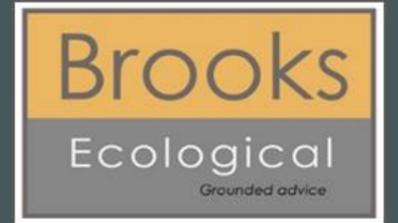


# Biodiversity Management Plan



**Land off Darton Lane, Mapplewell**

**Duchy Homes**

Report Title:	Land off Darton Lane, Mapplewell Biodiversity Management Plan
Report Reference:	ER-6517-09
Written by:	Jon Roberts MSci (Hons) Biodiversity Technician
Technical review:	Victoria Baker BSc (Hons) MSc MCIEEM Senior Ecologist
QA:	Joanna Bertwistle BSc (Hons) ACIEEM Ecologist
Approved for issue:	Victoria Baker BSc (Hons) MSc MCIEEM Senior Ecologist
Date:	01.08.2023

# Introduction

This Site has been subject to baseline surveys which have informed the layout, demonstrating its engagement with the NPPF mitigation hierarchy. The client; Duchy Homes, has secured with a Section 106 agreement that the proposed development will deliver a 10% Net Gain for Biodiversity by using off-Site Yorkshire Wildlife Trust land- see the separate Biodiversity Net Gain Assessment report ER-6517-02B for further information. This will ensure that the proposed development is policy compliant and can deliver a 10% Net Gain for Biodiversity.

This report is the final delivery document, and shows how retained and created habitats on Site can attain the condition scores that were predicted in the Biodiversity Net Gain Assessment.

In addition to meeting habitat condition objectives, this document presents all the measures included to maximise the Site's value for fauna, using the findings taken from the various 2023 protected species survey reports (including bats, badger, breeding bird and reptiles).

This plan is produced to satisfy condition 31 of decision notice 20191244, reproduced below:

- 31 The reserved matters application shall be accompanied by an updated Ecological Management Plan and Ecology Addendum, to include detailed monitoring proposals in accordance with the The Biodiversity Metric 2.0 Technical Supplement. The monitoring proposals shall include a timetable and methodology for reporting to the LPA at agreed intervals. The updated reports shall be agreed in writing by the LPA and the development and long term ecological management shall be carried out in accordance with the approved details.  
**Reason: To ensure that no net loss in biodiversity is achieved in accordance with Local Plan Policy BIO1 and the accompanying Biodiversity and Geodiversity SPD.**

This plan proceeds with the condition criteria for habitats presented in The Biodiversity Metric 3.1 Technical Supplement, under which framework the Site was re-assessed in 2022.

The Plan is produced in accordance with Chapter 11 of British Standard 42020. Reports which set out how wildlife interests will be enhanced, restored and maintained go under a variety of names, generated by the planning case officer or their internal consultant. As these names refer to the same output we standardise the name of our reports regardless of what appears in a planning condition as '**Biodiversity Management Plans**' (BMPs), a term is referenced in BS42020 Clause D.4.5.

Landscape Masterplan  
R/2675 rev. C - western  
half



Landscape Masterplan  
R/2675 rev. C - eastern  
half

To minimise measurable Biodiversity Net Loss, maximising the wildlife potential and condition of habitats on-site, creating a robust semi-natural landscape that will support invertebrates and small mammals, which will attract predatory birds, larger mammals, reptiles and amphibians.

### Scope of Plan

This plan relates to the whole development as contained within the red line illustrated in the figures on the previous page.

### Delivering the Plan

The Developer is responsible for the creation and establishment works for a five-year period.

The Developer will appoint either a Specialist Ecological Management Company (SEMC) or a company working under the direction of an Ecological Clerk of Works (ECoW) to oversee the delivery of this plan prior to any work commencing on-site.

The ECoW would be a qualified Ecologist and member of the Chartered Institute of Ecology and Environmental Management, or be otherwise approved by the LPA.

After Year 5, this plan will be the responsibility of a Site Management Company whence it will be implemented in perpetuity.

Land off Darton Lane, Mapplewell		Return to results menu	
Headline Results			
On-site baseline	Habitat units	34.11	
	Hedgerow units	0.56	
	River units	0.27	
On-site post-intervention <small>(including habitat retention, creation &amp; enhancement)</small>	Habitat units	20.90	
	Hedgerow units	2.58	
	River units	0.44	
On-site net % change <small>(including habitat retention, creation &amp; enhancement)</small>	Habitat units	-38.72%	
	Hedgerow units	357.18%	
	River units	62.37%	
Off-site baseline	Habitat units	48.54	
	Hedgerow units	0.00	
	River units	0.00	
Off-site post-intervention <small>(including habitat retention, creation &amp; enhancement)</small>	Habitat units	60.94	
	Hedgerow units	0.00	
	River units	0.00	
Total net unit change <small>(including all on-site &amp; off-site habitat retention, creation &amp; enhancement)</small>	Habitat units	-0.81	
	Hedgerow units	2.01	
	River units	0.17	
Total on-site net % change plus off-site surplus <small>(including all on-site &amp; off-site habitat retention, creation &amp; enhancement)</small>	Habitat units	-2.37%	
	Hedgerow units	357.18%	
	River units	62.37%	



# Wildflower grassland - Retention

## Rationale

Ensuring appropriate management to retain existing neutral grassland in its current condition, to provide habitat for invertebrates and aid human wellbeing.



## Objectives

Retaining 6.46 biodiversity units by maintaining a DEFRA condition score of **Good**; 0.25 units by maintaining a condition score of **Moderate**; and 0.02 units by maintaining a condition score of **Poor**.

## Specification

**Soil** Retained and protected. Fenced to avoid incidental access or storage of plant/materials in retention areas.

## Management

**All grassland:** Two cuts, once in August and again in October—remove arisings. Continue to spot-treat competitive weed species until under control according to ECoW.

**Poor condition grassland:** Clear any scrub and bracken colonisation to maintain at <5% and <20% cover, respectively. Remove any colonising INNS.

**Moderate condition grassland** - as above, AND: Vary mowing regimes to produce a variety of sward heights throughout the year; oversow bare areas and potentially limit access to keep bare ground cover <5%.

**Good condition grassland** - as above, AND: Oversow with an appropriate wildflower seed mix to enhance species richness if necessary.

