

Technical Note

Project Mayfield
Subject Update Ecology Strategy with Biodiversity Net Gain - Phase 1
Project no 0046688
Date 12 June 2023

Revision	Description	Issued by	Date	Approved (signature)
00	Draft Ecology Strategy	PO	15/03/2019	HD
01	Updated with DRE comments and Biodiversity Net Gain calculations	PO	29/08/2019	JR
02	Updated to include specific Phase 1 Biodiversity Net Gain calculations compared with survey site calculations	JR	06/09/2019	PO
03	Finalised with DRE comments	CF	26/09/2019	HD
04	Updated Ecology strategy to reflect updates to the Park design amendments, final for issue	JR	01/11/2021	PO
05	Updated Ecology Strategy to reflect additional details of the development plots in Phase 1	JR	02/06/2023	PO
06	Updated Ecology Strategy to reflect additional details of the development plots in Phase 1 – revised BNG calcs	JR	12/06/2023	PO

1 Introduction

1.1 Background

This Update Ecology Strategy for Mayfield sets out the detailed ecological features provided within the Phase 1 development of the Mayfield Strategic Regeneration Framework. This includes the previously approved, and now constructed, Mayfield Park and also provides details relating to the three built development plots associated with this phase of development:

- Plot O - Baring Street Office 1 / Poulton Building;
- Plot M - Baring Street Office 2/ Republic Building; and
- Plot N - Baring Street Multi-storey Car Park/ MSCP.

The strategy will present the updated biodiversity net gain calculations undertaken following the inclusion of the detailed design of the plots and associated area of public realm.

This document updates the previous Ecology Strategy produced for, and appended to, the 2021 Environmental Impact Assessment (EIA) Addendum. It continues to demonstrate how the Mayfield development aligns with the broad principles set out within the original Mayfield Strategic Regenerative Framework (SRF) (2018), but now provides detail of the ecological elements within the approved design of the Park as well as details of what the development plots in Phase 1 will contribute, which support the Natural Capital objective of the Mayfield SRF to 'increase biodiversity and public access to green space'.

This Update Ecology Strategy document will illustrate the new levels of biodiversity net gain that will be delivered by the built development plots, identifying what the updates in design and development of the plots mean for biodiversity net gain in terms of both the Phase 1 development and the wider SRF as a whole. The updates to this Ecology Strategy

This report has been prepared for the sole benefit, use and information of U+I for the purposes set out in the Design note or instructions commissioning it. The liability of Buro Happold in respect of the information contained in the report will not extend to any third party. All concepts and proposals are copyright © 1976 – 2023 Buro Happold. All rights reserved. Issued in commercial confidence.

revision will also highlight other enhancements incorporated in the plots outside of biodiversity net gain, such as habitat features for nesting birds.

Figure 1-1 indicates the boundaries of interest as referred to in this document. The orange line indicates the wider Mayfield (SRF) boundary as detailed within the strategy. The purple line indicates the extent of ecological surveys (the survey site) for the expected development areas within the SRF requiring habitat removal and building demolition. The red line indicates the Phase 1 application boundary, including additional highways improvements to the south west of the SRF boundary.

1.2 Overview

1.2.1 Mayfield draft SRF (adopted February 2018)

The Mayfield SRF recognises that naturalising the River Medlock channel offers significant opportunities to enhance the river corridor for both people and wildlife. It proposes creation of a central Park with soft river edges and setback for the river margins to establish a variety of wetland habitats to improve access to the river, as well as provide biodiversity benefits. It proposes that much of the riverbank should be rededicated to ecology and nature.

Although not specifically addressed in the SRF, a range of national and local legislative and policy requirements to protect, retain and enhance the ecology of the site has also influenced the design. This includes national legislation offering legal protection for some wildlife species and identifying habitats and species of principal importance to biodiversity in the UK, some of which occur on or near the Mayfield site. In addition, requirements for biodiversity net gain, which leaves biodiversity in a better state than before development, are already embedded in national and local environmental policy and strategy with emerging strategies placing increasing weight on biodiversity and green infrastructure.

1.2.2 Phase 1

The delivery of the Mayfield development will progress in phases over a number of years. The first phase (Phase 1), will deliver the majority of Mayfield Park, Plots O and N (Application 1) and Plot M (Application 2).

Following the successful S73 application and associated ES addendum in 2021, accompanied by information to discharge new and previous, but still relevant, planning conditions, the Mayfield Park has been constructed and is now completed and is in its operational form. Improvements to the river corridor, installation of semi-natural riparian and wildflower habitat, new trees, amenity planting spaces, lawn areas and a new play park have all been installed across the Park area.

More details are now available for the proposed development plots associated with Phase 1 and so further details of additional ecological enhancements are included within this strategy.

1.2.3 Biodiversity net gain

Biodiversity net gain was used in the previous iterations of the Ecology Strategy to quantify the benefits for biodiversity as a result of the proposed development at Mayfield, both in terms of the Phase 1 development site as well as the wider SRF as a whole. The assessment takes into account the value of baseline habitats across the site prior to construction works commencing (as assessed in 2017) and identifies those that are to be lost as well as those which will be retained and/or enhanced through the post-development landscape design and management.

Due to details around the built plot buildings and associated public realm now being available as part of the update to plot design, additional areas of public realm and building-associated planting is now included within the update to the biodiversity net gain calculations for both Phase 1 and the wider SRF. Areas of public realm planting are considered to following a similar typology to those included within the Park. Details relating to terrace planting on the buildings were not confirmed at the time of producing this update to the Ecology Strategy, and so assumptions have been made as to their likely planting typology, which are outlined in sections 5.1.2 and 5.1.3 as well as Table 5-1.

Outside of quantifiable net changes in habitat value, this Update Ecology Strategy will also detail the habitat features provided within the detailed Park design to support protected, priority and notable species within the Mayfield development.

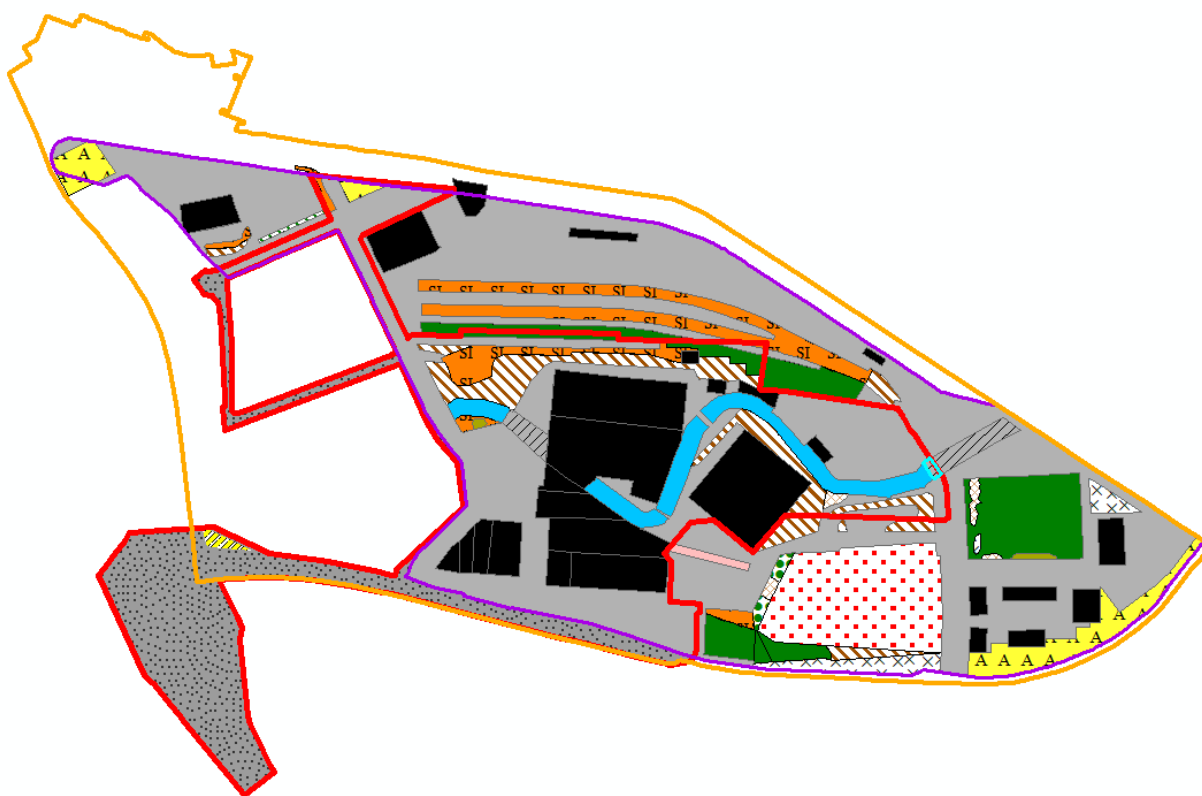


Figure 1-1 Illustrating site boundary context

1.3 Aims and objectives

The aims and objectives as outlined in the previous Ecology Strategy remain relevant in this Update Ecology Strategy. The key aim is to apply the mitigation hierarchy at all stages of development design to achieve biodiversity net gain in line with best practice. In summary, the objectives are to:

- Retain and enhance existing habitats where possible;
- Replace ecologically valuable habitats which will be removed as part of the works;
- Replace and enhance habitats for local and UK biodiversity priority species; and
- Maintain and improve, where possible, ecological connectivity and functionality across and beyond the site.

2 Summary of updates to the scheme

It is confirmed that habitats and ecological enhancement measures as outlined for the Mayfield Park within the previous iteration of the Ecology Strategy (Rev 04), have been implemented and installed across the Mayfield Park area. These habitats and ecological features are now under review, as per the Landscape and Ecological Management Plan as submitted to discharge planning conditions, to monitor planting health and success.

