



Biodiversity Management Plan (BMP)

Land off Rockingham Roundabout

Gregory Projects (Barnsley) Limited

Report Ref. ER-3806-08A

Date: 013/09/2022

Report Reference:	Biodiversity Management Plan Land off Rockingham Roundabout
Report Reference:	ER-3806-08A
Written by:	Christopher Shaw BSc (Hons) MCIEEM Principal Ecologist
Technical review:	Micah Duckworth BA MSc MCIEEM Biodiversity Manager
QA review:	Jon Roberts MSci (Hons) Biodiversity Technician
Approved for issue:	Micah Duckworth BA MSc MCIEEM Biodiversity Manager
Date:	Written 06/04/2022 Amended 13/09/2022



The information which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional *bona fide* opinions. This report does not constitute legal advice.

Unit A, 1 Station Road, Guiseley, Leeds, LS20 8BX

Phone: 01943 884451

01943 879129

www.brooks-ecological.co.uk

Registered in England Number 5351418



Introduction

The following Biodiversity Management Plan has been produced for Gregory Projects (Barnsley) Limited for their proposed development Site known as Land off Rockingham Roundabout.

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.

Scope of Plan

This plan relates to the scheme outlined in Vector Design Concepts Ltd. Landscape Masterplan, drawing 15315-VL_L01 Rev. F (08/08/2022). This is summarised in the figure opposite.

Aims of the Plan

1. To maximise the Site's biodiversity value, through creating a range of semi-natural habitats within the Public Open Space (POS) that will support and attract greater volumes of invertebrates and urban wildlife, than would otherwise be present within typical ornamental landscaping.
2. To demonstrate how the Biodiversity Score outlined in the DEFRA Metric 2.0 Calculation tool will be achieved.