## Monitoring

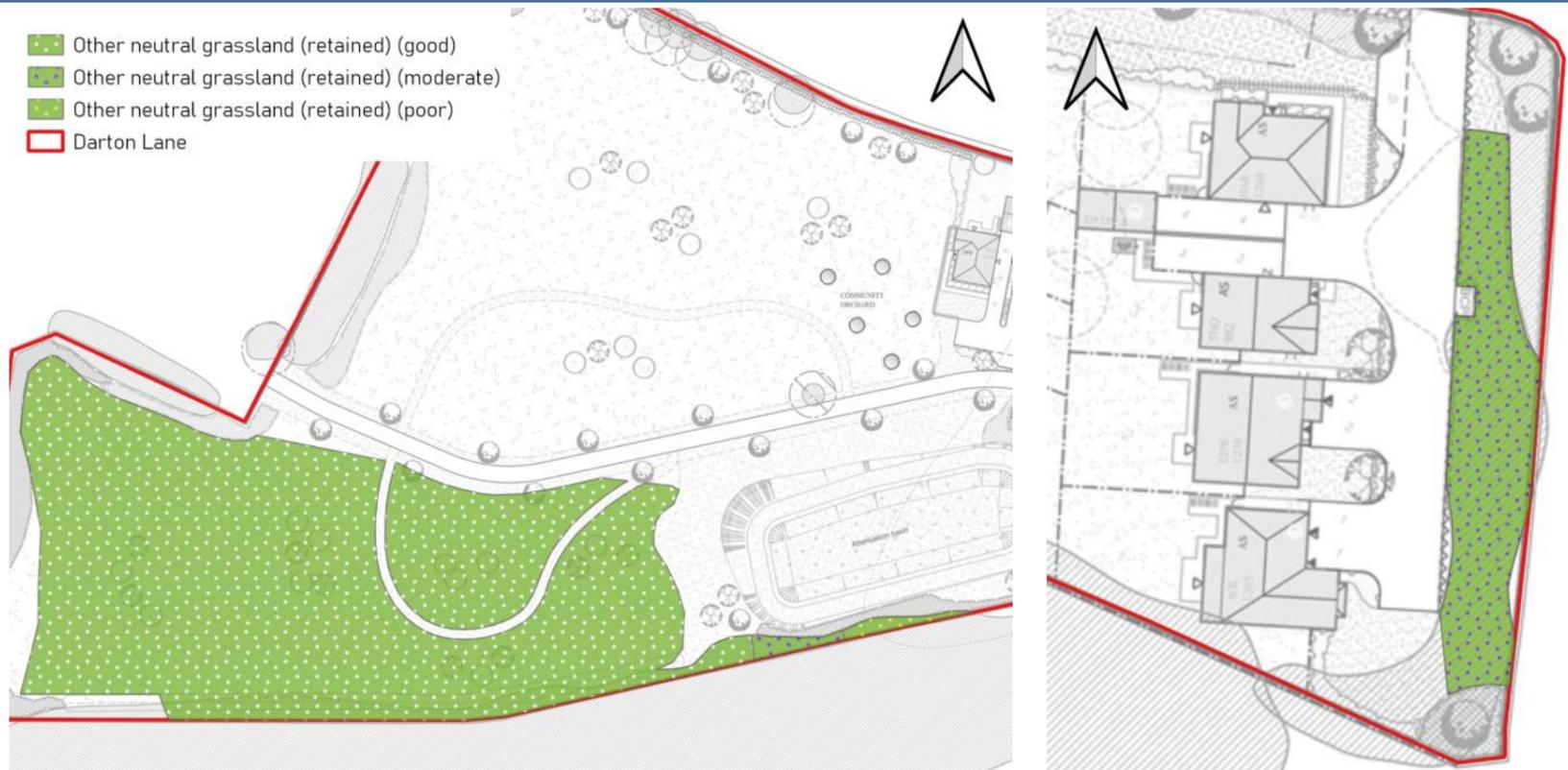
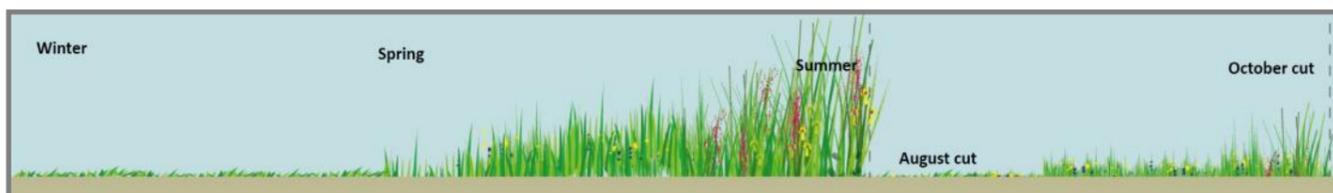
ECoW to conduct monitoring visits in Years 2, 5, 7, 10, 20, and 30 to check maintenance at required conditions.

**Output** ECoW report, Years 2, 5, 7, 10, 20, and 30.

## Remedial action options

- Increase weed control if undesirable species establish.
- Soil scrape to reduce nutrients.
- Re-seed locally to minimise bare areas.
- ECoW to advise on appropriate remedial management if species richness of good condition grassland drops below 9 species per square metre.

## Illustrative cutting regime.



Condition Assessment Criteria: Grassland broad habitat type (higher distinctiveness)				
Criteria	Poor	Moderate	Good	Notes
1	0	1	1	Maintained through management regimes detailed left.
2	0	1	1	Vary mowing regimes.
3	0	1	1	Oversow and reduce access to damaged areas.
4	1	0	1	Cut back encroachment to limit.
5	1	1	1	Remove INNS as necessary. Reduce nutrients if undesirable species encroaching. Limit access if needed.
6	0	0	1	Oversow if needed.

Refer to *The Biodiversity Metric 3.1 Technical Supplement* for assessment criteria details



# Wildflower grassland - Enhancement



## Rationale

Enhancing the condition of retained neutral grassland to attract invertebrates and aid human wellbeing. Not intended to replicate any priority grassland habitat type.

## Objectives

Delivering 1.75 biodiversity units by reaching a DEFRA condition score of **Good** by Year 10.

## Specification

**Soil** Retained and protected.

**Preparation** Cut sward in autumn and harrow, i.e. with chain harrow, to break up existing grass thatch.

**Seeding** Seed with Emorsgate seeds EM1 General Purpose Meadow Mixture, or similar, to supplier's specification.

**Planting** N/A.

## Management

**Year 1** Two cuts, in August and October; leave arisings *in situ* for one week to allow seed to drop out, then collect and remove from Site. Cut back scrub, including bramble, to <5% total cover. Use a weed wipe three times in Year 1 to kill off weeds—spear thistle, creeping thistle, broad-leaved dock, clustered dock, wood dock, curled dock, nettle, ragwort, and others, according to ECoW recommendations. Operatives must be proven competent in identifying.

**Years 2 onwards** Two cuts, once in August and again in October—remove arisings. Continue to spot-treat competitive weed species and cut back any scrub encroachment each year until under control according to ECoW.

## Monitoring

ECoW to conduct monitoring visits in Years 2, 5, 7, 10, 20, and 30 to check trajectory to and maintenance at Good condition.

**Output** ECoW report, Years 2, 5, 7, 10, 20, and 30.

## Remedial action options

- Increase weed control if undesirable species establish.
- Consider targeted chemical control if scrub continues to encroach.
- Soil scrape to reduce nutrients.
- Re-seed locally to minimise bare areas.
- Mow patches more regularly to introduce variation to sward height.

## Illustrative cutting regime.



Condition Assessment Criteria: Grassland broad habitat type (higher distinctiveness)			
Criteria	Baseline	Post-dev	Notes
1	1	1	Appearance and composition of vegetation closely matches UKHabs characteristics of specific grassland type. Wildflowers, sedges and indicator species are clearly and easily visible throughout the sward. Present in baseline
2	1	1	Sward height is varied (at least 20% under 7cm and at least 20% over 7cm). Maintained with mown paths and human access
3	1	1	Cover of bare ground between 1% and 5%, including localised areas like rabbit warrens. Oversow bare areas as needed
4	0	1	Cover of bracken under 20%; cover of scrub, including bramble, under 5%. Cutting back and potentially treating scrub and bramble encroachment
5	1	1	Absences of INNS. Combined cover of undesirable species and physical damage accounts for under 5% of total area. Spot-treat weeds and INNS
6	0	1	>9 species per m <sup>2</sup> . Increase species richness by oversowing
<b>Overall condition</b>	<b>Mod.</b>	<b>Good</b>	
<b>Refer to The Biodiversity Metric 3.1 Technical Supplement for assessment criteria details</b>			



# Wildflower grassland - Creation

## Rationale

Creating flower-rich mesic grassland to attract invertebrates and aid human wellbeing. Not intended to replicate any priority grassland habitat type.



## Objectives

Delivering 0.41 biodiversity units by reaching a DEFRA condition score of **Fairly Good** by Year 7; and a further 1.57 units by reaching **Moderate** condition by Year 5.

## Specification

**Soil** Checked by ECoW for suitability; this to be a friable, low nutrient load, neutral soil. Spread using back actor spread and firmed. Not driven over or compacted. All soil handling and spreading to be supervised and sanctioned by ECoW.

