavation of small embankments, particularly within this draw down zone where feasible. The ponds will not be lined.
Apply Habitat Aid Pond Edge seed mix	F5, F12	Year 1	In the autumn, broadcast seed mix. The Habitat Aid Pond Edge seed mix (or similar) will be used as it contains a mix of wildflower and grass species characteristic of pond margins. Seed will be oversown at a rate of 35kg/ha. Sowing must be undertaken in still wind conditions when the soil is saturated but not flooded. After sowing, seed will be bedded in by rolling where possible.
Introduce plug planting	F5, F12	Year 2	In addition to seed adding a seed mix, a range of plug plants tolerable of inundated soil conditions will be planting into the pond margins immediately following their creation. Pot grown plants or plugs will be planted out in April or May when frosts have past. Plants will be sourced from a reputable supplier or can be grown in advance from seeds or cuttings. Aquatic plants can be introduced directly into the pond following supplier instructions. Fertiliser or topsoil will not be used during planting.
Water level monitoring	F5, F12	Year 2, Year 3	The pond water levels will be monitoring in the spring, summer, autumn and winter of year 2 and year 3 to assess whether the desired water levels are being achieved. This will aim to achieve a depth of 50mm-1500mm across the ponds. The key target will be to ensure the correct design of drawdown zones at the edges of the pond, where standing water will be present at a depth of 10mm-300mm during the winter months of following periods of inundation, but where these areas will likely dry during warmer, dryer periods. Where the desired water levels are not observed, remedial measures will be taken including additional excavations. Additional excavations should be undertaken in the autumn, avoiding the great crested newt breeding season. Monitoring should not be undertaken following prolonged dry spells or periods of excessive inundation.
Ongoing Monitoring	F5, F12	Year 3+	Following establishment, ponds will require minimal management. Monitoring will track the establishment of vegetation and will trigger remedial measures where appropriate.

Pond Species Lists

Species to be confirmed at the detailed design stage.

Common Name	Scientific Name	Abundance / %	Comments
Yarrow	*Achillea millefolium*	1	
Water-plantain	*Alisma plantago-aquatica*	1	
Wild angelica	*Angelica sylvestris*	1	
Common knapweed	*Centaurea nigra*	1	
Teasel	*Dipsacus fullonum*	1	
Common spike-rush	*Eleocharis palustris*	1	
Hemp-agrimony	*Eupatorium cannabinum*	1	
Meadowsweet	*Filipendula ulmaria*	2	
Hedge bedstraw	*Galium mollugo*	2	
Lady's bedstraw	*Galium verum*	2	
Water avens	*Geum rivale*	1	
Yellow iris	*Iris pseudacorus*	2	
Ox-eye daisy	*Leucanthemum vulgare*	1	
Ragged robin	*Lychnis flos-cuculi*	1	
Gypsywort	*Lycopus europaeus*	1	
Purple loosestrife	*Lythrum salicaria*	1	
Ribwort plantain	*Plantago lanceolata*	1	
Cowslip	*Primula veris*	1	
Selfheal	*Prunella modularis*	1	
Meadow buttercup	*Ranunculus acris*	3	
Yellow rattle	*Rhinanthus minor*	1	
Common sorrel	*Rumex acetosa*	1	
Red campion	*Silene dioica*	1	
Betony	*Stachys officinalis*	1	
Common bent	*Agrostis capillaris*	10	
Crested dog's-tail	*Cynosurus cristatus*	25	
Slender-creeping red fescue	*Festuca rubra*	25	
Meadow fescue	*Schedonorus pratensis*	10	
Marsh marigold	*Caltha palustris*	70 plants	
Purple loosestrife	*Lythrum salicaria*	70 plants	
Water-mint	*Metha aquatica*	70 plants	
False-fox sedge	*Carex obtrubae*	70 plants	
Common water-crowfoot	*Ranunculus aquatalis*	70 plants	
Spiked water-milfoil	*Myriophyllum spicatum*	70 plants	
Water violet	*Hottonia palustris*	70 plants	
Frogbit	*Hydrocharis morsus-ranae*	70 plants	

What Does Success Look Like?