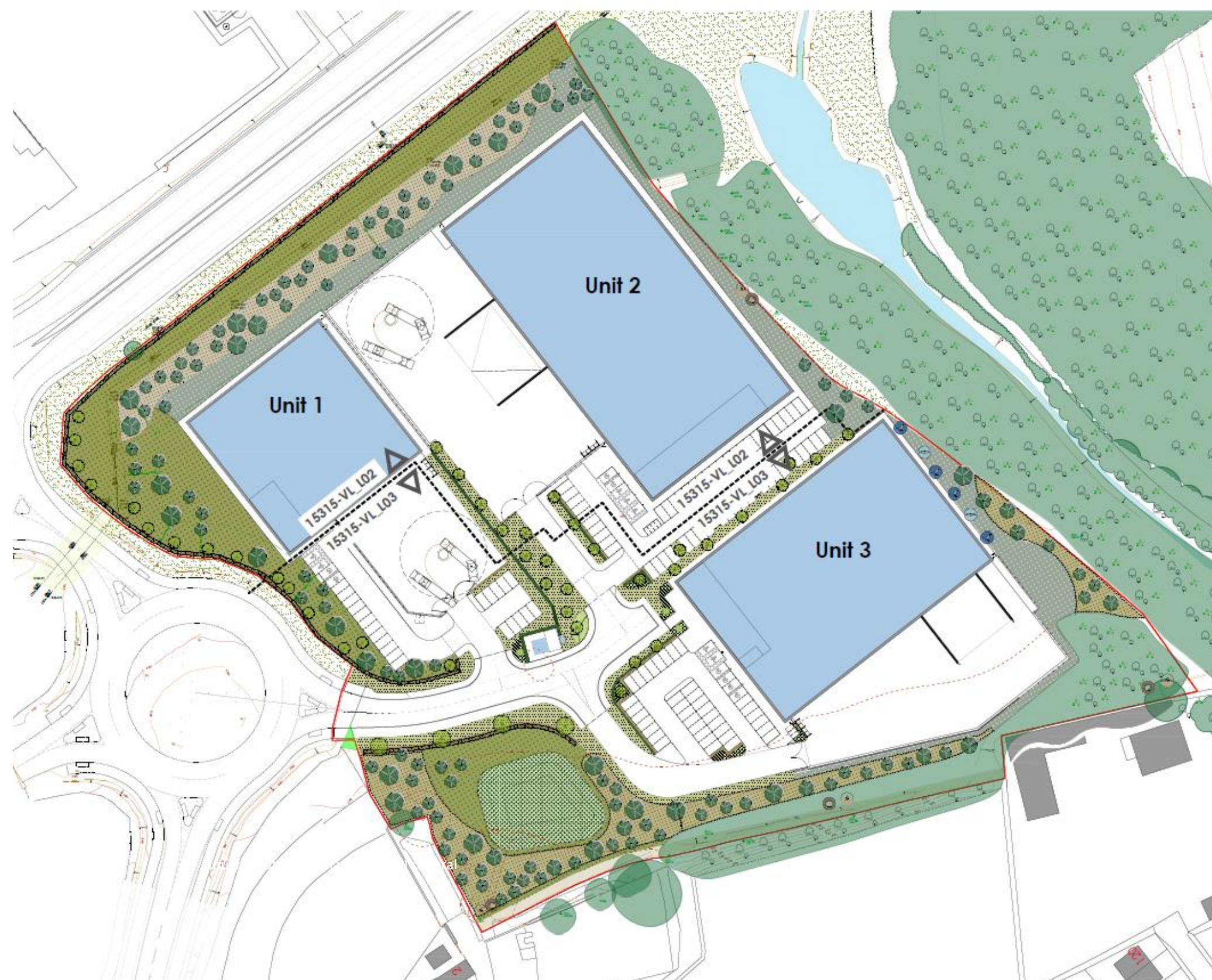
Delivering the Plan

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



Opportunities and Themes



Wildflower grassland

Area of naturalistic wildflower meadow, sown and managed within areas of POS, can provide high value habitat for groups such as invertebrates, and create an impressive backdrop to the development.



Homes for declining birds & bats

New-builds often fail to provide opportunities for nesting birds and roosting bats, with the eaves and verges being well-sealed.

A wide range of designs are now available on the market which can either be fixed to the masonry, or built discreetly into the fabric of new walls.



Food and cover for wintering birds

Birds on passage are often attracted to dense cover where they can recuperate away from predators. Landscaping can include areas which will allow for the creation and long term maintenance of thickets, which will also provide winter food sources (berries).



Maintaining connectivity

Species like hedgehog have seen significant declines over the last few decades, with one of the major factors being habitat loss and fragmentation. Simply providing a means of access into new POS can increase the amount of available foraging habitat.