**Weeds** If the soil is likely to support viable weed seeds it should be allowed to grow to first flush, then killed off with translocated non-persistent weedkiller.

**Seeding** Seed with Emorsgate Seeds EM1 General Purpose Meadow Mix to supplier's specification.

## Management

**Year 1** Five cuts, collect arisings and remove from Site. Use a weed wipe three times in Year 1 to kill off weeds—spear thistle, creeping thistle, broad-leaved dock, clustered dock, wood dock, curled dock, nettle, ragwort, and others, according to ECoW recommendations. Operatives must be proven competent in identifying.

**Years 2 onwards** Two cuts, once in August and again in October—remove arisings. Continue to spot-treat competitive weed species and cut back any scrub encroachment each year until under control according to ECoW.

## Monitoring

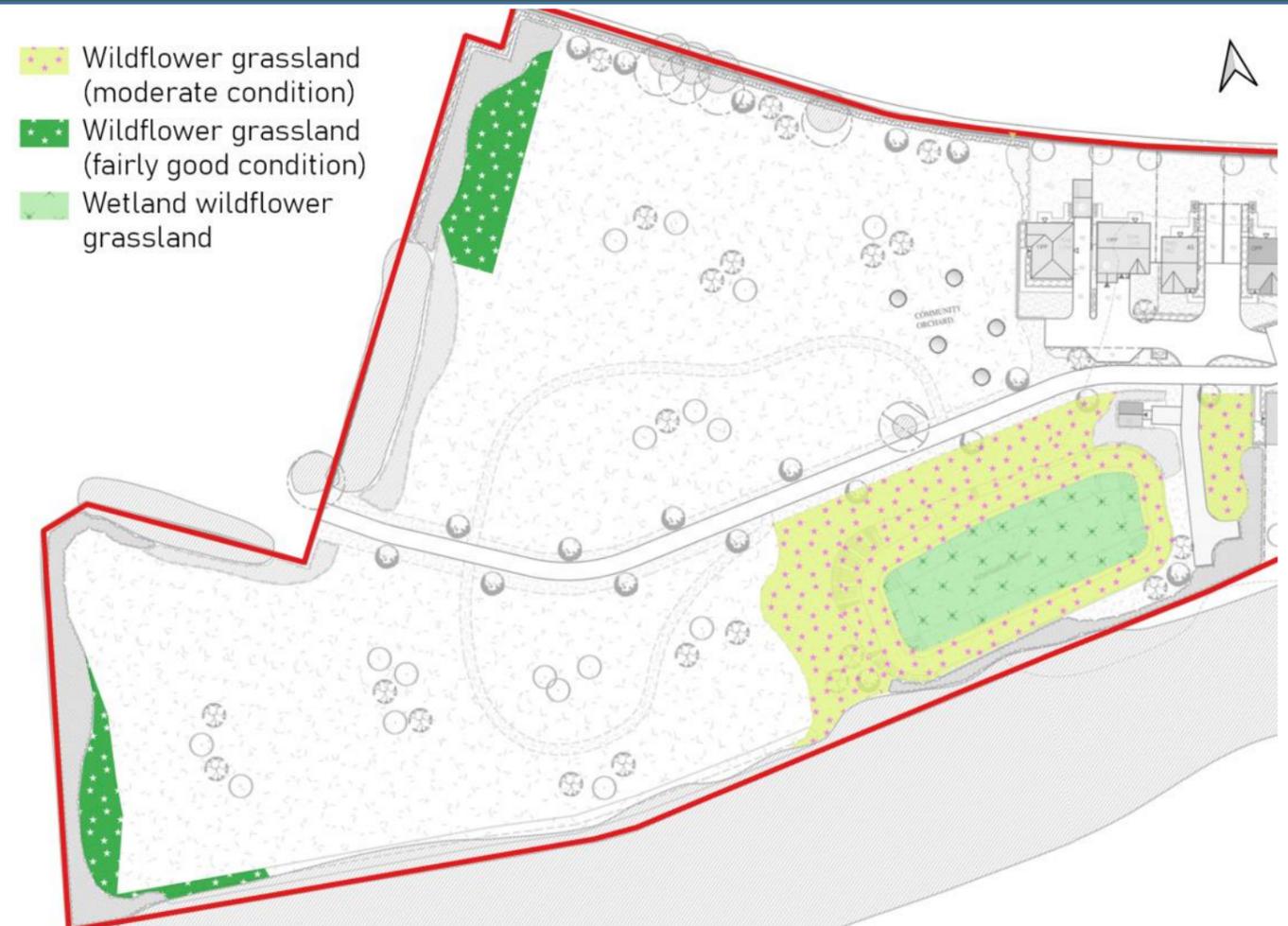
ECoW to conduct monitoring visits in Years 2, 5, 7, 10, 20, and 30 to check progress to and maintenance at required conditions.

**Output** ECoW report, Years 2, 5, 7, 10, 20, and 30.

## Remedial action options

- Increase weed control if undesirable species establish.
- Soil scrape to reduce nutrients.
- Re-seed locally to minimise bare areas.

## Illustrative cutting regime.



Condition Assessment Criteria: Grassland broad habitat type (higher distinctiveness)			
Criteria	Mod.	F. Good	Notes
1	1	1	Required for Mod. condition.
2	1	1	
3	1	1	
4	1	1	
5	0	0	
6	0	1	Required for Good condition.

Refer to **The Biodiversity Metric 3.1 Technical Supplement** for assessment criteria details



# Flowering lawn

## Rationale

Creating functional yet flower-rich amenity-type grassland to attract invertebrates, particularly pollinators. Not intended to replicate any priority grassland habitat type.



## Objectives

Delivering 0.82 biodiversity units by reaching a DEFRA condition score of **Good** by Year 7.

## Specification

**Preparation** No more than 5cm of topsoil will be spread over the subsoil profile. This will be loose tipped and spread with back actor to avoid compaction, and harrowed to a fine tilth ready for seeding.

**Seeding** Seed according to supplier's instructions. If soils have been spread before September, any weed growth that has established in the meantime will be sprayed off with glyphosate and a seedbed be re-prepared. Seed will either be broadcast by hand or by approved light-weight machinery at c. 40kg/ha. Following seeding, the area will be lightly rolled to incorporate the seed with the growing substrate.

## Management

**Year 1** Five cuts, collect arisings and remove from Site. Use a weed wipe three times in Year 1 to kill of weeds—spear thistle, creeping thistle, broad-leaved dock, clustered dock, wood dock, curled dock, nettle, ragwort, and others according to ECoW recommendations. Operatives must be proven competent at identifying.

**Years 2 onwards** Cut once per month during the growing season; leave for 5 weeks in June. Arisings may be left to rot *in situ* unless condition deteriorates.

## Monitoring

ECoW to conduct monitoring visits in Years 2, 5, 7, 10, 20, and 30 to check trajectory to and maintenance at Good condition.

**Output** ECoW report, Years 2, 5, 7, 10, 20, and 30.

## Remedial action options

- Localised weed control or oversowing with wildflower seed.
- Periodic collection of arisings under the instructions of the ECoW.

Condition Assessment Criteria: Grassland (low distinctiveness)		
Criteria	Post-dev	Notes
1	6-8 species per m <sup>2</sup> .	1 Essential for Mod./Good condition.
2	Sward height is varied (at least 20% under 7cm and at least 20% over 7cm).	0
3	Scrub <20% cover.	1
4	Physical damage <5% cover.	1
5	Bare ground 1-10% cover.	1
6	Bracken <20% cover.	1
7	Absence of INNS.	1
<b>Overall condition</b>		<b>Good</b>
<b>Refer to The Biodiversity Metric 3.1 Technical Supplement for assessment criteria details</b>		





# Mixed scrub

## Rationale

New scrub planting and management of existing habitat to create a diverse ecotone habitat between the Site's boundaries and its internal grasslands. Not intended to replicate any priority grassland habitat type.