Updates presented in this Ecology Strategy include the inclusion of public realm and terrace planting associated with the Plot M, N and O development areas of Phase 1 and other associated habitat feature enhancements that the plots provide within the design of the buildings.

3 Ecological baseline

3.1 Habitats

As applied in the previous Ecology Strategy and within the 2019 ES Ecology chapter, the baseline as surveyed in 2017 will continued to be used for the biodiversity net gain calculations in order to reflect a true change in habitats for the proposed Phase 1 and wider Mayfield development area.

Habitats recorded across the survey site include buildings (occupied and derelict), the disused railway depot, the culverted and canalised River Medlock, extensive areas of hardstanding and a range of semi-natural habitats typical of urban brownfield sites.

It is acknowledged that the Mayfield Park now provides a more ecologically valuable receptor within the Mayfield site than the baseline reflects. However the Park is part of the post-development condition of the site, and so will not form part of the baseline assessment presented within the biodiversity net gain assessment. Potential for impacts to the ecological receptors associated with the Park due to potential construction and operational impacts associated with the implementation of the Phase 1 development plots are considered within the 2023 ES addendum.

3.2 Key species

Small bat roosts were previously recorded across the site in four locations including the now removed culverted section of the River Medlock. The river was, and still is, generally considered to be an important commuting and foraging route for bats within the urban environment of Manchester and common pipistrelles and Daubenton's bats had been recorded as part of activity surveys to support the 2019 application. Due to the brownfield nature of the baseline site, it was considered to have suitable habitat for the black redstart, a rare breeder in the UK that is known to occur near the Mayfield site, although targeted surveys didn't identify any on site.

The development of the Park included the installation of new bat boxes within parts of the retained river wall, as well as features to support wagtails, kingfishers, generalist bird species and invertebrates.

4 Strategy

The 2021 Ecology Strategy identified how the updated Mayfield Park design would deliver mitigation for habitat loss, biodiversity for the wider SRF and enhancements for protected and priority species. The extent to which the Park delivered biodiversity benefits in terms of quantified net gain was demonstrated to have changed between the 2019 and 2021 designs for the Park. Whilst the Park was found to still deliver a significant net gain for the Phase 1 development site, when taken into account in the context of the wider SRF it then failed to produce a net gain and would actually result in a net loss if no other ecological interventions came forwards.

The strategy identified that the development plots and public realm areas to come forward within the rest of Phase 1 and the wider SRF would need to ensure that tangible habitats and benefits for biodiversity will be included within development design to support the SRF as a whole in achieving biodiversity net gain.

The completed Park delivers biodiversity mitigation and enhancements through a network of green infrastructure, including landscaping with native species and replacement tree planting, incorporation of wildlife planting including for pollinators, the creation of biodiverse roofs and the provision of habitat features following the amendments to the scheme.

Mitigation and enhancement measures that have been successfully implemented within the Mayfield Park include:

- Enhancement of the river corridor for both people and wildlife by incorporating a variety of features to naturalise and 'daylight' the **River Medlock**, a UK and Manchester priority habitat:
 - Maximise the use of soft and bioengineering solutions where river walls will be removed. This will enable a variety of wetland habitats including marginal and emergent planting to be created to provide biodiversity benefits, reduce flood risk and improve access to the river in certain locations.

- Provides setbacks from the river corridor, even where walls remain, to green the river corridor edges. This improves the setting of the river where hard engineering solutions are retained. A variety of native and non-native planting soften the visual of the hard-engineered river edges providing resource for local wildlife.
 - Creation of riffles and associated pools in the riverbed, increasing oxygenation and providing habitat for fish such as brown trout and aquatic invertebrates.
 - Incorporation of artificial nest boxes for nesting habitat for kingfisher, dipper and wagtail in the river edge design.
 - Retention of a sufficiently dark river corridor, ensuring continued use by bats. A sensitive lighting plan was produced and approved that demonstrates how light spill is minimised within the river corridor while still maintaining health and safety requirements for public realm areas.
- Removal of Japanese knotweed, undertaken by specialist contractors with a long-term strategy for management of invasive plant species, further improves the ecology of the river corridor.
 - Urban green space is a priority habitat within the Manchester BAP and there are a number of priority and protected species strongly associated with urban green space and the built environment including pipistrelle bats, peregrine falcon and swifts. Soft landscaping and provision of habitat features targeted at urban-adapted priority species helps to mitigate the impact of the development on these species and provides biodiversity enhancement through the provision of new nesting, roosting and foraging resources.
 - Demolition/conversion works to buildings and culverts which contain bat roosts were carried out under licence from Natural England with provision of replacement roosting habitat along the river corridor.
 - As development of the Phase 1 and SRF site will result in loss of potential habitat for black redstart, replacement brownfield habitat is recommended within the adjacent developed plots in the form of biodiverse/brown roofs, living walls, perching posts and nest boxes close to the river. This supports the developed plots contribution in achieving biodiversity net gain across the wider SRF.
 - Provision of replacement nesting habitat for generalist bird species to replace lost nesting opportunities following vegetation removal.
 - Incorporation of plant species which are native and/or of known benefit for pollinators and other invertebrates in combination with provision of habitat features to support resting/hibernating invertebrates will contribute to meeting the targets of the National Pollinator Strategy as well as deliver biodiversity net gain.
 - Pre-clearance checks of vegetation and buildings for nesting birds within the main breeding season (March to September) to remain legally compliant.

5 Biodiversity net gain calculations

5.1 Methodology

5.1.1 Approach

Since the Ecology Strategy was produced in 2019, and the supporting biodiversity net gain calculations were undertaken, and subsequently updated in 2021, the Natural England Biodiversity Metric has gone through several updates, with the latest iteration of the Biodiversity Metric 4.0 released in February 2023. However, to maintain consistency with the previous biodiversity net gain approach, and to illustrate the comparative changes to the net gain score as a result of the scheme changes, the updated biodiversity net gain calculations have been undertaken using the same, older, version of the Natural England Biodiversity Metric 2.0. In the version of the Biodiversity Metric 2.0 originally used, the river was assessed as an area, and not a linear feature, and is included within the habitat calculations, rather split into a separate river assessment section which is the approach in the later versions of the metric.

The metric uses habitat to describe biodiversity, which is converted into measurable 'biodiversity units' according to the area of each type of habitat. The metric scores different habitat types (e.g. river, scrub) according to their relative biodiversity value, taking into consideration the condition and location of the habitat. In addition, the post-development calculations include three additional factors for new or enhanced habitats: difficulty of creation/restoration, temporal risk of delivery and spatial risk of delivery.

The metric does not incorporate consideration of protected or priority species and these have been provided for separately, as demonstrated in section 5.3.

In line with the Ecology Strategy, two calculations have been undertaken to demonstrate the change in habitat value of the site with regards to the wider Mayfield SRF development as well as the Phase 1 area specifically. The calculations presented in this section build on those previously undertaken and presented in to 2021 Update Ecology Strategy. They build on the habitat value delivered by the Mayfield Park and incorporate additional areas of planting that are proposed to be provided by the three development plots in Phase 1.

Detailed planting palettes are not yet available for the plots and associated public realm, and so a series of reasonable assumptions have been applied which are outlined in the following section.

5.1.2 Assumptions

A number of assumptions have been made in order to prepare these calculations.

As in the Ecology Strategy, the pre-development calculations are based on the Phase 1 habitat survey completed in 2017¹ shown in Figure 5-1. The GIS layers of the site and the habitats classified during the Phase 1 habitat surveys have been used to generate the areas used in the calculations. As the survey was undertaken using the Phase 1 habitat methodology, and not necessarily to directly support biodiversity net gain calculations, habitat types have been translated from the Phase 1 typologies to the UK Habitat Classification typologies adopted within the Biodiversity Metric. Where relevant, species lists have been used to support this, along with the condition assessment of the pre-development habitats as defined within the Biodiversity Metric supporting technical documents.

As part of the Phase 1 calculations, habitats outside of the redline boundary are not considered as it is assumed all will be retained until subsequent phases are brought forward. Additional highway and public realm improvement works outside of the SRF boundary have been included and are demonstrated in Figure 5-2.

The post-development habitats presented in the habitat creation and enhancement table include those that were presented for the Park in the 2021. A complete resurvey of the as-planted Park has not been undertaken, however no significant area changes or failure in planting typologies has been recorded as part of the ongoing landscaping management and so there is no reason to consider that the habitats would, at this stage, be significantly different to those proposed to be delivered within the detailed planting plans that supported the calculations presented in the 2021 Updated Ecology Strategy.