Grassland (Seeding)

Rationale

Creating a range of flower-rich habitats to attract invertebrates, that in turn will provide foraging opportunities for groups such as birds. Flower-rich habitats will also aid human wellbeing.

Specification

Preparation

Soils should be checked by ECoW for suitability: this to be a friable low nutrient load neutral soil.

No more than 5cm of topsoil will be spread over the subsoil profile. Spread using back actor, spread and firmed. Not driven over and compacted. All soil handling and spreading to be supervised and sanctioned by ECoW.

Seed mixes

The following seed mixes, or suitable alternatives as approved by the ECoW, will be used:

Emorsgate EL1 - Flowering Lawn Mixture

Emorsgate EM2 - Standard General Purpose Meadow Mixture

Emorsgate EM8 - Meadow Mixture for Wetlands

Germinal Amenity WFG8 - Hedgerows and shady areas

Areas to be sown with each seed mix are shown in the figure opposite.

Sowing

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 lightweight machinery at c. 40kg/ha.

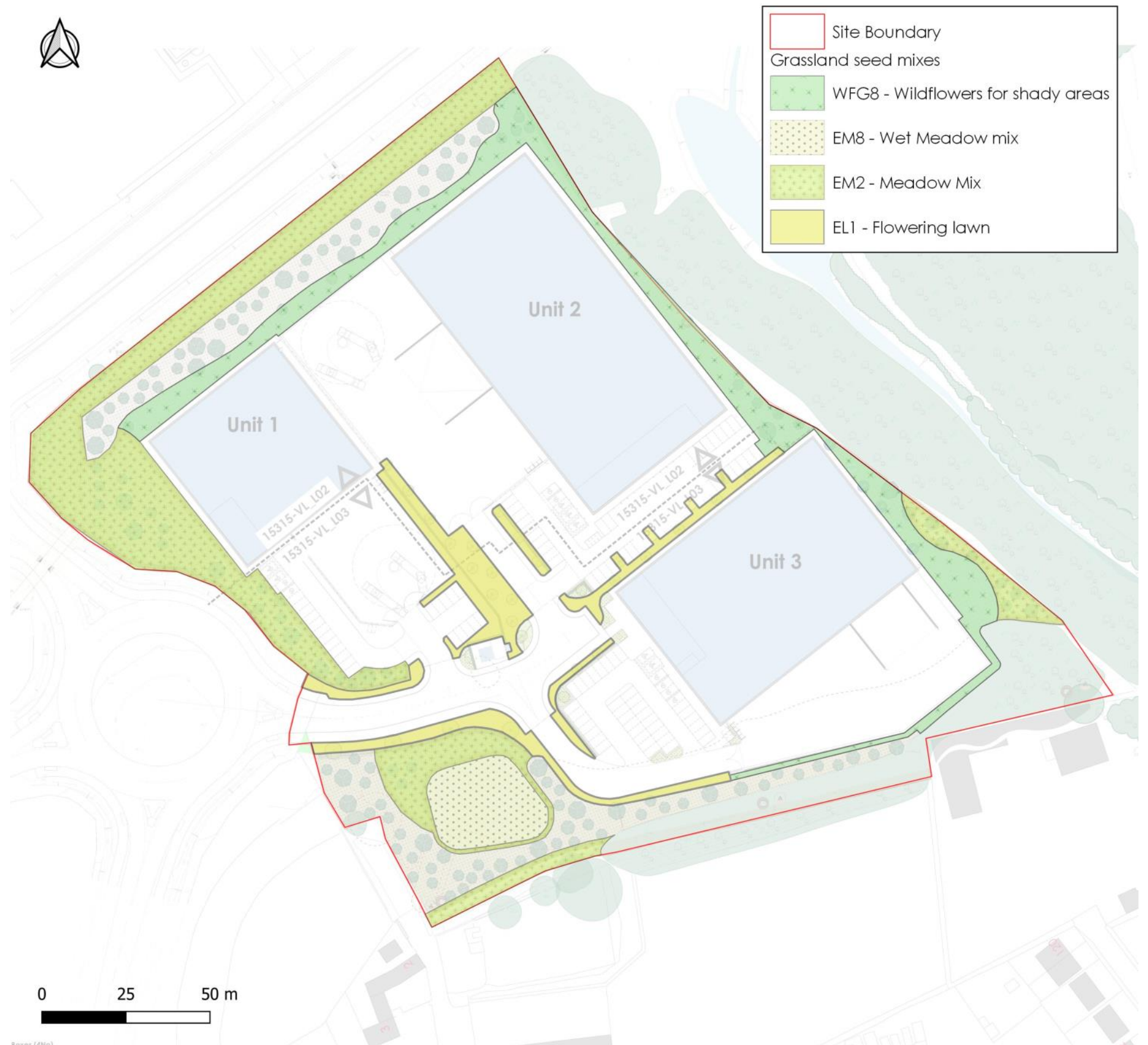
Following seeding, the area will be lightly rolled to incorporate the seed with the growing substrate.