## Objectives

Delivering 1.83 biodiversity units by reaching a DEFRA condition score of **Moderate** by Year 5. Existing scrub enhanced to Moderate condition to be managed identically to newly-planted scrub.

## Specification

**Soil** Retained and protected.

**Weeds** Treat weeds in new tree and shrub planting stations.

**Planting** From Schedule NS1 opposite.

## Management

**Years 1-2** Keep a 0.5m diameter area around new trees and shrubs weed-free with herbicide. Check shelters are fitted properly, stakes are firm, and ties in place. Hand-weed grasses and weeds in tree shelters if present. Replace failures next growing season. Monitor for competitive weed growth away from planting stations. Spray or weed wipe as required to keep cover to <10%.

**Years 3-5** Monitor for competitive weed growth away from planting stations. Spray or weed wide as required to keep cover to <10%. Remove tree guards before Year 5.

**Year 10** Thin by 20% to remove canopy trees if these are outcompeting scrub. Must be ECoW directed. Leave all felled timber *in situ* to rot down; may be used to construct log piles. Selectively seed with native woodland seeds at ECoW discretion in locations with suitable soil and light conditions (10-40% ambient daylight in summer).

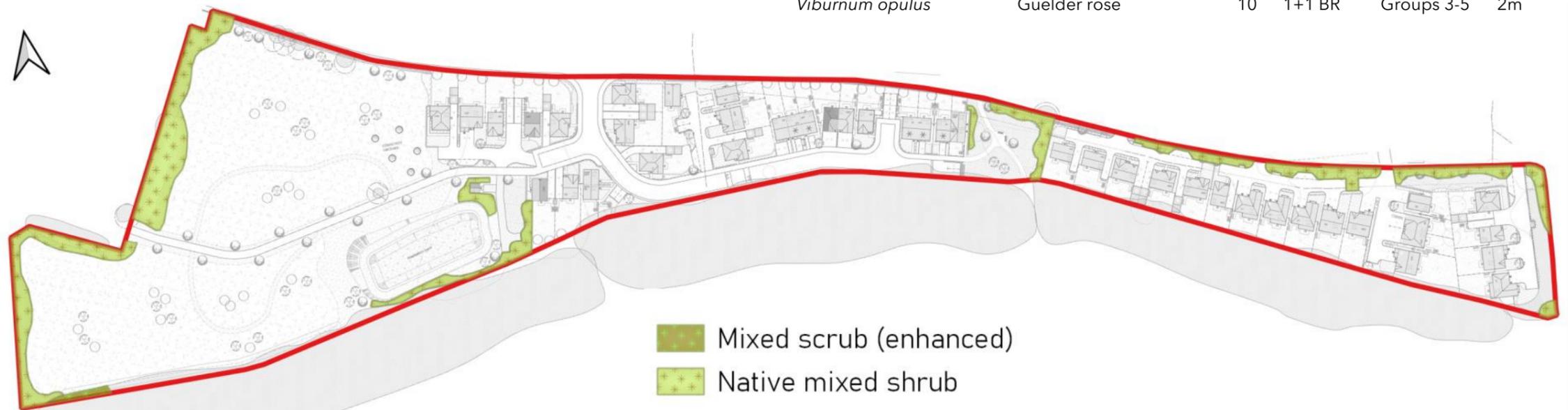
## Monitoring

ECoW to conduct monitoring visits in Years 2, 5, 10, 20, and 30 to check trajectory to and maintenance at Moderate condition.

**Output** ECoW report, Years 2, 5, 10, 20, and 30.

## Remedial action options

- Increase weed control if undesirable species establish.
- Re-seed and replant locally.
- Increased thinning of canopy species.



Condition Assessment Criteria: Scrub			
Criteria	Baseline	Post-dev	Notes
1	0	1	Plant from Schedule NS1, below.
2	0	0	
3	1	1	Remove INNS and suboptimal species.
4	1	1	Leave grass unmown at edges of scrub.
5	0	0	
<b>Overall condition</b>	<b>Poor</b>	<b>Mod.</b>	
<b>Refer to The Biodiversity Metric 3.1 Technical Supplement for assessment criteria details</b>			

Scientific name	English name	%	Stock	Groupings	Centres
<i>Crataegus monogyna</i>	Hawthorn	30	1+1 BR	Groups 3-8	2m
<i>Prunus spinosa</i>	Blackthorn	15	1+1 BR	Groups 5-9	2m
<i>Corylus avellana</i>	Hazel	15	1+1 BR	Groups 3-8	2m
<i>Sorbus aucuparia</i>	Rowan	10	1ltr pot	Scattered	2m
<i>Rosa canina</i>	Dog rose	10	1+1 BR	Groups 3-8	2m
<i>Malus sylvestris</i>	Crab apple	10	1+1 BR	Groups 3-5	2m
<i>Viburnum opulus</i>	Guelder rose	10	1+1 BR	Groups 3-5	2m



# Individual trees

## Rationale

Planting of new urban trees along streets and in POS to provide habitat for birds and invertebrates, and enhance green infrastructure connectivity across the Site.



## Objectives

Delivering 1.29 biodiversity units by reaching DEFRA condition scores of **Poor** (non-native) and **Moderate** (native) by Year 27.

## Specification

**Soil** To landscape architect's specifications.

**Weeds** Treat weeds in new tree planting stations.

**Planting** From landscape architect's planting schedule.

## Management

**Years 1-2** Mulch with bark chippings or similar and keep a 0.5m diameter area around new trees weed-free with herbicide. Check shelters are fitted properly, stakes are firm, and ties in place. Hand-weed grasses and weeds in tree shelters if present. Water during periods of excessive drought. Replace failures next growing season.

**Years 3 onwards** Remove tree guards before Year 5. Water during periods of excessive drought until trees are well-established.

## Monitoring

ECoW to conduct monitoring visits in Years 2, 5, 10, 20, and 30 to check trajectory to and maintenance at Poor and Moderate condition.

**Output** ECoW report, Years 2, 5, 10, 20, and 30.

## Remedial action options

- Increase weed control if undesirable species establish.
- Replacement of failed trees in same or following growing season.

Condition Assessment Criteria: Urban Trees				
Criteria		Poor	Mod.	Notes
1	Tree (or >70% within block) is native.	0	1	Refer to landscape architect's plans for species list.
2	Tree canopy is predominantly continuous. Gaps make up <10% cover, none >5m wide. Individual trees auto-pass.	1	1	
3	Tree (or >50% within block) is mature/veteran.	0	0	
4	Little or no evidence of adverse impact on tree health by anthropogenic activities. No current regular pruning regime so trees retain >75% expected canopy for their age range and height.	0	0	
5	Micro-habitats present, e.g. deadwood, cavities, ivy, loose bark.	0	0	
6	>20% of canopy area oversails vegetation below.	1	1	
<i>Non-native tree species have been assigned a condition score of 'Poor'; native species have been assigned 'Moderate' condition. The precise layout and ratio of native and non-native trees has not been finalised at time of writing.</i>				
<b>Refer to The Biodiversity Metric 3.1 Technical Supplement for assessment criteria details</b>				





# Native hedgerow - Retention

## Rationale

Retaining existing hedgerow along the Site's eastern boundary, providing a range of nesting and foraging resources for birds, invertebrates, and small mammals, and shelter for amphibians and reptiles.



## Objectives

Retaining 0.22 hedgerow units by maintaining a DEFRA condition score of **Good** to Year 30.

## Specification

**Soil** Retained and protected. Fenced with tree protection fencing to avoid incidental access or storage of plant/materials in retention areas.