Hedgerow

Establishment & Management Summary

Provide details of the approach to delivering each of the targeted condition criteria and hedgerow type. Conditions from Biodiversity Metric habitat condition assessment sheets – Sheet 8. Hedgerow

Target Hedgerow Type:			Creation: Native Species-rich Hedgerows; Enhancement: Native Hedgerow – associated bank or ditch, Native Hedgerow, Native Hedgerow with trees, species-rich hedgerow with trees.			
Condition Assessment Criteria		**Targeted**	**Relevant Features**	**Establishment Approach**	**Enhancement Approach**	**Management Approach**
A1	Height >1.5m average along length.	Yes	H3, H12, H15, H20, H23, H28, new hedgerows	The hedgerows will be formed using double-staggered rows of no less than five plants per linear metre, with 400mm between rows to provide a dense and well-structured hedgerow of value to wildlife.	Hedgerows will be managed to encourage tall, wide and bushy features with only one side of hedgerows cut each year.	Hedgerows will be manged through rotational cutting every two years, with no more than 1/3rd of the total hedgerow resource pruned at any one time and dependant upon species.
A2	Width >1.5m average along length.	Yes	H3, H12, H15, H20, H23, H28, new hedgerows			
B3	Gap – hedgerow base Gap between ground and base of canopy <0.5m for >90% of length (unless 'line of trees')	Yes	H3, H12, H15, H20, H23, H28, new hedgerows	As above.	Additional planting using a range of native species will be introduced were 'gapping up' is required.	Management by side trimming in 'A' profile and shaped to promote the development of wide, healthy hedgerow bases.
B2	Gap – hedgerow canopy continuity Gaps make up <10% of total length and no canopy gaps >5m.	Yes	H3, H12, H15, H20, H23, H28, new hedgerows			Hedgerows will be monitored and should any shrubs become diseased, they are to be removed and replaced during the next planting season with a similar species to fill out any gaps.
C1	Undisturbed ground and perennial vegetation >1m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: • measured from outer edge of hedgerow, and • is present on one side of the hedge (at least)	Yes	H3, H12, H15, H20, H23, H28, new hedgerows	N/A	The 1m margin from the base of the hedgerow will remain 'undisturbed' with minimal management.	A minimum of 1m along the hedgerows will be managed as 'undisturbed' ground. Management of grassland within these areas adjacent to hedgerows will be in line with the management of meadow grasslands.

C2	Nutrient-enriched perennial vegetation Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground.	Yes	H3, H12, H15, H20, H23, H28, new hedgerows	No fertiliser will be used during planting of the hedgerows to prevent eutrophication of the soil.	Where hedgerows support an abundance of common nettle in places a programme of control of this pernicious species through spot-spraying will reduce its cover.	Fertiliser will be prohibited within grasslands adjacent to hedgerows to reduce nutrient enrichment. Spot treatment of pernicious weed species will be undertaken as required.
D1	Invasive and neophyte species >90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species.	Yes	H3, H12, H15, H20, H23, H28, new hedgerows	Only native species will be planted.	N/A	The site will be monitored for the establishment of non-native invasive species and these will be removed where they have established. Pernicious weed will be spot treated as required to prevent their widespread establishment.
D2	Current damage >90% of the hedgerow or undisturbed ground is free of damage caused by human activities.	Yes	H3, H12, H15, H20, H23, H28, new hedgerows	During creation care will be taken to prevent the physical damage from machinery or storage.	Where hedgerows have been subject to inappropriate flailing regimes these will be relaxed and bough under a sympathetic rotational cutting to create an 'A' profile.	Appropriate management practices will be employed to prevent detrimental damage to hedgerows.
E1	Tree class (applicable to hedgerows with trees only) At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	No	H12, H15, H23, new hedgerows	N/A – new trees will not yet be 2/3 of their fully mature height within 30 years.	N/A – hedgerows with trees already pass this criteria.	Inspection of mature hedgerow trees at least every other year and after storm events by suitably skilled and qualified arborist to assess their health and vigour. Any management recommended should only be conducted by a skilled and qualified arborist.
E2	E2. Tree health (applicable to hedgerows with trees only) At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	Yes	H12, H15, H23, new hedgerows	During establishment tree guards around newly planted trees should keep herbivore damage to a minimum. Any diseased specimens would be replaced. Any branches requiring removal should be cut leaving 5-8 cm of main stem and ensuring that all cuts are clean to encourage healing and water shedding.	If pollarding of individual existing trees is deemed necessary by a suitably skilled and qualified arborist, once started it is important to keep trees within the specified rotation or they will develop heavy branches, overcrowding and disease due to increased humidity and reduction of air movement. Any branches requiring removal should be cut leaving 5-8 cm of main stem and ensuring that all cuts are clean to encourage healing and water shedding.	Inspection of mature hedgerow trees at least every other year and after storm events by suitably skilled and qualified arborist to assess their health and vigour. Any management recommended should only be conducted by a skilled and qualified arborist.