Defra Metric (Version 2.0)

A Biodiversity Net Gain Assessment has been made using the DEFRA Metric 2.0 Calculator tool; this can be seen in Brooks Ecological Report ER-3806-06-D.

In terms of post-development grassland interest, the seed mixes EM2, WFG8 and EM8 are mapped as Other Neutral Grassland, whilst EL1 is mapped as Modified Grassland. Both grassland types are put through as achieving a Moderate Condition.

The table overleaf outlines how a moderate condition score will be targeted, using the criteria supplied with the Version 2.0 Metric Calculator.



Grassland (Management)

Rationale

Creating a range of flower-rich grasslands to attract invertebrates, that in turn will provide foraging opportunities for groups such as birds.

Defra Metric (Version 2.0)

A Moderate Condition score is targeted for grassland.

	DEFRA Metric 2.0 Condition Criteria	Targeted?
1	Appearance and composition closely match the specific grassland habitat type. Wildflowers, sedges and indicator species are very clearly and easily visible in sward.	Yes
2	Sward height varied (20% is less than 7cm and 20% is more than 7cm).	No
3	Cover of bare ground between 1% & 5%	Yes
4	Cover of bracken less than 20% and cover of scrub less and 5%	Yes
5	There is an absence of invasive non-native weeds. Undesirable species and physical damage accounts for less than 5%.	Yes
		4 out of 5 criteria targeted (Moderate)

Management

Year 1—All grassland types

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, bracken, and others, according to ECoW recommendations. Operatives must be proven competent in weed identification.

Year 2 onwards

EL1—Flowering Lawn

Cut once per month during the growing season, leave for 5 weeks in June. Arisings may be left to rot *in situ* unless condition is deteriorating.

EM2, WFG8 & EM8 —Meadow

Two cuts, once in August and again in October—remove arisings. Continue to spot treat competitive weed species each year to ensure these remain under the 5% cover threshold.

Any invasive non-native weeds or bracken will be treated immediately to ensure their absence from the Site.