## Management

**Year 1** Keep the 1m strip to the west of the hedge free of weed growth using translocated non-persistent herbicide.

**Year 2** Prune back in late winter to no less than 1.5m height and 1.5m width. Identify any emerging trees that can be left to grow into hedgerow standards.

**Years 3-4** Leave the hedgerow uncut to allow flowering and berry production through the summer and autumn.

**Years 5 onwards** Prune the hedge every third year in late winter.

## Monitoring

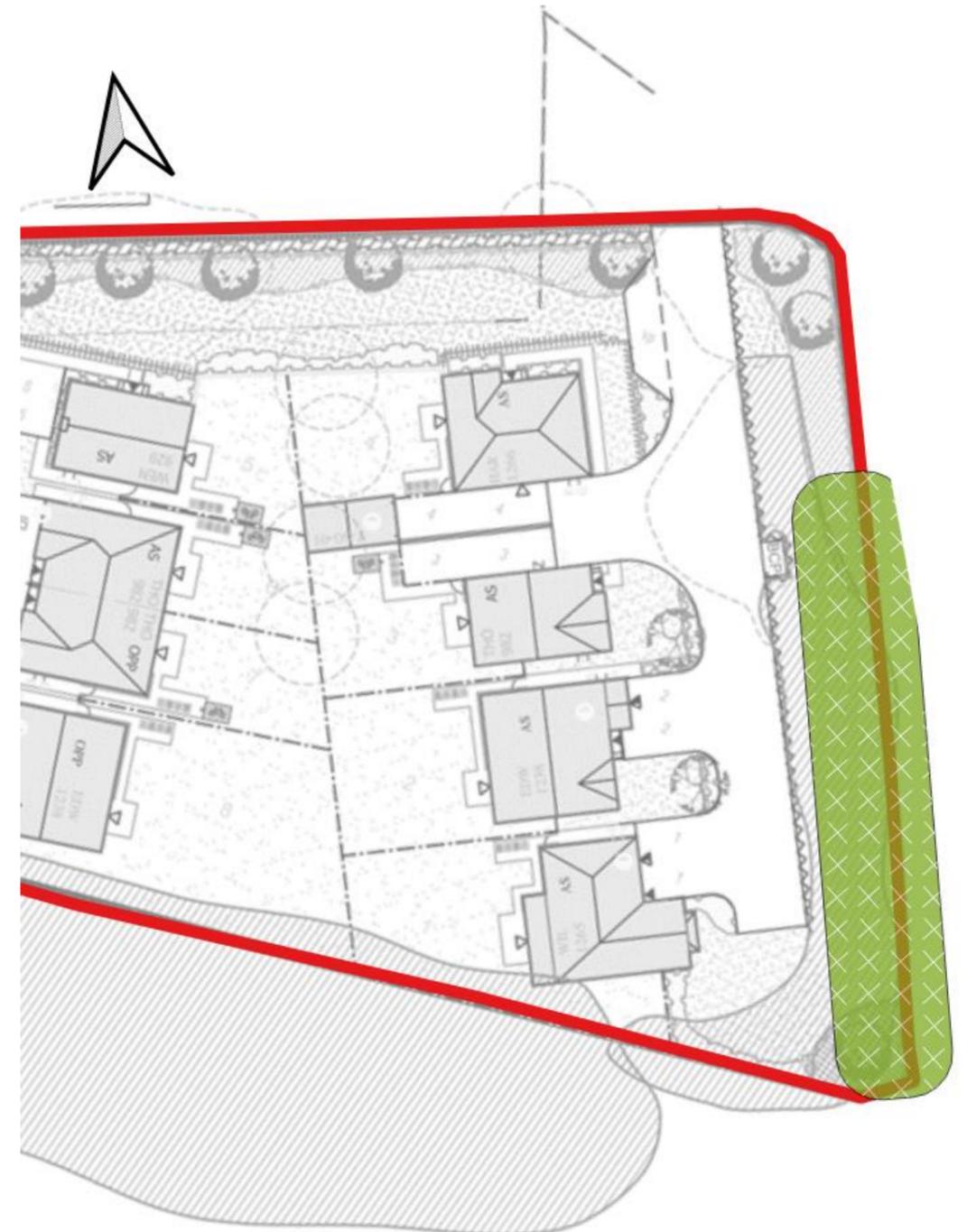
ECoW to conduct monitoring visits in Years 2, 5, 10, 20, and 30 to check maintenance at Good condition.

**Output** ECoW report, Years 2, 5, 10, 20, and 30.

## Remedial action options

- Increase weed control if undesirable species establish.
- Re-seed and replant locally.
- Vary cutting profile.
- Replace any lost shrubs with individuals of the same species.

Condition Assessment Criteria: Hedgerow				
Criteria		Baseline	Post-dev	Notes
A1	>1.5m average height along length.	1	1	
A2	>1.5m average width along length.	1	1	
B1	Gap <0.5m between bottom of canopy and ground for >90% of length.	1	1	
B2	Gaps makes up <10% total length, none >5m wide.	1	1	Plant to infill any gaps that emerge.
C1	>1m width undisturbed ground for >90% of length on at least one side.	1	0	Lost due to planting of mown grassland under hedge.
C2	Plant species indicative of nutrient enrichment <20% cover.	0	1	Control of species through mowing.
D1	>90% of hedge and undisturbed ground free of INNS and neophytes.	1	1	
D2	>90% of hedge and undisturbed ground free of human damage.	1	0	Lost due to mowing under hedge.
<b>Condition</b>		<b>Good</b>	<b>Good</b>	
<b>Refer to The Biodiversity Metric 3.1 Technical Supplement for assessment criteria details</b>				





# Native species-rich hedgerow - Creation



## Rationale

Planting new native species-rich hedgerows in POS to provide feeding and nesting resources for birds, invertebrates, and small mammals, and enhance connectivity of green infrastructure.

## Objectives

Creating 2.36 hedgerow units by achieving a DEFRA condition score of **Moderate** by Year 5.

## Specification

**Soil** Protected *in situ*.

**Weeds** Maintain a weed-free strip under establishing hedges.

**Planting** From schedule NH1. Plant hedge as staggered double row where larger gaps exist. Plant at rate of 5 per linear metre. Plant in staked tree tubes.

## Management

**Year 1** Keep a 1m strip centred on the hedge free of weed growth using translocated non-persistent herbicide. Two visits in the growing season.

**Year 2** No further weed treatment. Undersow with Emorsgate Seeds Hedgerow Mix EH1 at 4g per square metre. Lightly rake.

**Year 3** Cut 50% of hedges in late winter. Identify any trees that can be left to grow into hedgerow standards. Mark with a flag to prevent cutting. Look to achieve a random scattering of standards averaging 1 per 30m.

**Years 4 onwards** Cut the remaining 50% of hedges in late winter. Keep flags to prevent cutting until a very obvious standard has developed. Repeat cutting treatment, alternating areas cut between years.