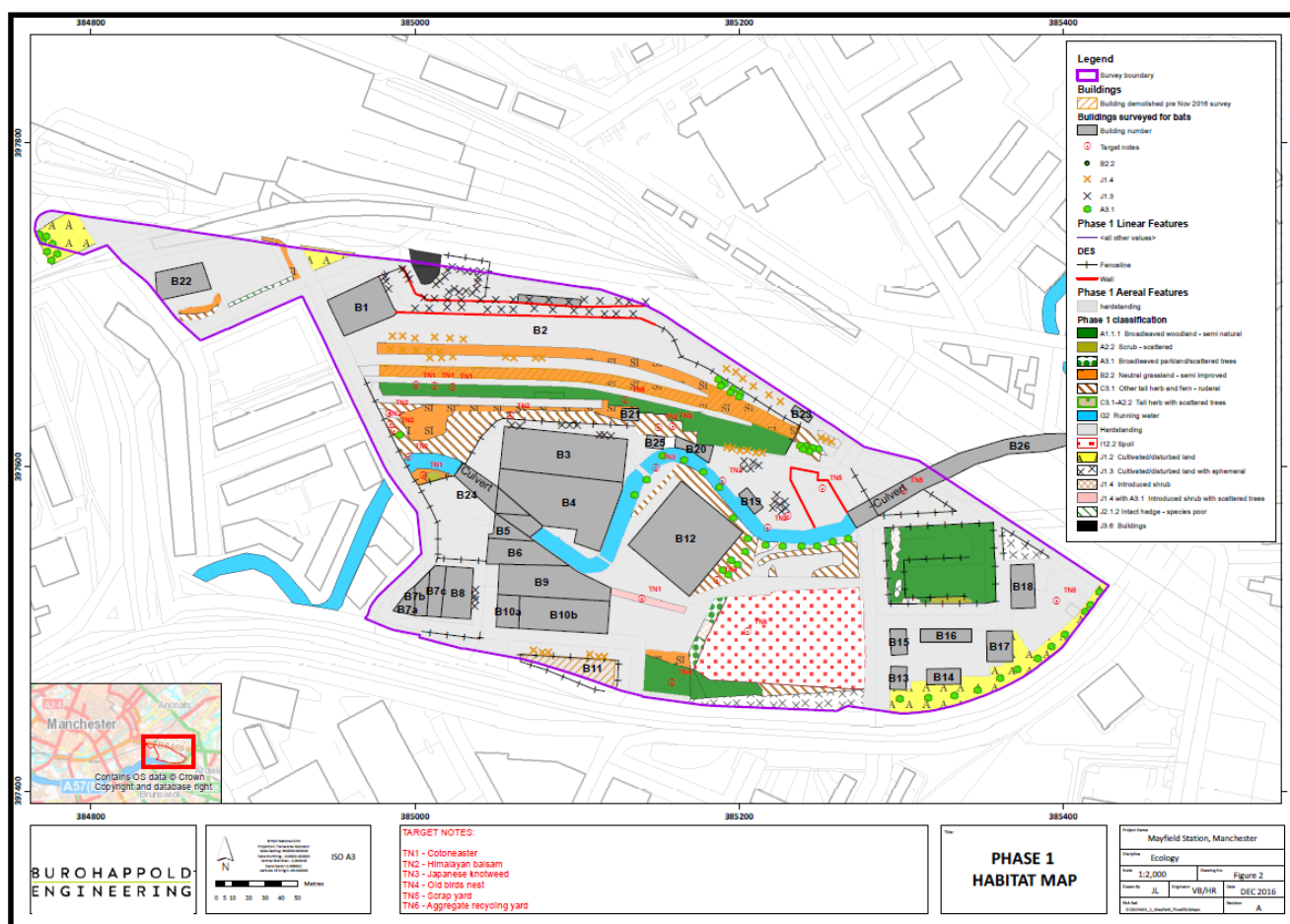
The post-development habitats now incorporate proposed planting within the developed plots and associated public realm. Whilst detailed planting has not yet been developed for this, the following assumptions have been made:

- Building associated – terrace planting – it is assumed that this planting will be typically ornamental and will aim to provide year-round interest in planters situated on roof terraces at various levels on the Plot M and Plot O buildings. Due to the limited sizes of the planters, they are not considered to qualify as an 'intensive green roof' and so are instead assigned as an 'introduced shrub' habitat type to reflect the likely non-native nature of the planting.
- Building associated – green roofs – Plot M building is seeking to incorporate a green roof strip around the perimeter of the roof. Further structural assessment is to be undertaken to understand the loading limits that will, in turn, partially inform the type of roof that can be considered. It is assumed that an extensive green roof of a wildflower-type will be targeted as a minimum. Once structural conditions are confirmed, the aim would be to include a biodiverse green roof with varying substrate depths and bare ground/ small habitat features to provide further interest for invertebrates.

¹ BuroHappold (2017), Ecological Assessment Report, November 2017.

- Public realm – rain gardens – whilst a detailed planting palette has not been provided for these areas specifically, it is considered that they are likely to be of a similar type to the rain gardens that were incorporated into the detailed design of the Park, and so the same assessment has been applied.
- Public realm – herbaceous and shrub planting - whilst a detailed planting palette has not been provided for these areas specifically, it is considered that they are likely to be of a similar type to the ornamental herbaceous planting and shrub beds that were incorporated into the detailed design of the Park, and so the same assessment has been applied.
- Public realm – street trees – Specific species of trees have not been provided, though the target size at planting of trees in different areas of the public realm around the plots has been indicated. This has helped to inform the size class of the trees to be planted. It is assumed that a mix of native and non-native trees, similar to those provided within the Mayfield Park will be incorporated.

It should be noted that the public realm planting plans also include two areas of temporary landscaping that will be delivered alongside the plots. In the east of the plot boundaries, adjacent to Plot M, border and tree planting will be incorporated alongside the boundary of future Plot L. As part of works to facilitate Plot L in the future, it is considered that this planting will need to be removed and then replaced as part of the wider Plot M/ Plot L public realm interface. Additionally, to the west of Plot N, and area of wildflower grassland is proposed between the plot and Baring Street. It is known that offsite future development west of Baring Street is likely to result in the realignment of the road carriageway which will removed the wildflower grassland area. As biodiversity net gain requires habitats to be implemented for a minimum of 30 years, neither of these areas of planting are included within the update metric calculations. The future, permanent landscaping for these areas will need to be incorporated once the type and extent of the planting is known.



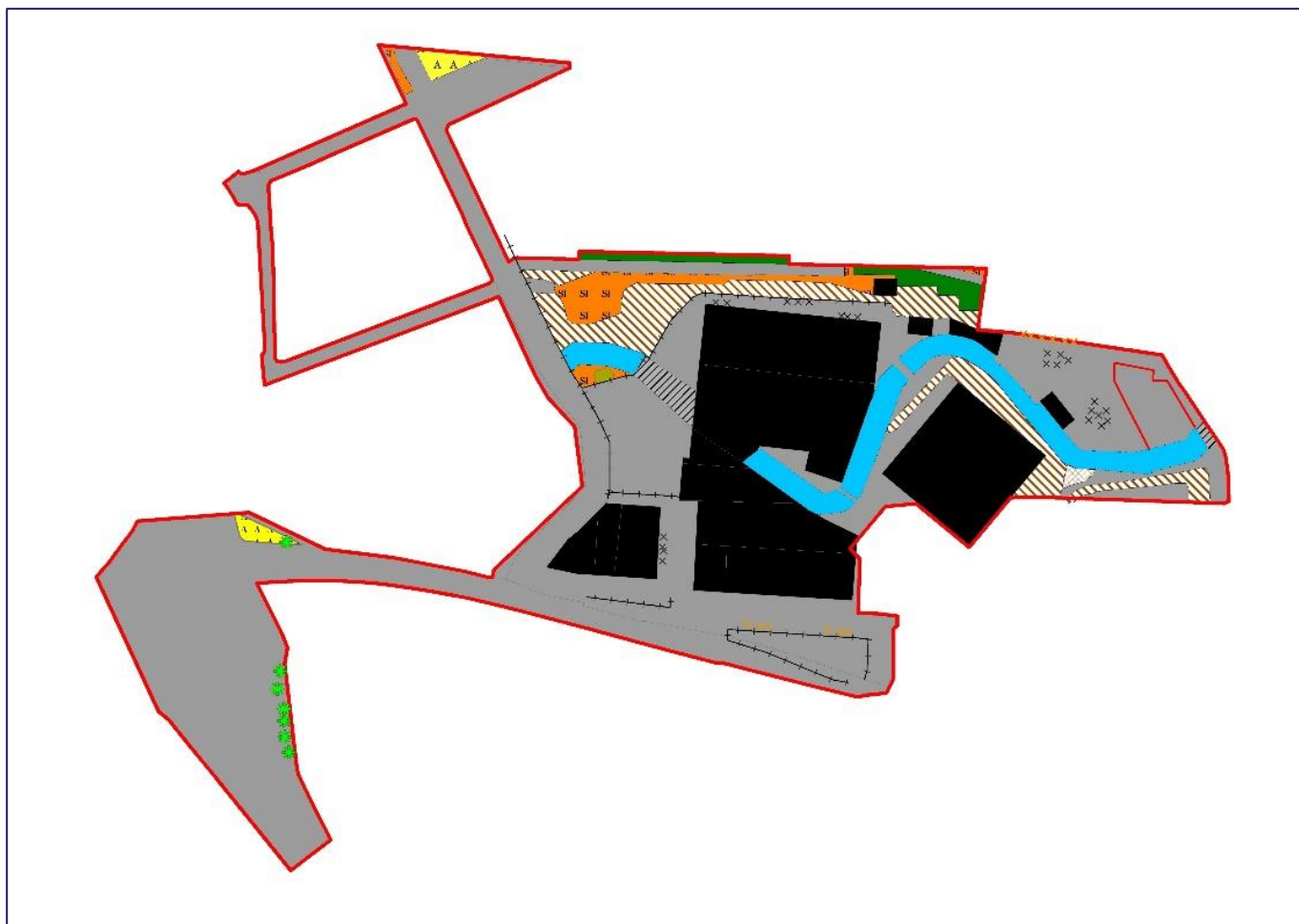


Figure 5-2 Phase 1 habitat map (BuroHappold, 2017)

5.1.3 Post-development habitats

The below table identifies the planting types produced for the post-development Park and plot design. The table provides a 'translation' between the landscape defined planting types to an appropriate UK Habitat Classification typology as defined within the Biodiversity Metric and provides justification for the habitat type chosen as well as the condition score attributed to the habitat based on available landscape information. Post-development habitat areas and distribution across the Park are illustrated in the landscape general arrangement plan, provided in Appendix A.

Table 5-1 Landscape types to biodiversity metric habitat types, condition scores and justification.