Monitoring

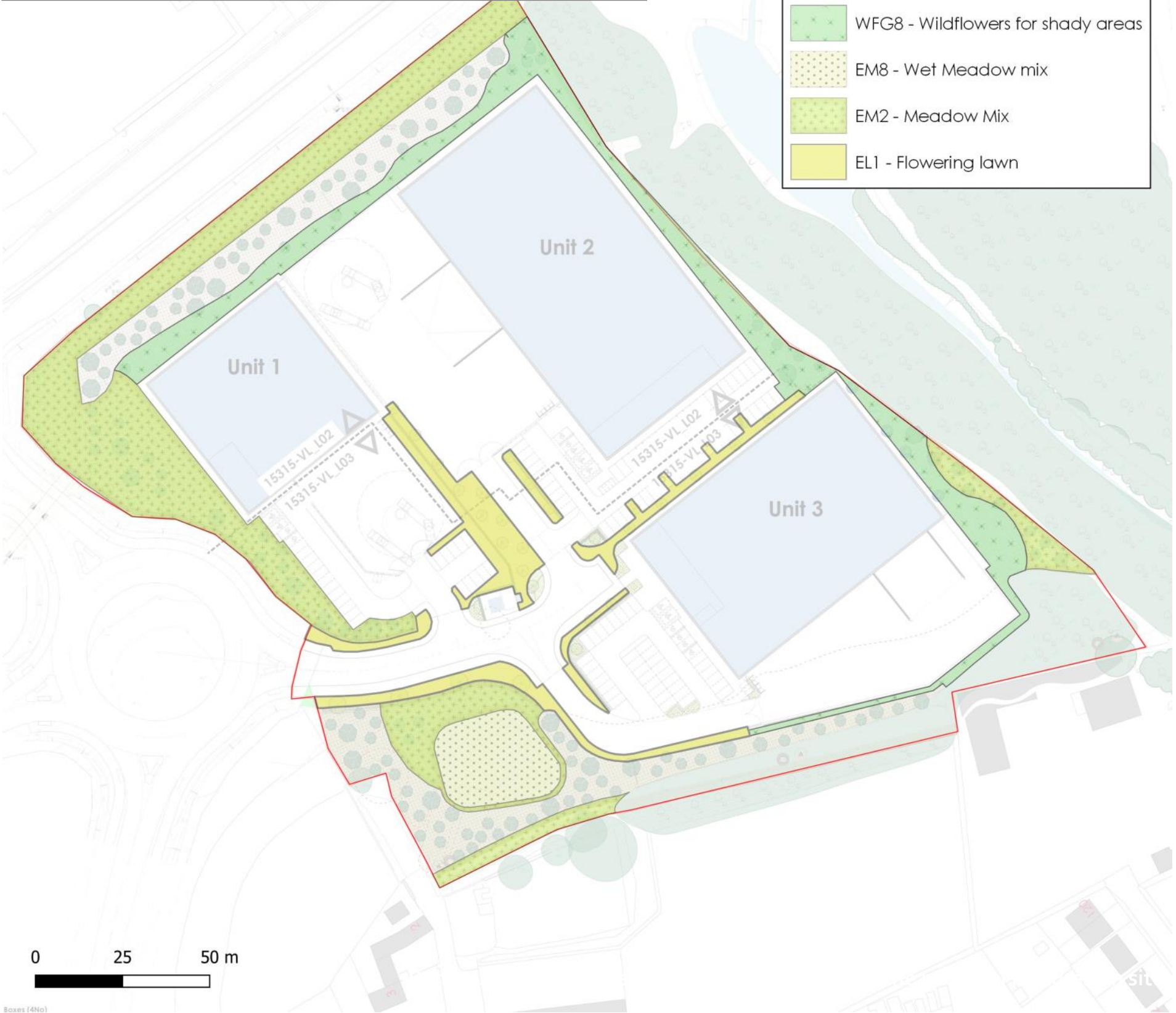
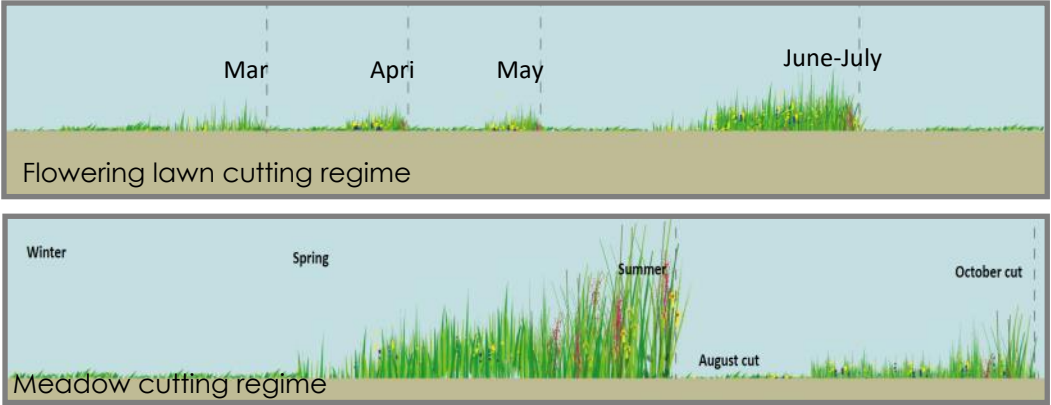
Ecological Clerk of Works year 2 and 5 monitoring visit to check trajectory to condition requirement.

Output

ECoW report year 2 and 5.

Remedial action options

- Increase weed control if undesirable species exceed 5% cover.
- Increase cutting frequency to remove nutrients if required.
- Re-seed and replant locally if cover of bare ground exceeds 5%.



Mixed Scrub (Planting)

Rationale

New scrub planting will seek to create a winter foraging resource and areas of shelter for groups such as birds.

Specification

Soil: N/A.

Weeds: treat weeds in new tree and shrub planting stations.

Seeding: Emorsgate EW1—Woodland Mix (Year 10).