Hedgerow

Creation, Enhancement & Management Methods

Provide detailed prescriptions for the creation and management of the habitat.

Action	Relevant Features	Timing	Prescriptions
Ground Preparation		Year 1	Apply herbicide to control weed growth/docks prior to planting (if required). An appropriate herbicide will be selected by an appropriately qualified contractor. Any chemicals will be used in accordance with the product label.
Introduce native whip planting		Year 1	Planting will be undertaken along historic hedgerow boundaries while supplementary planting will be undertaken in existing hedgerow to fill out any gaps. The soil will be harrowed to create an even bed. Any evidence of existing soil compaction will be remediated before planting to ensure the soil is able to support establishment and growth. Native shrub species planted between October and March, avoiding periods of inundation or prolonged ground frost. Whips will be planted in a double-staggered rows of no less than five plants per linear metre, with 400mm between rows to provide a dense and well-structured hedgerow. Whips will be protected from rabbits with spiral guards as conditions on site require. At least five species of native shrub will be planted within 30m intervals. The planting pit dug will be a shallow square, larger than the root ball of the whip. Backfilling of soil will utilise existing excavated soils only with no compost or fertiliser application. It will be important to ensure the shrub is not planted lower than the surrounding ground level. The aim of planting will be to ensure that the level that the tree base meets the soil level will be slightly above ground level, aiming for 25mm above. Tree guards will be installed around establishing whips to prevent them becoming browsed.
Establishment – Weed suppression if required		Following planting in year 1 to year 5	Spray a 1m diameter circle around each tree using an appropriate herbicide, glyphosate is typically used. Typically, one application is made in spring and, depending on the vigour of the weeds, another in mid-late summer.
Spot treating pernicious weeds	H3, H6, H12, H15, H20, H23, H28	Year 1-5	Spot treatment of species indicative of sub-optimal condition will be undertaken on existing scrub blocks in year 1 to reduce the competitiveness of pernicious species. This will be undertaken again in years 2-5 as required.
Short-term management		Year 1-3+	Newly-planted hedgerows will be lightly trimmed to encourage dense growth. After three years, they will follow the same management regime as the retained hedgerows
Long-term management	H3, H6, H12, H15, H20, H23, H28	Year 1-5+	Hedgerows will be managed in rotation, cutting only half the of the hedgerow stock within the site annually to ensure that there is a continuous supply of fruit during the winter months for birds and small mammal species. Hedgerows will be managed to a minimum height of 2m and a minimum width of 1.5m. Management by side trimming in 'A' profile and shaped to promote the development of wide, healthy hedgerow bases. Any established hedges of reasonable structure to support nesting birds, should be managed in the autumn/winter, ideally early February, and should never be done during the bird nesting season (March – August).

Hedgerow Species Lists

An example species list for the habitat to be created. Species to be confirmed at the detailed design stage.

Common Name	Scientific Name	Abundance / %	Comments
Hawthorn	*Crataegus monogyna*	20	
Blackthorn	*Prunus spinosa*	15	
Elder	*Sambucus nigra*	5	
Hazel	*Corylus avellana*	20	
Holly	*Ilex aquifolia*	15	
Dog-rose	*Rosa canina* agg.	10	
Guelder rose	*Viburnum opulus*	5	
Dogwood	*Cornus sanguinea*	5	
English oak	*Quercus robur*	5	

What Does Success Look Like?