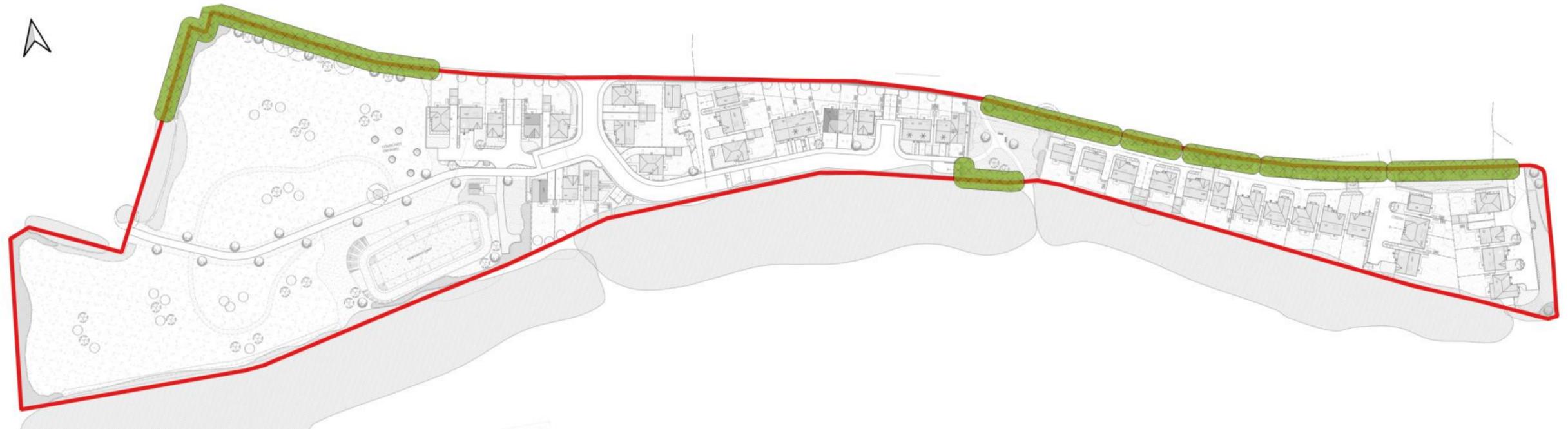
## Monitoring

ECoW to conduct monitoring visits in Years 1, 2, 5, 10, 20, and 30 to check trajectory to and maintenance at Moderate condition.

**Output** ECoW report, Years 1, 2, 5, 10, 20, and 30.

## Remedial action options

- Increase weed control if undesirable species establish.
- Re-seed and replant locally.
- Vary cutting profile.



Condition Assessment Criteria: Hedgerow			
Criteria		Post-dev	Notes
A1	>1.5m average height along length.	1	
A2	>1.5m average width along length.	0	
B1	Gap <0.5m between bottom of canopy and ground for >90% of length.	1	
B2	Gaps makes up <10% total length, none >5m wide.	1	
C1	>1m width undisturbed ground for >90% of length on at least one side.	0	
C2	Plant species indicative of nutrient enrichment <20% cover.	1	
D1	>90% of hedge and undisturbed ground free of INNS and neophytes.	1	
D2	>90% of hedge and undisturbed ground free of human damage.	0	
<b>Condition</b>		<b>Mod.</b>	
Refer to <i>The Biodiversity Metric 3.1 Technical Supplement</i> for assessment criteria details			



# Ditch

## Rationale

Creating a new ditch within POS to provide habitat for aquatic and amphibious species.



## Objectives

Creating 0.44 river units by achieving a DEFRA condition score of **Poor** by Year 1.

## Specification

**Soil** Excavated to a minimum depth of 60cm, with a 'stepped' profile to provide shallower areas at margins (see below). Line the bottom with large gravel and/or pebbles to minimise downward erosion.

**Seeding** Emorsgate Seeds Pond Edge Mixture EP1 or similar at 4g per square metre along both banks.

**Planting** Plug planting from schedule D1 below, at 5 plants per m length of bank.

## Management

**Year 1** Ensure sufficient water levels are maintained throughout the year as aquatic plants establish. Cut marginal grass twice a year in August and October.

**Years 2 onwards** Continue to cut marginal grass twice yearly and cut back common reed as required. Plants should be established enough to survive droughts, or re-grow from seed in the soil. Cut back any scrub encroachment onto the banks or into the channel.

**Years 10, 20, 30** Dredge the ditch, if required, to reduce sediment infilling and terrestrialisation.

## Monitoring

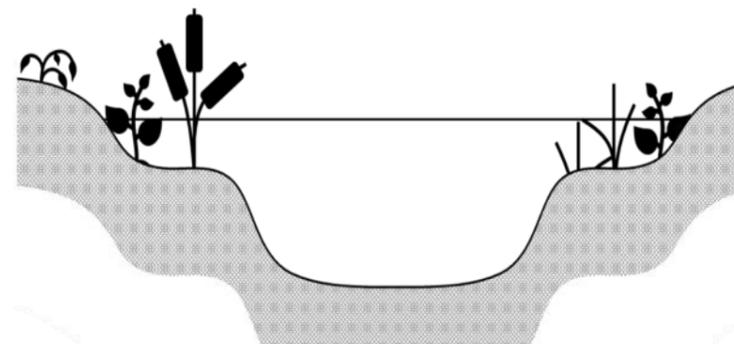
ECoW to conduct monitoring visits in Years 1, 2, 5, 10, 15, 20, and 30 to check trajectory to and maintenance at Poor condition.

**Output** ECoW report, Years 1, 2, 5, 10, 15, 20, and 30.

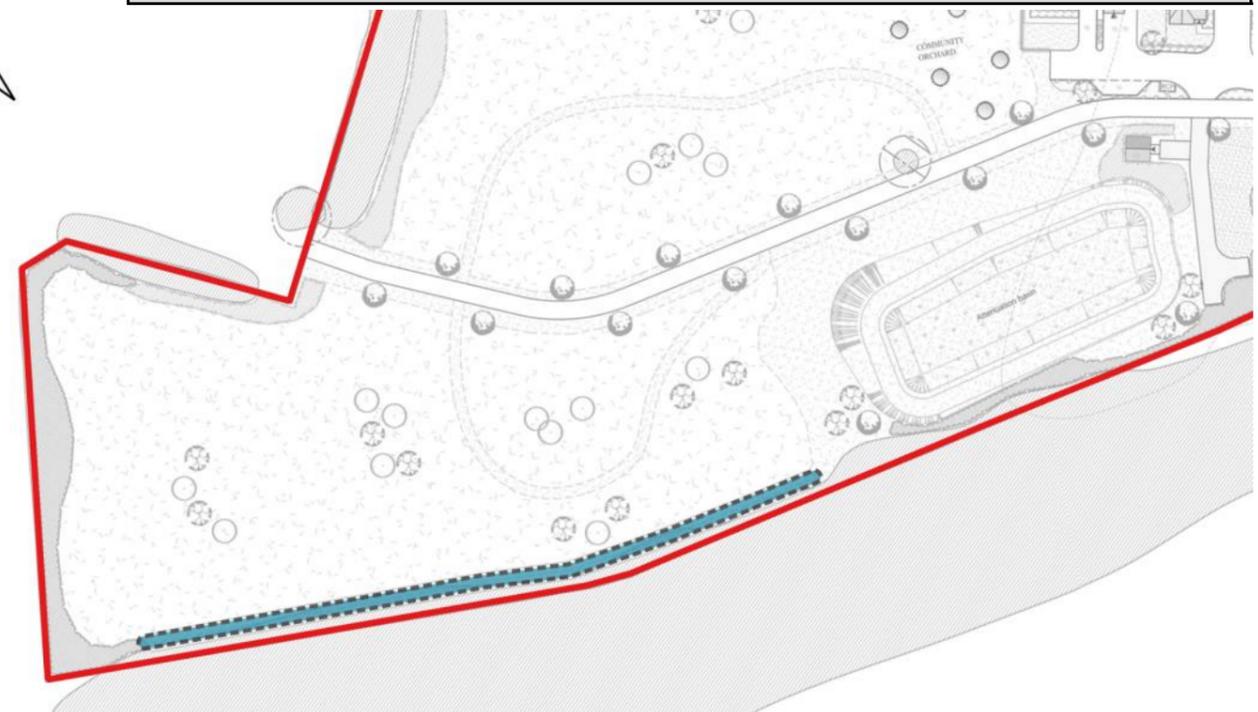
## Remedial action options

- Rake out some aquatic vegetation if becoming too dense; leave to dry on bank of ditch.
- Introduce barley straw if algal growth becomes problematic.
- Replant locally with aquatic plants.