Planting: as per Planting Schedule 1 below.

Planting Schedule 1				
Scientific	English	%	Stock	Groupings
<i>Sorbus aucuparia</i>	Rowan	20	1+1 BR	random
<i>Corylus avellana</i>	Hazel	25	1+1 BR	random
<i>Prunus spinosa</i>	Blackthorn	20	1+1 BR	random
<i>Crataegus monogyna</i>	Hawthorn	10	1+1 BR	random
<i>Rosa canina</i>	Dog rose	10	1+1 BR	random
<i>Viburnum opulus</i>	Guelder rose	10	1+1 BR	random
<i>Lonicera periclymenum</i>	Honeysuckle	5	1ltr Pot	random

Defra Metric (Version 2.0)

A Biodiversity Net Gain Assessment has been made using the DEFRA Metric 2.0 Calculator tool; this can be seen in Brooks Ecological Report ER-3806-06-D.

In terms of post-development planting, native tree and shrub planting along the south and east boundaries has been mapped as Mixed Scrub in Moderate Condition.

The table below outlines how a moderate condition score will be targeted, using the criteria supplied with the Version 2.0 Metric Calculator.

	DEFRA Metric 2.0 Condition Criteria	Targeted?
1	There are at least three woody species, with no one species comprising more than 75% of the cover.	Yes
2	This is a good age range - a mixture of seedling, saplings, young and mature shrubs.	No
3	Pernicious weeds and invasive species make up less than 5% of the ground cover.	Yes
4	The scrub has a well-developed edge with un-grazed tall herbs.	Yes
5	There are many clearings and glades within the scrub.	Yes
		4 out of 5 criteria targeted (Moderate)



Mixed Scrub (Management)

Rationale

New scrub planting will seek to create a winter foraging resource and areas of shelter for groups such as birds.

Management

Years 1-2

Keep a 0.5m diameter area weed-free through strimming or hand pulling.

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 less than 5%.

Years 3-5

Monitor for competitive weed growth away from planting stations.

Hand pull, trim, or weed wipe as required to keep cover of pernicious weeds and invasive species below 5% of ground cover.

Remove tree guards before year 5.

Years 10 and onwards

Thin by up to 30% in year 10 to remove any species which is becoming dominant and to create a series of small clearings. No one species will be allowed to comprise more than 75% of cover. Must be ECoW directed.

Leave all felled timber *in situ* to rot down.

Hand pull, trim, or weed wipe as required to keep cover of pernicious weeds and invasive species below 5% of ground cover.

Selectively seed with 1kg of native woodland seeds at ECoW discretion in locations with suitable soil and light conditions (10%-40% ambient daylight in summer).

Monitoring

Ecological Clerk of Works year 2, 5, and 10 monitoring visit to check trajectory to condition assessment.

Output

ECoW report year 2, 5, and 10.

Remedial action options

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



Native Hedge (Planting & Management)

Specification

- Soil:** N/A.
- Weeds:** Maintain a weed free strip under establishing hedge.
- Seeding:** Emorsgate seeds Hedgerow Mix EH1 (Year 2).
- Planting:** as per Planting Schedule 1 below.

Defra Metric (Version 2.0)

In terms of post-development hedgerows, those along the Site boundaries and access road have been mapped as Native Species-rich Hedgerows, whilst more formal internal hedges are mapped as Ornamental Non-native Hedgerows.

Native hedgerows will be managed to achieve a Good Condition score. The table below outlines how a this will be targeted, using the criteria supplied with the Version 2.0 Metric Calculator.

	Attribute	Targeted?	Criteria for favorable condition
A1	Height	Yes	>1.5m average along length.
A2	Width	Yes	>1.5m average along length.
B1	Gap – hedge base	Yes	Gap between ground and base of canopy <0.5m for >90% length.
B2	Gap – hedge canopy continuity	Yes	Gaps make up <10% of total length and no canopy gaps >5m.
C1	Undisturbed ground and perennial vegetation	No	>1m width of undisturbed ground with perennial herbaceous vegetation for >90% of length, measured from the outer edge of the hedgerow & present on one side of hedge at least.
C2	Undesirable perennial vegetation	Yes	Plant species indicative of nutrient enrichment of soils dominate <20% cover of area of undisturbed ground.
D1	Invasive and neophyte species	Yes	>90% of hedgerow and undisturbed ground is free of invasive non-native and neophyte species.
D2	Current damage	No	>90% of hedgerow of undisturbed ground is free of damage caused by human activities.