Habitat Creation & Management - Risks & Remedial Measures

Habitat Type	Risk	Trigger for Action	Remedial Measure
All habitats	Establishment of non-native invasive species	Monitoring identifies the presence of any invasive non-native species	Initiate a programme of eradication of invasive non-native species. Specialist advice should be sought to ensure the appropriate eradication measures for any species identified.
Other Neutral Grassland	Failed areas of seeding	Greater than 10% bare ground during years 2-5	Apply additional seed mix in areas of failed establishment, during next appropriate season.
Other Neutral Grassland	Poor sward height diversity	Where <20% of the sward is <7cm and <20% of the sward is >7cm.	Either leave 20% of the sward un-mown per year as part of the hay cut, with the unmown areas being changed each year on rotation.
Other Neutral Grassland	Vigorous grass growth limiting species diversity.	Sward 'collapsing' due to lushness prior to cutting or palatable/productive grasses are identified as dominating the sward (over 50%):	Remove early spring re-growth of grass by either taking an additional cut. If further monitoring shows continued vigorous grass growth introduce yellow rattle seed: 1) after the hay cut chain harrow the grassland three times in immediate succession and in a different direction each time. 2) Broadcast yellow rattle seed at a rate of 2.5kg/ha, then roll immediately with a flat roller. 3) If there is sufficient grass growth following sowing, take another cut before the end of year removing arisings.
Other Neutral Grassland	Scrub or bracken encroachment	Scrub and or bracken cover greater than 5% or 20% respectively	Initiate programme of scrub and/or bracken removal as required. This can either be through mechanical removal or spot spraying with herbicide.
Other Neutral Grassland	Establishment of species indicative of sub-optimal condition	Where species indicative of sub-optimal comprise >5% of sward	Initiate a programme of spot-spraying species indicative of sub-optimal condition using glyphosate herbicide.
Other Neutral Grassland	Damage through poaching or rabbit grazing	Evidence of damage and/or poaching >5% of ground cover >5% cover of bare ground	Identify the cause of the damage: If caused by pedestrians, temporarily exclude cattle from poached areas, if localised.
Other Neutral Grassland	Poor species diversity	Less than 10 species per average m^2	Initiate a second round of seeding following the prescriptions provided for the grassland field compartment(s) which are falling short of this target.
Other Neutral Grassland	Poor representation of wildflowers, sedges and indicator species.	Wildflowers, sedges and indicator species are not very clearly and easily visible in the sward.	Initiate a second round of seeding following the prescriptions provided for the grassland field compartment(s) which are falling short of this target.

Habitat Type	Risk	Trigger for Action	Remedial Measure
Hedgerows with trees	Tree Health	Either: • Ash Dieback due to *Hymenoscyphus fraxineus* fungus noted; • More than 10% mortality rate of trees; • Any of the following high-risk disease or pests are present: ○ Acute/Chronic Oak Decline ○ *Anoplophora chinensis* ○ *Anoplophora glabripennis* ○ Ash Dieback ○ Asian Longhorn beetle ○ Bronze Birch borer ○ *Cryphonectria parasitica* ○ Emerald Ash borer ○ *Gibrella circinata* ○ Horse Chestnut Bleeding Canker ○ *Ips amitinus* ○ *Ips duplicatus* ○ *Ips typographus* ○ *Phytophthora lateralis* ○ *Phytophthora kernoviae* ○ *Phytophthora ramorum* ○ *Phytophthora austrocedrae* ○ *Phytophthora spp* ○ Pine Lappet Moth ○ Pine Processionary Moth ○ Red Band Needle Blight ○ Weevils	If an action is triggered, take arboricultural advice and follow current Forestry Commission guidance[4] regarding management and best practice if felling or pollarding of diseased trees is the most appropriate option.
Mixed Scrub / Hedgerows	Newly planted whips failing to establish from drought etc	10% of newly planted trees found to be dead during years 1-10.	Undertake a second round of planting, replacing failed specimens on a like-for-like basis
Mixed Scrub	Insufficient variation of age classes	One or more age class missing across the habitat type.	Selective thinning of scrub to allow natural regeneration to occur. Where natural regeneration is unsuccessful, additional planting of native species should be introduced.
Mixed Scrub	Overdominance of one species within the canopy.	Where one species of scrub within a scrub block represents more than 75% of canopy cover.	Selective thinning of dominant species to allow other species to establish or initiate supplementary planting of alternative species.
Mixed Scrub	Poorly developed edge habitats	Where the edges of scrub do not grade into adjacent habitats in a diffuse way including scattered scrub and tall grassland/herbs.	Reduce mowing frequency of grassland at edge of habitat.