Landscape type	Habitat type	Condition score	Justification
Mayfield Park			
PC01 - The Railway Embankment	Grassland – Other neutral grassland	2	Grassland species mix intended to reflect southern facing, relatively dry slopes. The planting mix is largely reflective of neutral grassland, however contains some non-native species within the mix which has resulted in a 'moderate' condition score.
PC02 – Mayfield Lawn	Grassland - Amenity grassland	1	Designed as a turfed area, for use throughout the year by Park users. Low species diversity with grasses dominating. Given a 'low' condition score given its limited value for biodiversity.
PC03 – Gateway Gardens	Urban - Introduced shrubs	2	The area of planting is largely dominated by non-native species, however these do include some native species within the mix and a number of plants known to be of

Landscape type	Habitat type	Condition score	Justification
			benefit for native pollinators. Therefore, a 'moderate' condition score has been applied.
PC04 – Flower Rich Neutral Grassland (Bed 02 and 48)	Grassland – Other neutral grassland	3	Distinct Bed 02 and Bed 48 of PC04 planting type which contains only native species. Where there may be some scattered shrubs, these appear to be native. Attributed a 'good' condition score.
PC04 – Flower Rich Neutral Grassland (all other beds)	Grassland – Other neutral grassland	2	Some non-natives included within the grassland species mix. Any scattered shrubs within the landscape type also include non-natives within the species mix given. Therefore, given a 'moderate' condition score.
PC05 - River Fringe (Bed 24a)	Grassland – Other neutral grassland	3	River Fringe area is designed to buffer any wetland areas of the river but are not considered likely to be inundated often enough to support a wetland plant community. Bed 24a contains only native species and if shrubs are included in the area these are also of a native mix. Therefore, 'good' condition score has been applied.
PC05 - River Fringe (all other beds)	Grassland – Other neutral grassland	2	River Fringe areas which also include non-native bulbs, perennials and scattered shrubs within the species mix, although a number of these are considered to have benefit for native pollinators. Therefore, 'moderate' condition score has been applied.
PC06 – River Wetland	Wet river mosaic	3	Planting along the edge of the river either on banks or within coir rolls where the plants will be partially submerged for all or part of the year as indicated by detailed modelling of the annual river flows. The emphasis was on native species planting only within the river and frequently flooded areas. Includes sporadic areas which will provide additional habitat features of value for invertebrates. Considered to provide high value habitat within the Park design and given a 'good' condition score.
PC07 – Wildflower Turf	Grassland – Other neutral grassland	2	Some non-natives included within the grassland species mix. Any scattered shrubs within the landscape type also include non-natives within the species mix given. Therefore, given a 'moderate' condition score.
PC08 – The Play Yard	Urban – Introduced shrubs	1.5	The species mix is dominated by non-native large grass species, which are underlaid with primula, providing some value for native invertebrates. Condition score of 'fairly poor' is applied.
PC09 – Southern Woodland Walk (Bed 25 and 31a)	Grassland – Other neutral grassland	3	Area of PC09 planting type as a shade tolerant meadow mix. Non-natives species within the ground flora and shrub mix have been removed due to the planting proximity to the river edge (even though elevated above it). Excludes areas of 31b planting where non-natives still occur. If any shrubs included within the mix, these appear to be native – 'good' condition score.
PC09 – Southern Woodland Walk (all other beds)	Grassland – Other neutral grassland	2	Area of PC09 planting type as a shade tolerant meadow mix which includes non-native species within the ground flora and shrubs – 'moderate' condition score.

Landscape type	Habitat type	Condition score	Justification
PC10 – Rain Garden	Urban – Rain garden	2	Mostly non-native planted urban rain garden, with some species of benefit to native pollinators. Therefore, given a 'moderate' condition score.
PC11 – Southern Walkway Herbaceous	Urban – Introduced shrub	2	Shade tolerant understorey planting but dominated by non-native species. Some have value for pollinators. Therefore, given a 'moderate' condition score.
PC12 – Mayfield Border	Urban – Introduced shrub	2	Dominated by non-native species, but some natives in the mix and some non-natives of benefit to native pollinators. Therefore, given a 'moderate' condition score.
PC13 – Terraced Garden	Urban – Introduced shrub	2	Dominated by non-native species, but some natives in the mix and some non-natives of benefit to native pollinators. Therefore, given a 'moderate' condition score.
Woodland/ tree planting	Urban – street tree	2	All trees proposed across the site have been included under the 'street tree' habitat type as no groupings are considered to warrant a woodland habitat type category. Trees have been assigned a 'moderate' condition score and are split between their proposed size categories in line with how these are defined as small, medium or large within the biodiversity metric.
Plots			
Roof terrace planting	Urban – Introduced shrub	1	Roof terrace planting will need to be relatively drought tolerant and provide seasonal interest throughout the year. Therefore it is considered that the planting mixes are likely to be dominated by non-native ornamental species. It is currently assumed that there will be limited value for native pollinators, however this can be revised once detailed planting palettes are produced.
Green roof	Urban – Extensive green roof	1	The type of green roof to be included on the Republic building is to be confirmed following structure analysis in future detailed design. An extensive green roof is targeted, intended to be as a minimum a wildflower green roof, but ideally would reflect a biodiverse green roof with a range of substrate depth and bare substrate for greater invertebrate interest. To reflect the wildflower only approach currently considered, a poor condition has been selected, however this will be revised following detailed design.
Rain garden	Urban – Rain garden	2	Assumed to be a similar planting to mix to those implemented within the Mayfield Park. Likely to be mostly non-native planted urban rain garden, with some species of benefit to native pollinators. Therefore, given a 'moderate' condition score.
Herbaceous and shrub planting	Urban – Introduced shrub	2	Assumed to be similar to ornamental and herbaceous border and shrub planting areas within the Mayfield Park. Likely to be dominated by non-native species, but some natives in the mix and some non-natives of benefit to native pollinators. Therefore, given a 'moderate' condition score.
Tree planting	Urban – street tree	2	Trees planted within the public realm are assumed to be a similar type and quality to those provided within the Park. All are currently proposed to be deciduous and it is likely that seasonal flowering will support

Landscape type	Habitat type	Condition score	Justification
			pollinators. Trees have been assigned a 'moderate' condition score and are split between their proposed size categories in line with how these are defined as small, medium or large within the biodiversity metric.

5.2 Biodiversity net gain results

5.2.1 Phase 1

Table 5-3 and 5-4 illustrate the updated biodiversity net gain calculations for Phase 1 in isolation. Table 5-3 demonstrates the baseline habitats as recorded in 2017, which is taken as the most recent representative baseline of the habitats on site prior to any actions which supported the facilitation of development on the site. Table 5-4 provides the new post-development habitat values based on the proposed areas of planting within the Park, which have now been delivered, and the additional areas of planting provided by the built development plots in Phase 1 and the associated public realm area.

Table 5-2 Pre-development habitat calculations – wider Mayfield SRF

Habitat Type	Area on Site (ha)	Distinctive-ness	Condition	Strategic significance	Habitat connectivity		Pre-D Biodiversity Units	Removed	Enhanced	No change
Broadleaved woodland	0.0747	4.0	1.5	1.00	1.0		0.45	0.45		
Scattered scrub	0.0040	4.0	1.5	1.00	1.0		0.02	0.02		
Broadleaved parkland/ scattered trees	0.0028	4.0	1.5	1.00	1.0		0.02			0.02
Neutral grassland - semi improved	0.1190	4.0	1.5	1.00	1.0		0.71	0.71		
Other tall herb and fern - ruderal	0.3333	4.0	1.5	1.00	1.0		2.00	2.00		
River corridor										
Running water	0.1671	6.0	1.5	1.15	1.15		1.99		1.99	
In-channel vegetation incl. Japanese knotweed and Himalayan balsam	0.1067	2.0	1.0	1.00	1.0		0.21	0.21		
Hardstanding	2.9271	0.0	0.0	0.0	0.0		0.00			
Amenity grassland (Cultivated/disturbed land)	0.0390	2.0	1.0	1.00	1.0		0.08			0.08
Introduced shrub	0.0078	2.0	1.0	1.00	1.0		0.02	0.02		
Building	1.2184	0.0	0.0	0.0	0.0		0.00			
Baring Street Culvert (classified as running water)	0.0709	4.0	1.0	1.15	1.15		0.37		0.37	
Hoyle Street culvert, part of (classified as running water)	0.0058	4.0	1.0	1.15	1.15		0.03			0.03
Total area =	5.0766					Total =	5.90	3.42	2.36	0.13