Planting Schedule 2 - Native Species-rich Hedgerows

Scientific	English	%	Stock	Groupings	Centres and style
<i>Corylus avellana</i>	Hazel	25	1+1 BR	groups 3-8	Double staggered row
<i>Prunus spinosa</i>	Blackthorn	10	1+1 BR	groups 5-9	Double staggered row
<i>Ilex aquifolium</i>	Holly	5	1ltr Pot	Scattered individuals	Double staggered row
<i>Crataegus monogyna</i>	Hawthorn	25	1+1 BR	groups 3-8	Double staggered row
<i>Rosa canina</i>	Dog Rose	5	1+1 BR	groups 3-8	Double staggered row
<i>Malus sylvestris</i>	Crab apple	5	1+1 BR	groups 3-5	Double staggered row
<i>Viburnum opulus</i>	Gelder Rose	5	1+1 BR	groups 3-5	Double staggered row
<i>Cornus sanguinea</i>	Dogwood	5	1+1 BR	groups 3-8	Double staggered row
<i>Acer campestre</i>	Field Maple	10	1+1 BR	groups 3-8	Double staggered row
<i>Lonicera periclymenum</i>	Honeysuckle	5	1ltr Pot	Individuals	Scattered*



Native Hedge (Planting & Management)

Rationale

Planting and managing native hedgerows so as to create a foraging resource and area of shelter for groups such as birds.

Management - Native Species-rich Hedgerows only

Year 1 Keep a 1m strip centered 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 m square. Lightly rake.

Year 3-4 Cut hedge in late winter.

Years 5+ Cut one side (max. 50%) of hedgerow in any given year in late winter, alternating the side cut on an annual basis.
Maintain hedgerow at 2.5m height and 2m width.
Plant up any gaps to ensure Targets B1 & B2 are being met.

Monitoring

ECoW to conduct monitoring visits years 3 and 5 to check trajectory to Good condition.

Output ECoW report, years 3 and 5.

Remedial action options

- Increase weed control if undesirable species establish.
- Re-seed and replant locally.
- Vary cutting profile.
- Plant up any gaps to ensure there is no gap over 5m and gaps make up less than 10% of length.



Bat boxes

Rationale

Ready-made roosting boxes can be incorporated into developments to provide shelter and breeding sites for crevice dwelling bats, such as pipistrelles.

Specification

Box Type	No.	Plan ref.
Beaumaris Woodstone Bat Box*	3	Blue dots

* Or suitable alternative agreed with Ecologist

Location Notes

Sited as high as possible on the northeast gable ends of Unit 3, ideally directly below apex of verge.

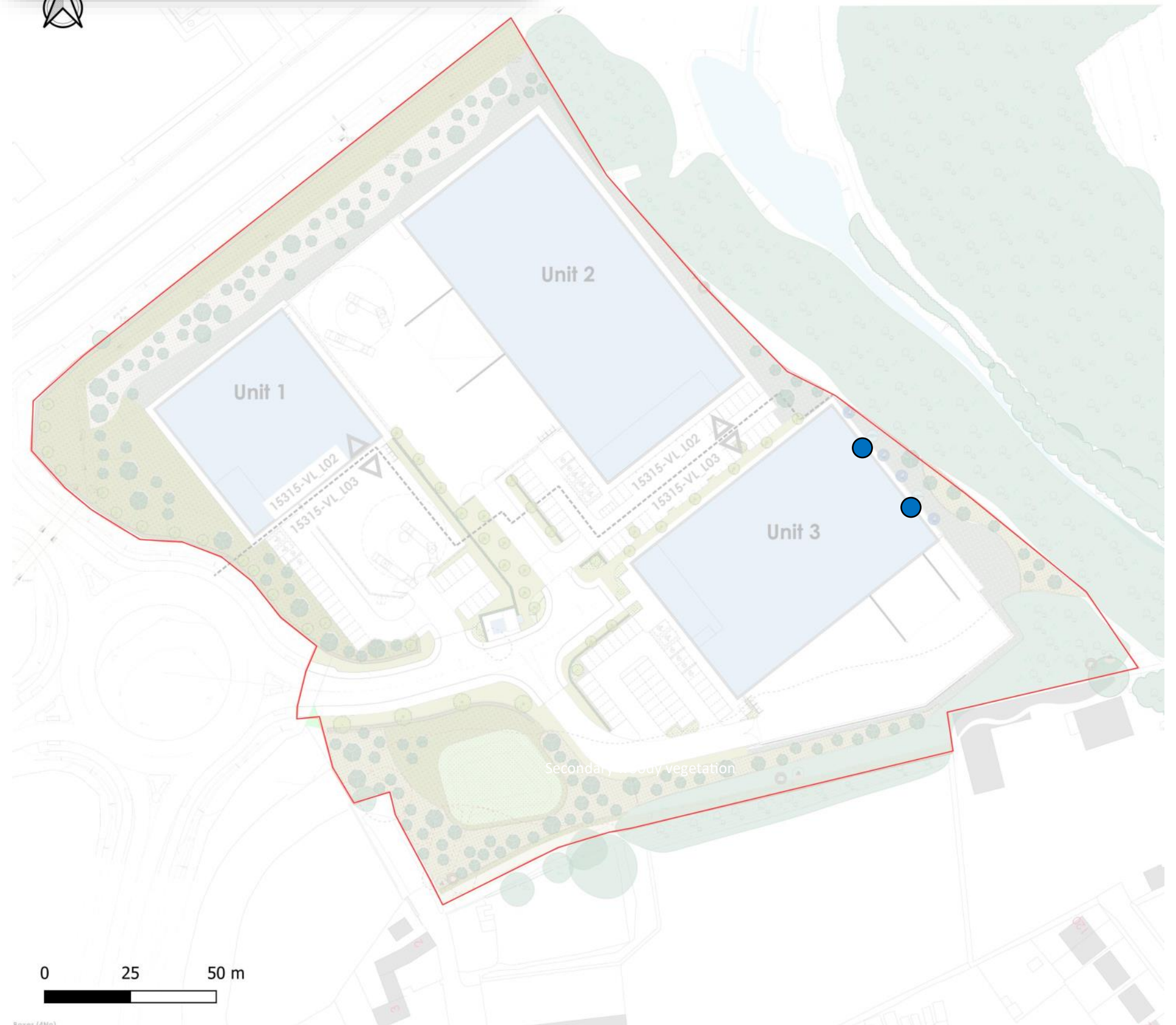
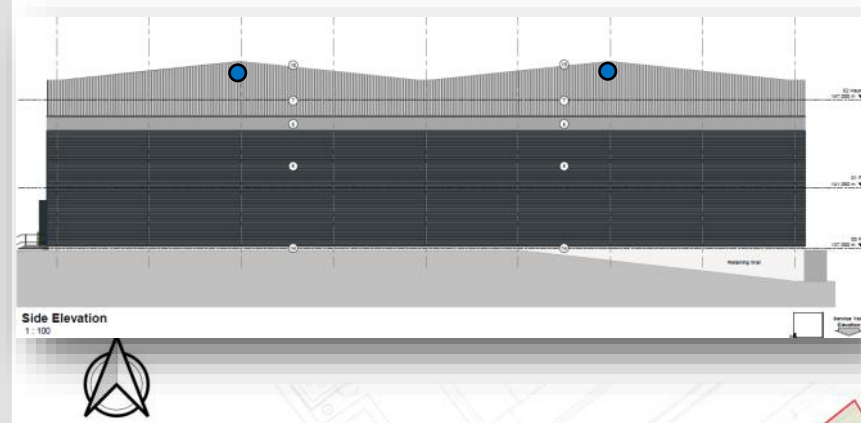
Boxes will not be positioned directly above windows, to prevent potential conflict with building users.

Boxes have been positioned so as to face onto retained boundary vegetation.

Elevations fronting onto roads, car parks, or service areas have been purposefully avoided, to avoid illumination of boxes from streetlamps or security lights.

Installed

During construction.



Boxes (4No)

Bird boxes

Rationale

Ready-made nesting boxes can be incorporated into developments to provide shelter and breeding sites for declining garden birds such as swift, house sparrow, house martin, and starling.

Specification

Box Type	No.	Plan ref.
Woodcrete Swift Box*	4	Orange dots

* Or suitable alternative agreed with Ecologist

Although designed to attract swift, swift boxes have been shown to act as 'universal' bird boxes, being used by other declining garden birds such as house sparrow, house martin, and starling.

Location Notes

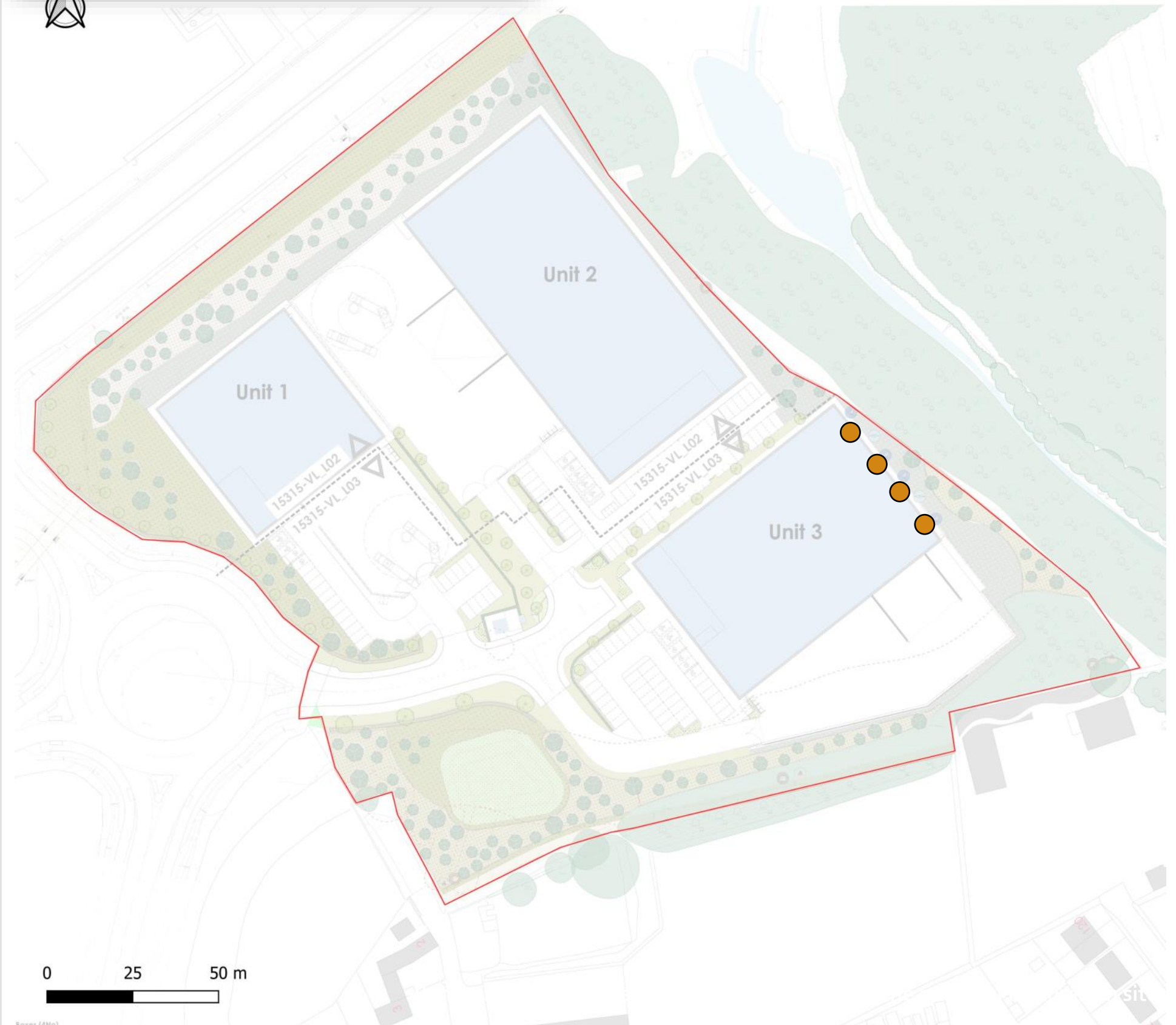
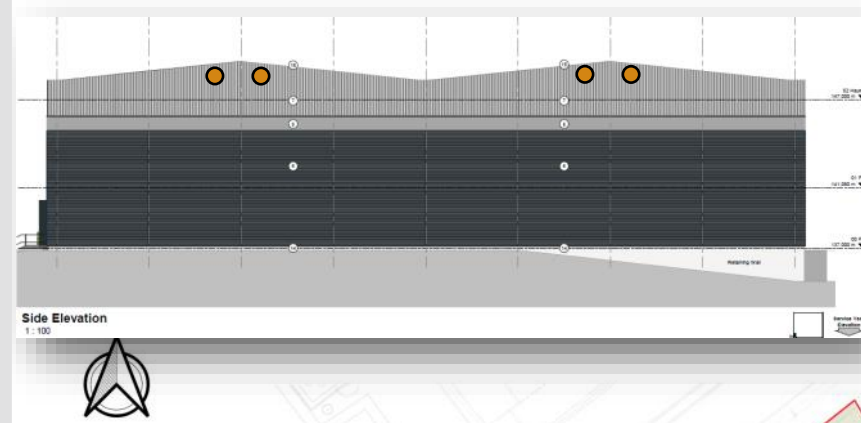
Sited as high as possible on new build, ideally close to the apex of the verge.

Boxes will not be positioned directly above windows or doors, to prevent potential conflict with building users.

Boxes have been positioned so as to face retained vegetation, and to avoid areas that will be subject to high levels of disturbance.

Installed

During construction.



Boxes (4No)



Maintain Connectivity

Rationale

Many species, most notably hedgehogs, have seen significant declines over the last few decades, with one of the major factors being loss or fragmentation of habitat.

Often, landscaping and public open space will provide excellent habitat for wildlife. Whereas previously these areas were accessible to this wildlife by virtue of hedgerow planting, a shift in industry practice to hard borders (fences and walls) has inadvertently excluded species like hedgehogs and amphibians from this extensive foraging resource. Simply providing a means of access through hard boundaries these new gardens and POS can very easily and cheaply increase the amount of habitat available to hedgehog, as shown in the figure opposite.

Specification

At least one access hole (measuring at least 13cm x 13cm) will be installed in any new fence lines installed within the areas highlighted green in the plan opposite, allowing new and retained vegetation to remain connected along the Site boundaries.

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 labelled 'Hedgehog Highway' (see photos below) so Site users and maintenance staff know why they are there. This will reduce the risk of holes being sealed.