[4] https://www.gov.uk/guidance/find-a-specific-tree-pest-or-disease

Habitat Type	Risk	Trigger for Action	Remedial Measure
Mixed Scrub	Encroachment of scrub into adjacent grasslands	Where the edges of scrub become more densely scrub and this habitat begins to creep into grasslands to an extent that they begin to reduce the overall extent of grasslands on site. This may be a particular problem with blackthorn suckering	Initiate a program of dense scrub removal where this habitat has begun to creep into grassland habitats. This should not be undertaken where only scattered scrub is present at the edges of the boundaries between these habitats and should only be undertaken where more dense scrub establishes.
Ponds	Undesirable water levels	Where the ponds do not hold sufficient water throughout the year. As a guide, this should be measured by the drawdown zones of the ponds where water levels should aim to be between 10mm-300mm during winter or following periods of inundation and likely drying over during warmer, dryer periods.	Trigger remedial excavations to the edges of the ponds to achieve the desired drawdown zones.
Ponds	Eutrophication	Where algal blooms or duckweeds become prevalent and cover >10% of water surface.	Investigate the causes of pollution events that have led to eutrophication and initiate appropriate remedial measures.
Ponds	Over-shading of margins	Where trees or scrub begin to shade >50% of pond margins.	Selective thinning of scrub and trees to prevent over-shading.
Ponds	Establishment of non-native invasive species.	Monitoring identifies the presence of any invasive non-native species.	Initiate a program of eradication of invasive non-native species. Specialist advice should be sought to ensure the appropriate eradication measures.
Hedgerows	Insufficient height and width	Where hedgerows are <1.5m on average in height and width.	Reduce cutting regime.
Hedgerows	Gaps in the canopy and base.	Where there is a gap >0.5m for >90% of the length and gaps in the canopy >10% and / or there are gaps wider than 5m.	Undertake further planting, replacing failed specimens on a like-for-like basis

Monitoring

5. Monitoring

Monitoring Strategy

Provide Details of the Monitoring Strategy to Ensure Compliance with the Management Plan
The Site will be monitored at varying degrees from establishment and through its long-term management. Initially from years 1-5, the site will be monitored annually by the appointed ecologists to review how the establishment of the proposed habitats is progressing. The key observations during this period will be to determine whether habitats are successfully establishing and whether or not replacement planting or reseeding may be required. Ponds across the site will be expected to achieve their target condition by year 5, and so monitoring in year 5 will review the success of these habitat creation measures and to provide remedial actions where appropriate if the targeted creation measures have not been achieved. During years 5-10, the management of the Site will begin to change to post-establishment management, for created and re-seeded areas of other neutral grasslands. Monitoring will be undertaken at the beginning and end of this 5-10 year period, with a third visit to review grassland establishment in year 8. By the end of this period, grasslands F2, F3, F3a, F3b F4, F5, F12, new scrub, new ponds and hedgerows H3, H12, H15, H20, H23 and H28 will be expected to reach their target condition and so monitoring in year 10 will review the success of habitat management measures and to provide remedial actions where appropriate if the targeted measures have not been achieved. The grassland compartments F1 and F9 are not expected to reach their target conditions until year 15. During years 11-30, monitoring of other neutral grassland, scrub, ponds and hedgerows will be undertaken every 5 years beginning at year 15. The key elements of this monitoring will be to review whether the long-term management practices are maintaining the site in the targeted condition scores for the proposals. During this period, adaptive management measures will be reviewed to determine whether there are any opportunities to alter management to encourage additional habitat enhancements.