Table 5-3 Updated post-development habitat calculations – Phase 1

Habitat Type	Area on Site (m ²)	Area on Site (ha)	Distinctiveness	Condition	Strategic significance	Habitat connectivity	Temporal risk	Difficulty of creation & restoration	Spatial risk		Post-D Biodiversity Units	Created	Enhanced	No change
River	2380.0	0.2380	6.0	2.0	1.15	1.15	0.84	0.67	1.00		2.12		2.12	
Park - PC06 wetland/river mosaic	1351.0	0.1351	6.0	3.0	1.15	1.15	0.84	0.67	1.00		1.80	1.80		
Park - PC05 river fringe (other neutral grassland)	1527.7	0.1528	4.0	2.0	1.10	1.15	0.70	1.00	1.00		1.08	1.08		
Park - PC05 river fringe (other neutral grassland) - high condition areas	331.3	0.0331	6.0	3.0	1.10	1.15	0.70	1.00	1.00		0.62	0.62		
Park - PC01 railway embankment (other neutral grassland)	1070.0	0.1070	4.0	2.0	1.1	1.0	0.70	1.00	1.00		0.66	0.66		
Park - PC04 flower-rich grassland (other neutral grassland)	742.2	0.0742	4.0	2.0	1.1	1.0	0.70	1.00	1.00		0.46	0.46		
Park - PC04 flower-rich grassland (other neutral grassland) high condition areas	270.8	0.0271	4.0	3.0	1.1	1.0	0.70	1.00	1.00		0.25	0.25		
Park - PC07 wildflower turf (other neutral grassland)	536.0	0.0536	4.0	2.0	1.1	1.0	0.70	1.00	1.00		0.33	0.33		
Park - PC10 raingarden	236.0	0.0236	2.0	2.0	1.1	1.0	0.37	1.00	1.00		0.10	0.10		
Park - PC 03, 08, 11, 12, 13 street planting (introduced shrub)	1877.0	0.1877	2.0	3.0	1.1	1.0	0.37	1.00	1.00		1.20	1.20		
Park - PC03 southern woodland walk (mixed woodland)	18.7	0.0019	4.0	2.0	1.10	1.0	0.70	1.00	1.00		0.01	0.01		
Park - PC03 southern woodland walk (mixed woodland) - high condition areas	1653.3	0.1653	4.0	3.0	1.10	1.0	0.70	1.00	1.00		1.53	1.53		
Park - PC02 lawn (amenity grassland)	2428	0.2428	1.0	2.0	1.00	1.0	0.30	1.00	1.00		0.44	0.44		
Hoyle Street culvert (classified as running water)	57.61	0.0058	4.0	1.0	1.15	1.15	1.00	1.00	1.00		0.03			0.03
Buildings + hardstanding	35268.0	3.5268	0.0	0.0	0.0	0.0	0.00	0.00	0.00		0.00			0.00
Park - Street trees (small)		0.0443	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.07	0.07		
Park - Street trees (medium)		0.0377	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.16	0.16		
Park - Street trees (large)		0.2035	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.34	0.34		
Plots - Roof terrace planting (introduced shrub)	117.5	0.0118	2.0	1.0	1.1	1.0	0.37	1.00	1.00		0.03	0.03		
Plots - Green roof (extensive green roof)	300.0	0.0300	4.0	1.0	1.1	1.0	0.37	0.67	1.00		0.03	0.03		
Plots - Rain garden	423.4	0.0423	2.0	2.0	1.1	1.0	0.37	1.00	1.00		0.18	0.21		
Plots - Herbaceous and shrub planting (introduced shrub)	50.1	0.0050	2.0	2.0	1.1	1.0	0.37	1.00	1.00		0.02	0.02		
Plots - Street trees (small)		0.0032	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.01	0.01		
Plots - Street trees (medium)		0.0448	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.08	0.08		
Total area =	50700.6	5.0701								Total =	11.60	8.48	2.12	0.03

The Mayfield Park and additional plot-related landscaping, as presented in Table 5-4, will result in a predicted 11.60 Biodiversity Units post-development. The plots contribute 0.39 units of this via roof terraces, green roof, rain gardens, herbaceous and shrub planting and additional street trees. Table 5-5 presents the summary of habitat change as a result of the Phase 1 development. This equates to a 96% net gain in biodiversity.

Table 5-4 Updated change in biodiversity units – Phase 1

Post-Development Biodiversity Units		Pre-Development Biodiversity Units		Change in Biodiversity Units
11.60	minus	5.90	=	+5.70

5.2.2 Wider Mayfield SRF

Table 5-7 and 5-8 illustrate the updated biodiversity net gain calculations for the SRF. Table 5-7 demonstrates the baseline habitats as recorded in 2017, which is taken as the most recent representative baseline of the habitats on site prior to any actions which supported the facilitation of development on the site. Table 5-8 provides the new post-development habitat values based on the proposed areas of planting within the Park, which have now been delivered, and the additional areas of planting provided by the built development plots in Phase 1 and the associated public realm area.

Table 5-5 Pre-development habitat calculations – wider Mayfield SRF

Habitat Type	Area on Site (ha)	Distinctive-ness	Condition	Strategic significance	Habitat connectivity		Pre-D Biodiversity Units	Removed	Enhanced	No change
Broadleaved woodland	0.6426	4.0	1.5	1.00	1.0		3.86	3.86		
Scattered scrub	0.0125	4.0	1.5	1.00	1.0		0.08	0.08		
Broadleaved parkland/ scattered trees	0.0220	4.0	1.5	1.00	1.0		0.13	0.13		
Neutral grassland - semi improved	0.4506	4.0	1.5	1.00	1.0		2.70	2.70		
Other tall herb and fern - ruderal	0.4388	4.0	1.5	1.00	1.0		2.63	2.63		
River corridor										
Running water	0.1671	6.0	1.5	1.15	1.15		1.99		1.99	
In-channel vegetation incl. Japanese knotweed and Himalayan balsam	0.1067	2.0	1.0	1.00	1.0		0.21	0.21		
Hardstanding	3.9891	0.0	0.0	0.0	0.0		0.00			
Spoil	0.5490	0.0	0.0	0.0	0.0		0.00			
Amenity grassland (Cultivated/disturbed land)	0.1906	2.0	1.0	1.00	1.0		0.38	0.38		
Cultivated/disturbed land with ephemeral	0.1175	4.0	1.0	1.00	1.0		0.47	0.47		
Introduced shrub	0.0310	2.0	1.0	1.00	1.0		0.06	0.06		
Introduced shrub with scattered trees	0.0195	2.0	1.0	1.00	1.0		0.04	0.04		
Building	1.4581	0.0	0.0	0.0	0.0		0.00			
Baring Street culvert (classified as running water)	0.0709	4.0	1.0	1.15	1.15		0.37		0.37	
Hoyle Street culvert (classified as running water)	0.0607	4.0	1.0	1.15	1.15		0.32			0.32
Total area =	8.3267					Total =	13.25	10.56	2.36	0.32

Table 5-6 Updated post-development habitat calculations – wider Mayfield SRF

Habitat Type	Area on Site (m ²)	Area on Site (ha)	Distinctiveness	Condition	Strategic significance	Habitat connectivity	Temporal risk	Difficulty of creation & restoration	Spatial risk		Post-D Biodiversity Units	Created	Enhanced	No change
River	2380.0	0.2380	6.0	2.0	1.15	1.15	0.84	0.67	1.00		2.12		2.12	
Park - PC06 wetland/river mosaic	1351.0	0.1351	6.0	3.0	1.15	1.15	0.84	0.67	1.00		1.80	1.80		
Park - PC05 river fringe (other neutral grassland)	1527.7	0.1528	4.0	2.0	1.10	1.15	0.70	1.00	1.00		1.08	1.08		
Park - PC05 river fringe (other neutral grassland) - high condition areas	391.3	0.0391	6.0	3.0	1.10	1.15	0.70	1.00	1.00		0.62	0.62		
Park - PC01 railway embankment (other neutral grassland)	1070.0	0.1070	4.0	2.0	1.1	1.0	0.70	1.00	1.00		0.66	0.66		
Park - PC04 flower-rich grassland (other neutral grassland)	742.2	0.0742	4.0	2.0	1.1	1.0	0.70	1.00	1.00		0.46	0.46		
Park - PC04 flower-rich grassland (other neutral grassland) - high condition areas	270.8	0.0271	4.0	3.0	1.1	1.0	0.70	1.00	1.00		0.25	0.25		
Park - PC07 wildflower turf (other neutral grassland)	536.0	0.0536	4.0	2.0	1.1	1.0	0.70	1.00	1.00		0.33	0.33		
Park - PC10 raingarden	238.0	0.0238	2.0	2.0	1.1	1.0	0.97	1.00	1.00		0.10	0.10		
Park - PC 03, 08, 11, 12, 13 street planting (introduced shrub)	1877.0	0.1877	2.0	3.0	1.1	1.0	0.97	1.00	1.00		1.20	1.20		
Park - PC09 southern woodland walk (mixed woodland)	18.7	0.0019	4.0	2.0	1.10	1.0	0.70	1.00	1.00		0.01	0.01		
Park - PC09 southern woodland walk (mixed woodland) - high condition areas	1653.3	0.1653	4.0	3.0	1.10	1.0	0.70	1.00	1.00		1.53	1.53		
Park - PC02 lawn (amenity grassland)	2428	0.2428	1.0	2.0	1.00	1.0	0.90	1.00	1.00		0.44	0.44		
Hoyle Street culvert (classified as running water)	607.00	0.0607	4.0	1.0	1.15	1.15	1.00	1.00	1.00		0.32			0.32
Buildings + hardstanding	67219.1	6.7219	0.0	0.0	0.0	0.0	0.00	0.00	0.00		0.00			0.00
Park - Street trees (small)		0.0443	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.07			
Park - Street trees (medium)		0.0977	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.16			
Park - Street trees (large)		0.2035	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.34			
Plots - Roof terrace planting (introduced shrub)	117.5	0.0118	2.0	1.0	1.1	1.0	0.97	1.00	1.00		0.03	0.03		
Plots - Green roof (extensive green roof)	300.0	0.0300	4.0	1.0	1.1	1.0	0.97	0.67	1.00		0.09	0.09		
Plots - Rain garden	423.4376	0.0423	2.0	2.0	1.1	1.0	0.97	1.00	1.00		0.18	0.21		
Plots - Herbaceous and shrub planting (introduced shrub)	50.1	0.0050	2.0	2.0	1.1	1.0	0.97	1.00	1.00		0.02	0.02		
Plots - Street trees (small)		0.0032	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.01	0.01		
Plots - Street trees (medium)		0.0448	2.0	2.0	1.1	1.0	0.38	1.00	1.00		0.08	0.08		
Total area =	83201.1	8.3201								Total =	11.89	8.48	2.12	0.32

The revised proposed landscaping for Mayfield Park and the additional plot-related landscaping, as presented in Table 5-8, will result in a predicted 11.89 Biodiversity Units post-development. The plots contribute 0.39 units of this via roof terraces, green roofs, rain gardens, herbaceous and shrub planting and additional street tree planting. Table 5-5 presents the summary of habitat change as a result of the Phase 1 development. This continues to equate to an overall loss in biodiversity of -11%, in the absence of any further landscaping and habitat interventions across the wider SRF.

Table 5-7 Updated change in biodiversity units – wider Mayfield SRF

Post-Development Biodiversity Units		Pre-Development Biodiversity Units		Change in Biodiversity Units
11.89	minus	13.25	=	-1.36

The current position of a net loss in biodiversity in the context of the wider SRF is not considered a significant risk to the targets for the wider Mayfield SRF delivering a net gain in biodiversity. Instead, this highlights to future phases that they will need to provide tangible biodiversity benefits within the forthcoming development plots. In order to support the SRF to deliver an overall minimum 10% biodiversity net gain, a final post-development value of 14.575 should be targeted. The developed plots across the SRF will collectively need to contribute an increase of +2.685 Biodiversity Units.

As identified within the 2018 Mayfield Strategic Regeneration Framework document, there will be five phases of developed plots (Baring Street Campus, Hoyle Street East, Hoyle Street West, Mayfield Depot and Wyre Street) across the wider Mayfield SRF. With the Baring Street Campus area delivering 0.39units, each of the remaining plot areas would need to deliver a minimum of 0.671 habitat units, which should be achievable using a variety of urban planting types as identified within Section 6 of this Strategy. The phases can each be more ambitious in the value they seek to deliver to support a more ambitious net gain outcome for the wider Mayfield SRF.

The level of the remaining habitat units delivered by each plot should be proportionate to the plot area so that the requirement to contribute to the wider Mayfield SRFs biodiversity net gain is balanced across the site, rather than onus

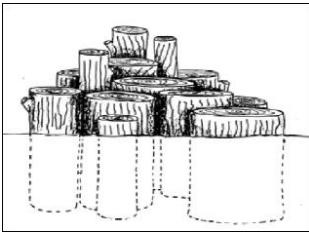
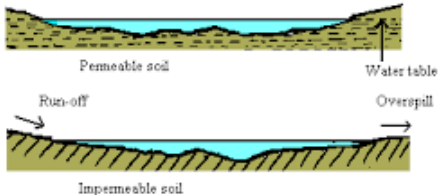
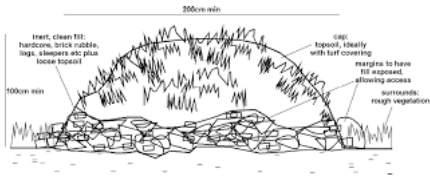
being placed on one or two plots. This will create a cohesive green network throughout the SRF which will support and balance the habitats created within the Park and carry through the ethos of urban greening and benefits provided by urban habitat creation for people and nature. Options for future Parks to incorporate landscaping of value that will contribute to biodiversity net gain is outlined in section 6.

5.3 Designed-in habitat features

In addition to the quantifiable biodiversity net gain as delivered by the habitats on the site, the Park and Phase 1 plots are also delivering a number of enhancement features which will be beneficial for a variety of species, including protected and priority species as well as those included in national and local biodiversity action plans. These features are not captured within the biodiversity net gain calculations but support the Park in delivering locally significant enhancements for ecology. Table 5-10 lists the features that have been designed into the Park and the plots as part of the latest detailed design works. The habitat features within the Park are illustrated on the habitat feature plan included in Appendix B. The exact type and location of the swift boxes that will be included within the plot buildings are still subject to detailed design, however the plot architects have confirmed that their inclusion should be possible within the northern and north eastern facades of the buildings. The swift boxes will be placed across the plot buildings, facing the Park, at a variety of heights that suit the individual building features and requirements for swift nesting. The types of boxes used are likely to also vary across the buildings to suit the facades and building finishes. This should provide a variety of nesting spaces and conditions that will support swift colonies across multiple years.

Other habitat features such as bat boxes have not been included due to the lack of diverse landscaping to the south of the plots and the proximity of the Baring Street road. Instead it is considered more suitable for future plots in the north of the site to provide further bat roosting potential in the future, where they will have greater proximity to the Park and favourable commuting and foraging habitat.

Table 5-8 Habitat features included within the Park design

Feature type	Number	Example image	Specification
Dead log piles	2		Material: Cords of Wood Wood: Recycled wood free from pests or diseases, not painted or treated with strong preservatives and free from any deleterious material. Other Materials: Free from nails or fixings Length: 700mm to 1500mm Diameter: 200mm to 600mm
Scrape	2		Location: Rivers edge - Shallow edges Depth: Up to 400mm Width: No thinner than 1000mm across. To be formed by gently scraping soil using a toothed bucket to form undulations within the profile of the soil.
Rubble hibernacula	2		Excavate: 1500mm x 2000mm and 600mm depth Backfill - base: Crushed rubble and finer shingle to fill gaps. Backfill - top layer: Build up hole with extra logs, rubble, sand and soil until it reaches 400mm above levels. Top: Cover mound with soil/turf.
Kingfisher Post	2	N/A	Post: Recycled Timber Post. Confirm with Landscape Architect Height: 1000mm minimum above ground after fixing Wood type: To be agreed Wood: Recycled wood free from pests or diseases, not painted or treated with strong preservatives and free from any deleterious

Feature type	Number	Example image	Specification
			material. Other Materials: Free from nails or fixings Fixing: Excavate 500mm, insert post and backfill.
Kingfisher nest box and tunnel	2		Supplier: NHBS Ltd - Product reference: Schwegler Kingfisher and Sand Martin Nest Tunnel Location: 1.2M above the base of gabion wall. (Confirm location with Landscape Architect). Method of fixing: Imbed tunnel to gabion wall, to manufacturer's recommendation. Size: Nest: 275mm x 275mm x 16mm Dia. Tunnel: 550mm x 140mm x 130mm
Willow tit box	3		Manufacturer: Bandbox, PASTURE HOUSE, WARK, HEXHAM, NORTHUMBERLAND, NE48 3DG Product: Willow Tit/Tree Creeper Box Dimensions: 430 x 60 x 70mm (Height x Width x Depth)
Blue tit box	2		Supplier: NHBS Ltd Product: Vivara Pro Seville 32mm WoodStone Nest Box Dimensions: 310 x 200 x 200mm (Height x Width x Depth)
Wagtail/dipper box	6		Manufacturer: Vivaria Pro Product reference: Wagtail Boxes Location: Minimum 350mm below the top of concrete coping and underneath culvert bridge. Size: 190mm x 255mm x 170mm
General bird/black redstart boxes	2		Supplier: NHBS Ltd Product: Vivara Pro Barcelona WoodStone Open Nest Box Dimensions: 240 x 190 x 175mm (Height x Width x Depth)
Norfolk bat brick	5		Supplier: NHBS Ltd. Product reference: Norfolk Bat Brick Location: Minimum 350mm below the top of concrete coping. Size: 200mm x 100mm x 70mm
Swift boxes	Up to 30 boxes across the three plot buildings	N/A – to be decided during detailed design as to which type suits each building based on construction and façade finishes.	To be decided during further detailed design.

6 Outline strategy for future developed plots across the Mayfield SRF

The purpose of this section is to provide detail on options for the plot design teams in order to further mitigate and compensate for the ecological impacts of the development and to support the wider Mayfield SRF in delivering biodiversity net gain across the whole site. As identified in section 5.2.2, the developed plots have a significant opportunity to incorporate biodiversity solutions which will not only support the SRF in delivering a net gain for biodiversity, but will provide further enhancements alongside the Park and support the benefits delivered by the Park throughout the SRF.

The guidance below covers the recommended habitat interventions that the developed plots could be providing to compensate for habitat loss and to deliver biodiversity net gain for the site in line with best practice. The recommendations are by no means set in stone and can be adapted to the emerging designs. They provide a general indication of the type and scope of biodiversity measures which should be provided across the site in order to deliver the Natural Capital objective of the Mayfield SRF to '*increase biodiversity and public access to green space*' (Mayfield SRF, 2018). The suggested provisions take into account that the developed plots will likely be spatially constrained, with buildings dominating the plot area and there being an associated need for hard landscaping public realm to support the building's intended function and use. Therefore, interventions included within this section are done so in mind of being proportionate and realistic for inclusion within a spatially constrained development plot.

It is advised, given the longevity of the Phase 1 design process and the length of time to complete the wider SRF, that the biodiversity net gain calculations are updated and amended to work within the latest, approved edition of the Biodiversity Metric (3.0, released 2021). This will update the assessment of the river and will be easier to align existing habitat provision within Phase 1 with future SRF development plots which will need to use the more up to date version of the metric in line with local and national planning policies.

6.1 Green/biodiverse/brown roofs

In spatially constrained urban environments, green roofs (which includes biodiverse {wildflower} and brown roofs) can be used to attenuate roof run-off, reduce urban heat island effect, insulate buildings, enhance amenity value and provide habitat for wildlife. There are a range of different green roof types available, and an evaluation of the different roof types is presented in Table 6-1. Table 6-2, adapted from *Living Roofs and Walls Technical Report: supporting London Plan policy* (GLA, 2008), summarises the broader potential environmental benefits for the main green roof types.

As far as biodiversity improvements go, biodiverse green roofs provide the greatest benefit. They can provide food, cover and overwintering habitats for a range of invertebrates which can in turn feed a variety of local bird and bat species. They can also provide seeds and fruits for birds and can contribute to delivering a new ecologically valuable habitat appropriate to the local area and a biodiversity priority habitat.

For the Mayfield site, because of the presence of black redstart within Manchester city centre, this brownfield specialist would particularly benefit from a mix of biodiverse and brown roofs which could be provided as a mix within a single plot or across the different plots in the SRF.

In terms of contributing to biodiversity net gain, biodiverse (extensive) green roofs provide the most Biodiversity Units in comparison to intensive green roofs and brown roofs which provide the least. Maximising biodiverse green roofs will help to support the biodiversity net gain assessment. It is also worth noting that a number of companies that specialise in providing green roof mediums and planting types have developed biodiverse mixes which are designed to thrive alongside PV installation. Whilst to support the vegetative growth beneath, PVs are required to be spaced further apart than they would without the green roof component, there is the possibility of combining the two which reduce roof-space conflict with other sustainability objectives.

Table 6-1 Green and blue roof types

Feature (Fig no.)	Description	Typical substrate depth	Typical roof loadings (dead load)	Water retention annual average (%) / Coefficient ²	Vegetation options / plant species diversity	Contributes to biodiversity?	Accessible?
Extensive sedum roof (Fig 6-1)	Lightweight with minimal maintenance and lower water requirements than intensive green roofs	Mat based: 20-60mm depth Substrate-based: 60-100mm depth	50kg/m ² (sedum mat/blanket) - 110kg/m ² (substrate)	40 - 50% / 0.6 - 0.5	Sedum moss / low plant species diversity	Not considered biodiverse, but do provide some invertebrate forage in early summer. Can be combined with solar PV and blue roof	Generally maintenance only
Extensive biodiverse roof (Fig 6-2)	Planted in shallow, low nutrient substrates to increase local plant diversity and provide wildlife habitat, minimal maintenance	80mm-150mm – ideal if depth is varied across the roof as it can support a greater diversity of plants and therefore biodiversity	100 – 200 kg/m ²	55 - 60% / 0.5 - 0.45	Sedum moss wildflowers grasses sedges / high species diversity	Yes – biodiverse. Tend to have better water holding capacity than brown roofs. Can be combined with solar PV and blue roof	Generally maintenance only
Brown roof (Fig. 6-3)	Not planted – substrate is selected to allow native plant species to colonise the roof over time. Designed to mimic brownfield habitats for species such as black redstart	80mm-150mm	100 – 200 kg/m ²	-	Not planted -	Can be difficult to get a diversity of vegetation to establish due to roof top conditions (heat/wind/drought stress). Also of limited water holding capacity due to substrate (high proportion of recycled brick/aggregate /cement). Can be combined with solar PV and blue roof	Generally maintenance only
Semi-intensive / intensive green roof (roof gardens/terraces and podium decks) (Fig 6-4)	Can support a wider range of plants, require regular maintenance and irrigation	150mm - >500mm depth	150-500 kg/m ²	60 – >90% / 0.4 - 0.1	Trees, shrubs, lawns, perennial beds, climbers / low – high species diversity dependent on selection	Potentially yes if a proportion of the plants are selected for biodiversity/wildlife value. Can be combined with blue roof	Yes
Blue roof	Attenuates collected water across a roof at a shallow depth	<100mm	Maximum additional load of 1.0kN/m ²	-	-	Can be combined with any of the above green roof types and solar PV	Yes

² <https://livingroofs.org/storm-water-run-off/> Table is abridged from the FLL – the German Guidelines for Green Roofs.



Figure 6—1 Extensive Sedum green roof above cycle store/garages (Nyborg, Denmark)



Figure 6—2 Jakob Burkhardt biodiverse roof (Basel, Switzerland)



Figure 6—3 Typical brown roof – self-seeded brownfield habitat and mixed recycled substrate



Figure 6—4 Intensive green roof (roof garden)(London)

Table 6-2 Matrix of roof type vs. potential environmental benefits

Roof type	Potential benefit					
	Climate change	Building energy balance	Urban Heat Island Effect (UHIE)	SUDS	Biodiversity	Amenity
Extensive - mat based <40mm e.g. Sedum	✓	✓	✓	✓	✓	✓ (visual)
Extensive – substrate based >75mm e.g. biodiverse	✓✓	✓✓	✓✓	✓✓	✓✓✓	✓✓ (visual)
Intensive e.g. roof garden, podium deck	✓✓	✓✓	✓✓✓	✓✓✓	✓	✓✓✓

6.2 Living walls

As with green/biodiverse/brown roofs, living walls provide a range of benefits and can reduce urban heat island effect, regulate building temperatures, protect building façades, improve air quality, reduce noise and contribute to biodiversity.

Living walls tend to be grouped into two categories: modular and climbing on trellis/framework/cables (Figures 6-5 – 6-8). The main difference is that with modular systems the growing medium which provides the plants with their nutrients and water sits in the modules of the walls while in the climbing system plants are rooted at the base of the structures.

At Mayfield, they can easily be incorporated into public realm and provide both biodiversity and amenity/visual benefit. Utilisation of a range of native and wildlife-beneficial climbing flowering species and evergreen species such

as ivy and ferns would maximise their ecological/biodiversity benefit. Stone and brick walls also offer opportunities to incorporate small creeping plants and drought-tolerant plants such as succulents with minimal root systems which will easily fit into planting pockets.

In terms of biodiversity net gain, climbing, ground-based green walls and modular, façade bound green walls can score the same habitat value. Typically climbing systems have better long-term survival due to the ground-based nature of the planting giving better access to food and water for the plant. However, it can be more challenging to include a variety of species with value for biodiversity. Alternatively, modular walls can provide a wide range of native species as well as non-native species which are known to be beneficial for native wildlife species.

Table 6-3 Living wall types

Feature (Fig no.)	Description	Benefits	Disadvantages	Contributes to biodiversity?
Climbing or hanging green walls (Figs 6-5 and 6-8)	Supported by structure on a wall e.g. trellis or cables Supported by a self-standing structure away from a wall e.g. framework Plants hang from a height	Can cover large areas. Less expensive to install and maintain than modular systems Maintenance at planter level May not require irrigation	More difficult to provide the diversity of planting achievable by modular systems. Slower to establish than modular systems	Yes – if a proportion of the plants are selected for biodiversity/wildlife value.
Modular green walls (Figs 6-6 and 6-7)	Plants grow in pockets, pots, modules in panels, walls or box planters	Instant impact. Modular system can be built to any size/shape. Planting can be tailored to provide specific benefit for certain species or groups e.g. pollinators or bats. Can be integrated with rainwater harvesting system for irrigation.	Expensive Requires irrigation On-going long-term maintenance required, access can be challenging	Yes – if a proportion of the plants are selected for biodiversity/wildlife value.

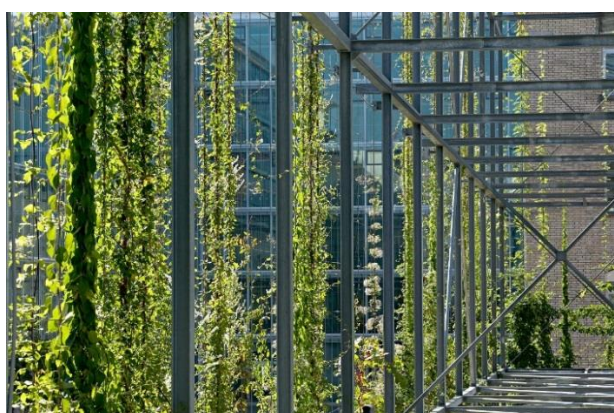


Figure 6—5 Cable green wall (MFO Park, Zurich)



Figure 6—6 Modular green wall (Paddington, London)



Figure 6—7 Modular green walls (Lord's Cricket Ground, London)



Figure 6—8 Box planters at Paddington

6.3 Pollinator planting

For this development, incorporation of plant species in the soft landscaping which are native and/or of known benefit for pollinators would contribute to meeting the targets of the National Pollinator Strategy as well as contribute to delivering biodiversity net gain. Potential opportunities include:

- Trees and shrubs underplanted with native spring bulbs, flowering perennials and ferns to provide ground cover and foraging habitat.
- Beds, verges, rain gardens and/or swales (or other SUDS features) planted with a variety of flowering perennials, grasses and shrubs to provide both visual amenity as well as pollen and nectar throughout the growing season (including early spring – late autumn/winter) to help extend food availability throughout the season (see Figs 6-9 and 6-10).
- Living walls planted with climbing flowering species, creeping plants, succulents and wall ferns to create vertical living habitat and cover as well as provide pollen and nectar.
- Biodiverse green roofs planted with a diversity of flowering plants as well as mosses, grasses, sedges to provide overwintering habitat and cover.

The positive benefit of pollinator planting is increased when undertaken in conjunction with provision of habitat features (see Table 6-8) to support resting/hibernating invertebrates.

Typically the use of native planting within planting beds around the developed plots will support the application of a semi-natural habitat type within the Biodiversity Metric calculations, although at a poorer condition score to reflect its urban location and planting within a bed/planter environment. Semi-natural habitats are typically attributed with a higher distinctiveness score within the metric to support their inclusion within developments aiming to achieve a net gain in biodiversity.

Non-native planting is attributed with a lower distinctiveness score within the Biodiversity Metric and will typically only achieve a Poor condition score which restricts the amount of Biodiversity Units it can deliver, despite the fact that it may contain plant species which are known to benefit native pollinators.

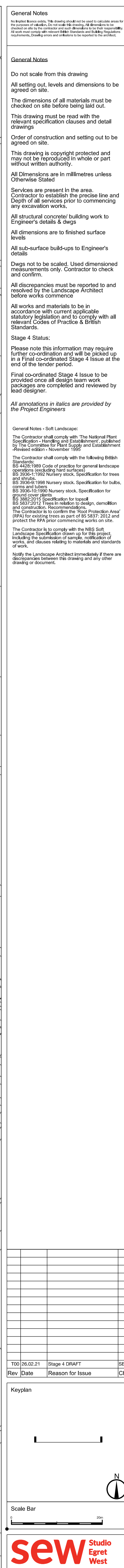


Figure 6—9 Wildflower verge (Olympic Park, Stratford)



Figure 6—10 Vegetated conveyancing swale planted with native, pollen-rich species (Olympic Park, Stratford)

7 Appendix A – Landscape General Arrangement Plan



	Mayfield Partners
	Project Mayfield Park
	Drawing Title Soft Landscape
	Project Number 0345
	Scale at A0 1:500
	Drawn by

Mayfield Partnership	
Project: Mayfield Park	
Drawing Title Soft Landscape Planting Types G	
Project Number 0345	Status TENDER
Scale at A0 1:500	Date 26.02.21
Drawn by TH	Checked by SEW
Drawing Number 0345-SEW-ZZ-00-DR-L-007123	Revised TOD



General Notes

No implied licence exists. This drawing should not be used to calculate areas for the purposes of valuation. Do not scale this drawing for construction purposes. All dimensions to be checked on site by the contractor and such dimensions to be their responsibility. All work must comply with relevant British Standards and Building Regulations requirements. Drawing errors and omissions to be reported to the architect.

Notes

Key

Levels

- Proposed Levels
- Existing Levels
- Top of Kerb Levels

Paving Types

- P01** Paving Type 01
Description: Clay Paving Bricks
Finish: Diamond chequered pattern
Colour: Staffordshire blue
UK sourced
- P02** Paving Type 02
Description: Clay Paving Bricks
Finish: Smooth pattern
Colour: Staffordshire blue
UK sourced
- P03** Paving Type 03
Description: Permeable Resin Bound Gravel
Colour: Hazel (to match Mayfield Park)
UK sourced
- P04** Paving Type 04
Description: Steel Grating
Colour: Galvanised finish
Finish: Pressure-locked steel grating
Allowance: Weathered steel upstand
- P05** Paving Type 05
Description: Temporary asphalt road surface - occasional traffic
Finish: Asphalt with stone chippings (pink/red)
- P06** Paving Type 06
Description: Gravel
Colour: Staffordshire pink ornamental gravel
- P07** Paving Type 07
Description: Asphalt
Colour: To match existing highway

Steps

- ST0** Step Type 01
Description: Access Steps - In-Situ concrete steps
Finishes: Variety of concrete finishes to differentiate treads from risers
Dimensions: 150mm risers x 280mm treads
Accessories: Allowance for handrails eitherside and integrated nosing
- Tactile Paving Type 01**
Description: Tactile Hazard Warning Paving
Finishes: Contrasting colour
Dimensions: 400mm x 400mm

Trees

- Proposed Tree**
Size: Semi-mature
Filing: Underground puyed
Accessories: Rootroom protected system
Soil depth: minimum 1000mm
- Existing Tree**
Retained existing trees to be protected and retained in accordance with BS5837:2012.
- Relocated Tree**
Relocate existing tree in accordance with BS5837:2012.

Planting

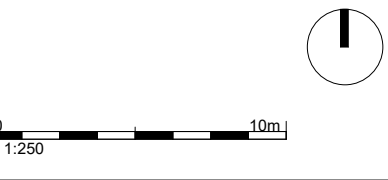
- Planting Type 01**
Description: Herbaceous, ornamental grass and shrub planting
Density: 9 per 1m (average)
Pot Size: P9 - 2L Pots (average)
Depth: 600mm minimum growing medium depth
- Planting Type 02**
Description: Pre-grown wildflower meadow turf
- Planting Type 03**
Description: Rain Garden - Herbaceous, ornamental grass and shrub planting
Density: 9 per 1m (average)
Pot Size: P9 - 2L Pots (average)
Depth: 600mm minimum
- Planting Type 04**
Description: Existing Rain Garden

Street Furniture

- Seating Type 01**
Description: Proposed timber and steel bench to match Mayfield Park furniture
Length: Varies (Minimum 2m)
Allowance: Backrest and Armrest
- Seating Type 02**
Description: Relocated seating bench
- Bollard Type 01**
Description: Retractable Bollards
Dimensions: To match Mayfield Park
Finish: To match Mayfield Park
- Bollard Type 02**
Description: Fixed Bollards
Dimensions: To match Mayfield Park
Finish: To match Mayfield Park
- Cycle Type 01**
Description: Relocated cycle stands
- Bin Type 01**
Description: Relocated Bin
- Boulder Type 01**
Description: Proposed Boulders
Size: Varied Size (300-750mm)
UK sourced

Walls and Balustrade

- Wall Type 01**
Description: In-situ concrete wall
Finish: Varied Finish to match Mayfield Park
Allowance: 1100mm high powder-coated steel and mesh balustrade to match Mayfield Park



Key Plan

Planning

Project No. 0436

Project Name

Mayfield Phase 1 Public Realm

Drawing Title

Site Wide Landscape Context Plan

Client Mayfield Medlock Limited

Scale @A1 1: 250

Date 03/28/23

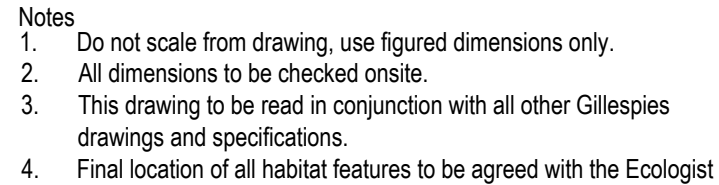
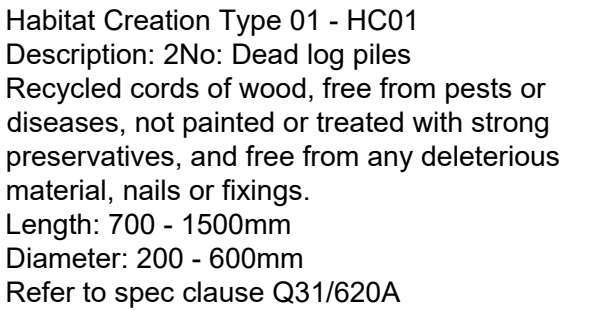
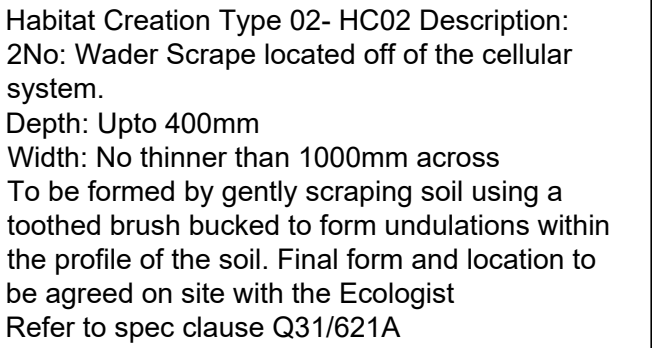
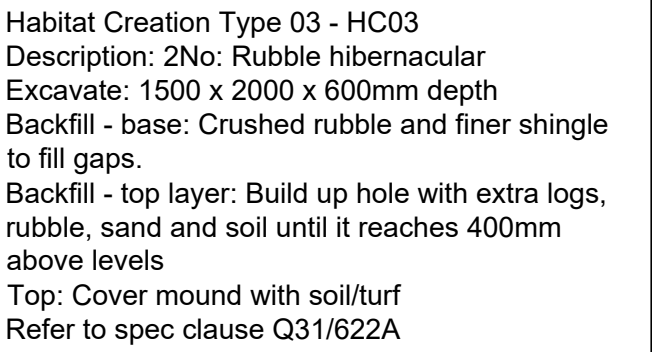
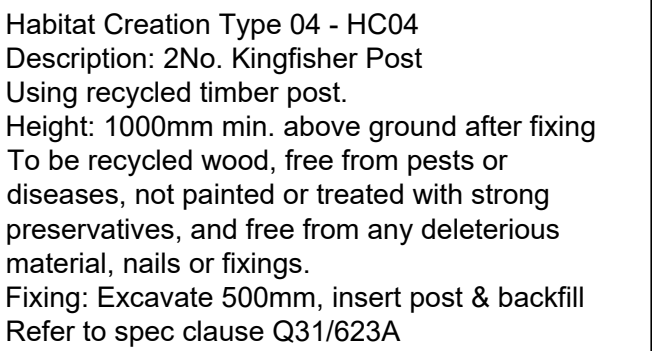
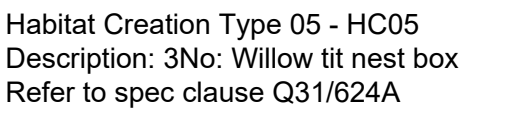
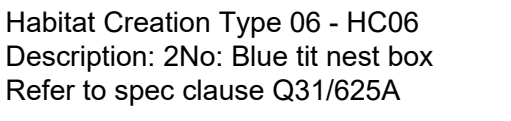
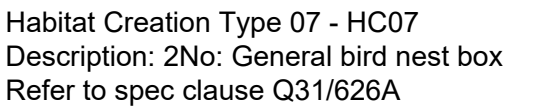
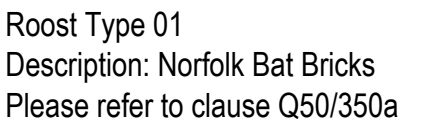
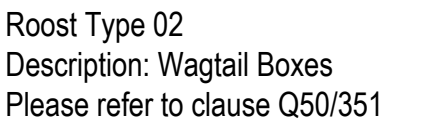
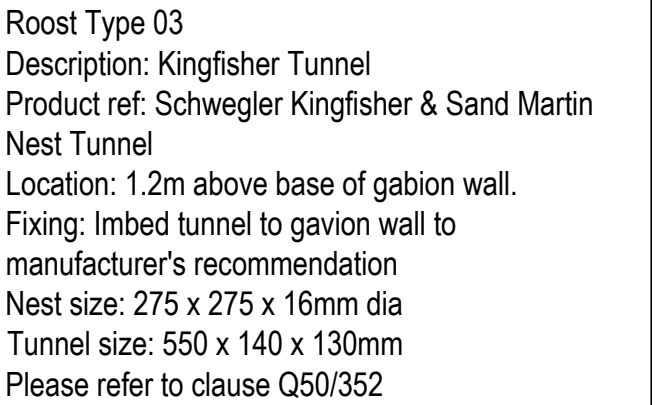
Drawn by TH

Checked by SEW

Rev	Date	Reason	Chk
4	09/06/23	Planning	SEW
3	02/06/23	DRAFT Planning	SEW
2	31/05/23	For Coordination	SEW
1	18/05/23	For Coordination	SEW

Drawing Number	Rev
0436-SEW-ZZ-00-DR-L-001100	4

8 Appendix B – Habitat Feature Location Plan



Mosley Rd
Stratford Park
Stratford
Manchester
M17 1NB

Westgate House, 44 Hale Road, WA14 2EX
161 928 7715 E: design.manchester@gillespies.co.uk