Common name	Scientific name	Groupings
Common reed	<i>Phragmites australis</i>	Single
Common water plantain	<i>Alisma plantago-aquatica</i>	3
Lesser water-parsnip	<i>Berula erecta</i>	Single
Flowering rush	<i>Butomus umbellatus</i>	3
Marsh marigold	<i>Caltha palustris</i>	3-5
Cuckooflower	<i>Cardamine pratensis</i>	5-7
Purple loosestrife	<i>Lythrum salicaria</i>	3
Water mint	<i>Mentha aquatica</i>	3
Water forget-me-not	<i>Myosotis scorpioides</i>	5-7
Lesser spearwort	<i>Ranunculus flammula</i>	3-5
Arrowhead	<i>Sagittaria sagittifolia</i>	3-5
Marsh woundwort	<i>Stachys palustris</i>	3-5
Brooklime	<i>Veronica beccabunga</i>	3



Condition Assessment Criteria: Ditch			
Criteria		Post-dev	Notes
1	Good water quality, with low turbidity indicating no obvious signs of pollution.	0	
2	Range of emergent, submerged and floating-leaved plants present; >10 species per 20m length.	1	Achieved through seeding and plug planting.
3	<10% cover of filamentous algae and/or duckweed.	0	
4	Fringe of marginal vegetation present for >75% of length.	1	
5	Physical damage to <5% of length, such as excessive poaching, or damage from machinery use or storage.	1	
6	Sufficient water levels maintained—minimum summer depth 50cm.	0	
7	<10% heavily shaded.	1	Cut back scrub encroachment to minimise shading.
8	Absence of non-native plants and animals.	1	Remove if necessary. Himalayan balsam may be a particular concern.
<b>Condition</b>		<b>Poor</b>	
<b>Refer to The Biodiversity Metric 3.1 Technical Supplement for assessment criteria details</b>			





# Other habitats

## Rationale

Creating additional, "standard" suburban habitats in POS to provide further habitat units.



### Objectives

Creating 0.07 and 0.05 habitat units by creating standard amenity grassland and ornamental shrub, respectively.

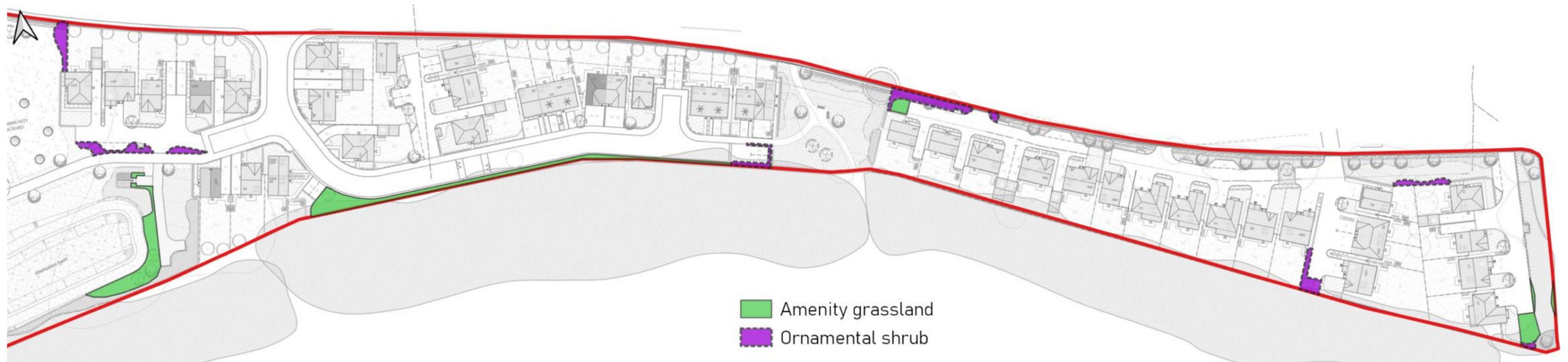
### Specification

**Seeding and Planting** To landscape architect's specifications.

### Management

The amenity grassland is set to 'Poor' condition, and the introduced shrub automatically achieves 'Condition N/A'. Consequently, neither will require specific ecological management to attain agreed-to conditions, and may be managed in the "typical" way.

Condition Assessment Criteria: Grassland (low distinctiveness)		
Criteria	Post-dev	Notes
1	6-8 species per m <sup>2</sup> .	0 Essential for Mod./Good condition.
2	Sward height is varied (at least 20% under 7cm and at least 20% over 7cm).	0
3	Scrub <20% cover.	1
4	Physical damage <5% cover.	0
5	Bare ground 1-10% cover.	1
6	Bracken <20% cover.	1
7	Absence of INNS.	1
<b>Overall condition</b>		<b>Poor</b>
Refer to <i>The Biodiversity Metric 3.1 Technical Supplement</i> for assessment criteria details		



# Nesting and Roosting Boxes

## Rationale

Ready-made roosting and nesting boxes can be incorporated into new builds to provide shelter and breeding sites for declining fauna.



### Integral bat boxes

#### Specification

<https://www.nhbs.com/search?q=bat+brick&qtview=193867> or equivalent approved by ECoW.

#### Location notes

Bat bricks will be positioned singly, as high up on buildings as possible, ideally below the eaves. Bricks will not be positioned above windows, to prevent conflict with new homeowners. Locations will have good access to unlit vegetated corridors and POS areas.

**Number** 20 **Erected** During construction

**Suggested locations** Properties **1, 4, 5, 8, 9, 11, 13, 15, 17, 22, 24, 28, 29, 32, 36, 39, 40, 41, 42, and 46**



### Integral swift bricks

#### Specification

<https://www.nhbs.com/manthorpe-swift-brick> or equivalent approved by ECoW.

Manthorpe swift bricks have been shown to be used by a range of declining urban bird species, including house martin, house sparrow, and starling.

#### Location notes

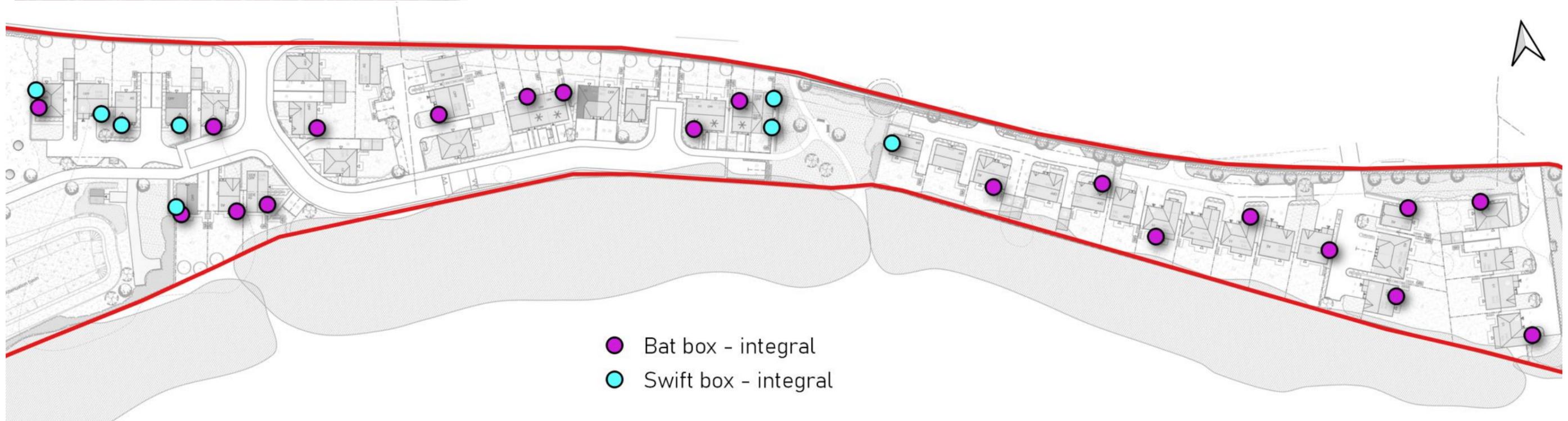
Swift bricks will be positioned in groups of three, as high up on buildings as possible, ideally below the verges of gables. Bricks will not be positioned above windows, to prevent potential conflict with new homeowners.

**Number** 24 (8 groups of 3) **Erected** During construction

**Suggested locations** Properties **19, 20, 21, 41, 43, 44, 45, and 46**



◀ Recommended positioning of swift bricks (credit Dick Newell).



# Reptile and Amphibian Refugia

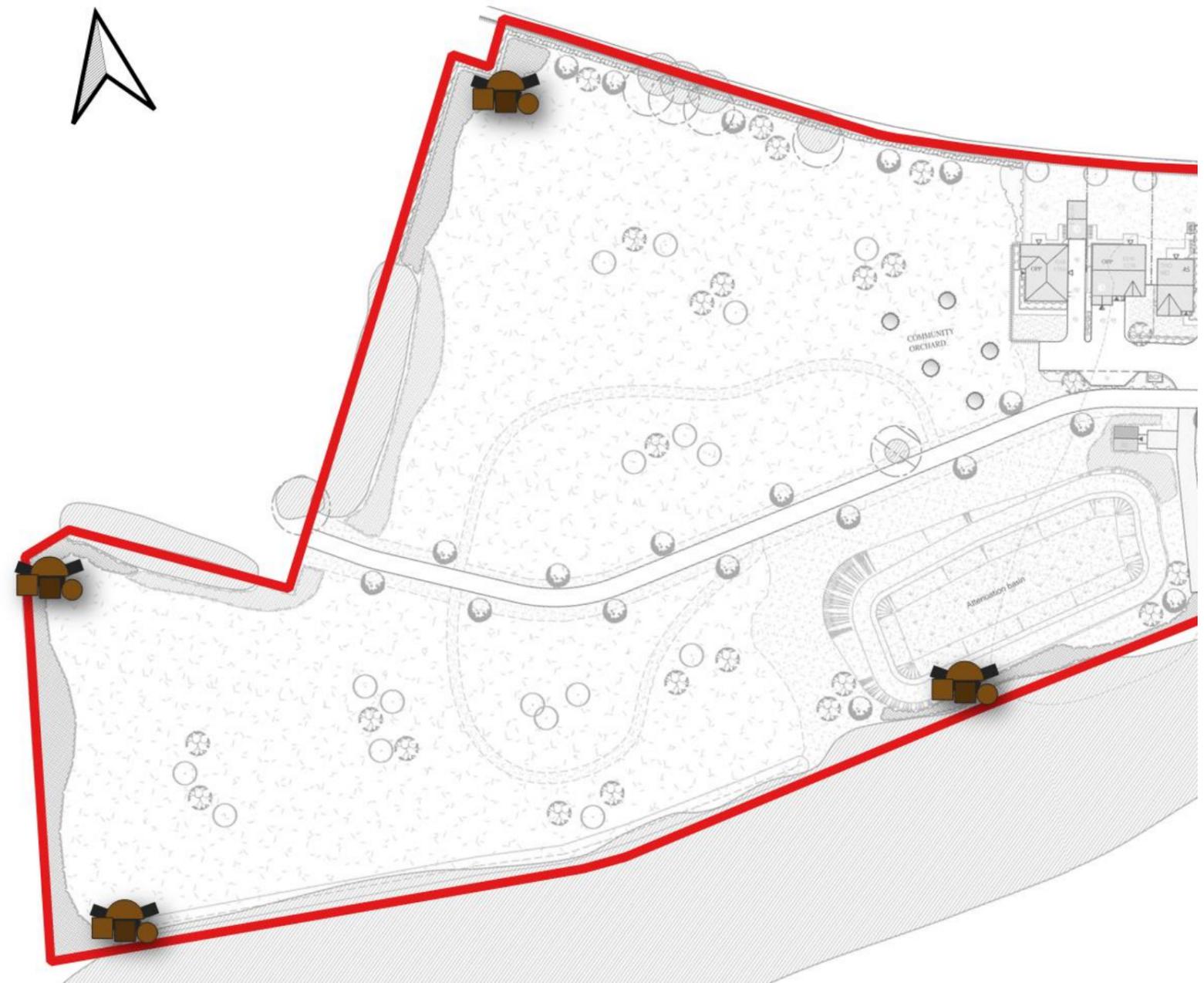
## Rationale

Reptiles and amphibians require shelter when environmental conditions become too harsh—i.e., too hot or cold, or too dry—and in which to hibernate. In nature, fallen deadwood and leaf litter provide natural refuges; these can be mimicked by creating log piles.

**Materials** Wood and tree roots, ideally from Site works, stacked; rubble, compost, and mulch may also be incorporated.

**Design** Mixed together in a naturalistic way, to avoid being too tidy, and provide a range of differently-sized crevices.

**Location** Ideal sites have a mix of sun and shade, situated in long grass between scrub along the Site's western and southern edges (which provides cover) and wildflower grassland in the interior (which provides foraging opportunities).



# Faunal Access

## Rationale

Hedgehog have seen significant declines over the last few decades, with one of the major factors being loss of habitat. This species is listed under Section 41 of the NERC Act (2006) as a 'Species of Principle Importance'.

New gardens can provide excellent hedgehog habitat and whereas previously, these gardens were accessible to this species by virtue of hedgerow planting, a shift in industry practice to hard borders (fences and walls) has inadvertently excluded hedgehog from this extensive foraging resource. Simply providing a means of access into and between these new gardens can very easily and cheaply increase the amount of habitat available to hedgehog.

## Hedgehog access holes

At least one hedgehog access hole (measuring at least 13cm x 13cm) will be installed in each new garden and boundary fence line, allowing rear gardens and POS (below) to remain connected. This will allow hedgehogs to move through the Site, as shown in the figure below (green arrows).

This will be done by contractors during the fence's installation. These will be either purpose made panels such as those supplied by Jackson Fencing or be cut into standard fences, by contractors, during installation. Where concrete gravel boards are used, either purpose built ramps to access holes in the fence panels or underpasses beneath the boards will be made.

All holes will be simply labelled 'Hedgehog Highway' (see photos below) so home owners know why there are there. This will reduce the risk of holes being sealed.



# Timeline



\* Time needed will depend upon factors beyond the ECoW's control and may vary significantly from this estimate.

Task	ECoW to direct	ECoW to carry out	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6+
Retained habitat management (harrowing, planting and seeding)	Yes	Yes	October-February	October-February				
Soiling of new habitats	Yes		To construction programme	To construction programme				
Seeding and planting of new habitats			October-February	October-February				
Manage wildflower grassland	Yes (Years 1-2)		April-Sept	April-Sept	April-Sept	April-Sept	April-Sept	April-Sept
Manage mixed scrub	Yes (Years 1-2)		Sept-March	Sept-March	Year-round	Year-round	Year-round	Year-round
Manage individual trees			Year-round	Year-round	Year-round	Year-round	Year-round	Year-round
Manage hedgerows			Jan-Feb	Jan-Feb	Jan-Feb	Jan-Feb	Jan-Feb	Jan-Feb
Manage ditch			Year-round	Year-round	Year-round	Year-round	Year-round	Year-round
ECoW monitoring		Yes	Yes	Yes			Yes	Years 7, 10, 15, 20, 30
Faunal boxes installed			As built	As built				
ECoW verification of faunal boxes			As built	As built				
Faunal access installed			As built	As built				
Reptile refugia created			January-March					