Monitoring Methods

Habitat Type	Monitoring Methods	Monitoring Interval and Timing
Other Neutral Grassland	To be undertaken on parcels F2, F3, F3a, F3b F4, F5 and F12. Undertake quadrat sampling to identify the habitat type establishing and then number of species per m^2. Estimate the percentage of bare ground, bramble and bracken cover.	Annually from years 1-5 then every 5 years. Surveys to be completed between May and August
	Collect a botanical species list across grassland to check against the target species list	
Mixed scrub	During each monitoring visit the scrub will be recorded by making a comprehensive species list of the woody components, split into upper canopy, lower canopy and regeneration, together with a comprehensive species list of the ground flora. Each element should have an associated DAFOR measure of abundance. The following will also be recorded, along with representative photos: • The percentage cover of scrub canopy species; • The percentage cover of various age ranges of scrub; • Percentage cover of species indicative of sub-optimal condition • Presence of non-native invasive species; • The character of edge habitats; • The presence and character of scalloped edges, clearings, glades and rides	Scrub monitoring will be undertaken between May-September.
Ponds	Throughout years 2 and 3, the water levels within the ponds will be reviewed. During the remainder of management period, ponds will be monitored for: • The presence and percentage covers of filamentous algae and/or duckweed on water surfaces • The level of shading at the banks of pools caused by tree and/or scrub • Water levels • Presence of non-native invasive species • Presence of fish • Marginal vegetation diversity Pond monitoring will be undertaken between May-August.	Pond monitoring will be undertaken between May-August.

Habitat Type	Monitoring Methods	Monitoring Interval and Timing
Hedgerows	During each monitoring visit the hedgerows will be recorded by making a comprehensive species list of the woody components, recording the number of species within a 30m interval, starting 30m in from the end of the hedgerow, together with a comprehensive species list of the ground flora. Each element should have an associated DAFOR measure of abundance. The following will also be recorded, along with representative photos: • Average height and width of the hedgerow; • The percentage cover of where gap between the ground and base of the canopy is >0.5m; • Percentage cover and size of gaps in the canopy; • Presence of non-native invasive species; • Width of undisturbed ground from the hedgerow base; • The percentage cover of nutrient-enriched perennial vegetation along the hedgerow length; • Level of damage; • If trees are presence their presence per 30m stretch and maturity; • If trees are present their general condition.	Hedgerow monitoring will be undertaken between May-September.

Monitoring Intervals

Habitat Type	Monitoring Years
All habitat Types	2, 3, 5, 7, 10, 15, 20, 25, 30

Management plan updates

Period Covered	Years Covered	Year and Month Required
Establishment	Year 1 - 5	To commence at start of development.
Post-establishment management	Year 6 - 10	TBC
Long-term management	Year 11 - 15	TBC
Long-term management	Year 16 - 20	TBC
Long-term management	Year 21 - 25	TBC
Final Report	Year 26 - 30	TBC

Appendix 5:

Land Management -
Email Correspondence Wain Estates (Land) Ltd.

[redacted]

From: [redacted] <[redacted]>
Sent: 07 June 2024 12:15
To: [redacted]
Cc:
Subject: RE: Great Barr - Habitat Management

[redacted]

Please find below details of the management regime on Land North of Wilderness Lane, Great Barr and future intentions for the site.

The site was purchased by Wain Estates in 2014. It is subject to an intensive management regime where the grass is cut 2 to 3 times a year.

In the time that it has been in the ownership of Wain Estates, the site has never been in agricultural stewardship and it is not intended to enter the site into any agricultural stewardship schemes or (outside of planning permission for redevelopment) a formal BNG agreement.

This land has not been entered into any form of conservation grant scheme and there is no intention to do so.

The site will either be subject to development, or continue to be intensively managed in accordance with the current prescriptions. Without development there is no potential for restoration of the site and the existing management regime will continue.

Kind regards

[redacted]

[redacted] | STRATEGIC PLANNING MANAGER

T [redacted]
M
E [redacted]
W wainestates.co.uk

Wain Estates | Fontwell House, Trident Business Park
Birchwood. Warrington WA3 6BX

From: [redacted]
Sent: Thursday, June 6, 2024 7:54 PM
To: [redacted]
Subject: [EXTERNAL] Great Barr - Habitat Management

Dear [redacted]

We would be grateful if you could confirm your understanding of the historic management and current management regimes of the above-mentioned site, including whether the site has been subject to any agricultural land management grants.

We would also be grateful if you could confirm from the perspective of the landowner whether it is likely that the site will be the subject of positive ecological management or managed as a habitat bank.

Regards

[redacted]

[redacted] MCIEEM | Senior Director
BSc(Hons) MSc

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Job Ref: