



Biodiversity Net Gain Assessment

Reliance Street, Manchester

Presented to: **Be.EV**

Issued: June 2024

Lucion Delta-Simons Project No: 87687.544956

Report Details

Client	Be.EV
Report Title	Biodiversity Net Gain Assessment
Site Address	Reliance Street, Manchester
Project No.	87687.544956
Lucion Delta-Simons Contact	Craig Dickson (craig.dickson@luciongroup.com)

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
4	Final	19th June 2024	Updated following changes to Site Layout and Landscaping	 Craig Dickson Senior Ecologist	 Craig Dickson Senior Ecologist	 Jon Spencer Associate Ecologist

About Us

Lucion Delta-Simons is a trusted, multidisciplinary environmental consultancy, focused on delivering the best possible project outcomes for customers. Specialising in Environment, Health & Safety and Sustainability, Lucion Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from across the UK we employ over 180 environmental professionals, bringing experience from across the private consultancy and public sector markets.

As part of Lucion Services, our combined team of 500 in the UK has a range of specialist skill sets in over 50 environmental consultancy specialisms including asbestos, hazardous materials, ecology, air and water services, geo-environmental and sustainability amongst others.



Lucion Delta-Simons is a 'Beyond Net-Zero' company. We have set a Science-Based Target to reduce our Scope 1 and Scope 2 carbon emissions in line with the Paris Agreement and are committed to reducing Scope 3 emissions from our supply chain. Every year we offset our residual emissions by 150% through verified carbon removal projects linked to the UN Sustainable Development Goals. Our consultancy services to you are climate positive.

If you would like support in understanding your carbon footprint and playing your part in tackling the global climate crisis, please get in touch with your Lucion Delta-Simons contact above who will be happy to help.



Table of Contents

1.0 INTRODUCTION	1
1.1 Context and Purpose	1
1.2 Proposed Development	1
2.0 METHODOLOGY	2
2.1 Overview	2
2.2 Biodiversity Metric.....	2
2.3 Habitat Distinctiveness.....	2
2.4 Habitat Condition	3
2.5 Baseline Assessment.....	3
2.6 Post Development Biodiversity Unit Calculation	3
2.7 Proposed Scheme	4
2.8 Future Auditing	4
3.0 ASSUMPTIONS AND APPLICATION OF PROFESSIONAL JUDGEMENT	5
3.1 Baseline Habitats	5
3.2 Future Habitats	5
4.0 RESULTS	6
4.1 Baseline	6
4.2 Proposed Scheme	6
5.0 CONCLUSIONS.....	8
6.0 DISCLAIMER	9

Tables

TABLE 1 – ON-SITE AREA HABITAT BASELINE SCORE
TABLE 2 – POST-DEVELOPMENT AREA HABITAT SCORE
TABLE 3 – ON-SITE URBAN TREE AREA CALCULATOR

Figures

FIGURE 1 – BASELINE HABITATS

Appendices

APPENDIX A – DEFRA SMALL SITE METRIC CALCULATION TOOL (ISSUED SEPARATELY)
APPENDIX B – PLANTING STRATEGY (BE.EV - RELIANCE STREET . MANCHESTER 16/04/2024 REVISION E)

1.0 Introduction

1.1 Context and Purpose

Lucion Delta-Simons Ltd ("Lucion Delta-Simons") was instructed by Be.EV ("the Applicant") to undertake a Biodiversity Net Gain (BNG) Assessment to determine whether the EV Charging Station ("the Proposed Development") proposed on brownfield land off Reliance Street, in Newton Heath, Greater Manchester (hereafter referred to as "the Site") can achieve a net gain in biodiversity.

The revised National Planning Policy Framework (NPPF, 2023) states, "*Planning policies and decisions should contribute to and enhance the local environment by...(d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...*", it also places greater emphasis on achieving a measurable net gain in biodiversity.

1.2 Proposed Development

It is understood from the Landscape Proposals and Planting Strategy (Appendix B) that the Proposed Development will comprise an EV charging station with associated retail unit and parking. The design will incorporate boundary planting with additional trees, grasses and ruderals.

The construction phase will comprise:

- Clearance and remediation of the previously demolished petrol station; and
- Construction of EV charging station with green roof canopy and heavy standard trees.

The operational phase will comprise:

- Use of the Site for charging EV vehicles, as well as commercial and leisure uses; and
- Management of the proposed habitats in accordance with a Landscape and Ecological Management and Monitoring Plan (LEMMP).

2.0 Methodology

2.1 Overview

The approach used to assess biodiversity impacts resulting from the proposed development is detailed below. This assessment has been based on the Small Sites Metric (JP040) (the Metric, Appendix A), the Landscape Proposals and Planting Strategy (Appendix B) provided by the Client in an email in June 2024 and the Preliminary Ecological Appraisal (PEA) undertaken by Lucion Delta-Simons in August 2022.

For the purpose of this assessment, the Small Sites Metric (JP040) was the version used in the initial assessment, and as such, for continuity as per the guidelines, has continued to be used for this updated assessment.

2.2 Biodiversity Metric

The quantitative assessment is based on the Metric to provide a transparent and repeatable measure of biodiversity at each of the stages identified above. The biodiversity score considers a number of factors including:

- Habitat distinctiveness;
- Habitat condition;
- Temporal risk: time required to reach target condition;
- Difficulty to create/restore;
- Connectivity; and
- Spatial area of loss/gain of each habitat.

The pre-development value is compared to the proposed habitat composition post development to assess the change in biodiversity value using biodiversity units as a proxy numeric value.

The Metric only considers habitats and does not take protected and notable species or associated enhancement measures such as bird/bat boxes into account.

2.3 Habitat Distinctiveness

Distinctiveness refers to the relative scarcity of the habitat and its importance for nature conservation. Habitats are assigned to distinctiveness bands. These are based on an assessment of the distinguishing features of a habitat or linear feature, including the consideration of species richness, rarity (at local, regional, national and international scales), and the degree to which a habitat supports species rarely found in other habitats.

The distinctiveness band of each habitat is preassigned in the Metric. The bands are based upon the UK habitat classification system. Where no directly comparable Defra habitat type was available to match the vegetation recorded by Phase 1 Habitat survey, the closest approximation was selected.

The Defra habitat typologies are split into five distinctiveness bands:

- **Very High** - Priority habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 that are highly threatened, internationally scarce, and require conservation action;
- **High** - Priority habitats as defined in Section 41 of the NERC Act requiring conservation action;
- **Medium** - Semi-natural habitats not classed as Priority Habitat;

- **Low** - Habitat of low biodiversity value; and
- **Very low** - Little or no biodiversity value.

Under the supplementary habitat calculations for linear habitats, hedgerows are assigned a distinctiveness weighting based on their physical structure and the species composition of the woody element of the hedgerow, and their association with physical features (ditches and banks) that may enhance their ecological value by providing additional niches or enhanced capacity to provide habitat connectivity.

2.4 Habitat Condition

The condition of a habitat is defined by its particular quality. For example, a habitat is in poor condition if it fails to support the notable/protected species for which it is valued, or if it is in unfavourable condition due to degradation from external factors, such as pollution, erosion or invasive species. Condition assessment criteria is based on the Small Sites Metric technical guidance. Habitat condition categories are as follows:

- Good;
- Moderate;
- Poor;
- N/A - Agricultural; and
- N/A - other.

2.5 Baseline Assessment

The baseline biodiversity score for the Site has been determined using the PEA of the Site undertaken by Lucion Delta-Simons in August 2022. Whilst it is acknowledged that the baseline assessment is more than 18 months old, this report update represents layout changes to the development which has already gained planning consent. Therefore, it is considered appropriate to continue to use the baseline assessment previously submitted and on which the original scheme was assessed. Furthermore, as the habitats on-Site were predominantly hardstanding or of low conservation concern, this is not considered a significant constraint. The baseline habitats are shown in Figure 1.

2.6 Post Development Biodiversity Unit Calculation

Biodiversity Units and Linear Units resulting from ecological mitigation for the Scheme to compensate for potential losses are referred to as post-development Biodiversity Units / Linear Units (BUs / LUs).

To calculate the BUs which may be achieved post-development, risk factors are introduced. The aim of a risk factor is to correct for a disparity or risk, associated with the uncertainty surrounding the creation of habitats. There are three main types of risk that are accounted for within the Metric. These are categorised as follows:

- **Spatial Risk** - these reflect ecological risks deriving from the change in location of the habitat or resource. By way of example, it may be that recreating a habitat in a new location distant from the area of loss could reduce its biodiversity value, through reduced connectivity and a decrease in habitat availability for the species affected by the development;
- **Temporal Risk** - the risk associated with the time required for created habitats to reach their target suitability and for the functionality of the habitat to be restored; and
- **Delivery Risk** - the risks associated with the actual delivery of the offset due to, for instance, uncertainty in the effectiveness of habitat creation/management.

Each risk multiplier is assigned a numerical score which enables post development Biodiversity Units to be calculated.

2.7 Proposed Scheme

In order to calculate the post-intervention score, the Landscape Proposal Plan (Drawing 1) and Planting Strategy (Appendix B) have been used as well as assumptions for targeted habitat conditions as set out in Section 3.1.

2.8 Future Auditing

This Report sets out the predicted biodiversity impacts of the scheme based on a set of assumptions and professional judgement for target habitat conditions post-development. In order to ensure the development achieves the targets set out below, the scheme should be accompanied by an appropriate Landscape and Ecology Management and Monitoring Plan (LEMMP). The LEMMP should allow for regular monitoring of the habitat establishment and their progression to the desired condition target, allowing for changes to management regimes as necessary to achieve the targets set.

3.0 Assumptions and Application of Professional Judgement

3.1 Baseline Habitats

Professional judgement has been made in relation to the baseline habitats and their conditions based on the criteria provided within the Defra Metric Technical Supplement and User Guide.

3.2 Future Habitats

Assumptions and professional judgement have been applied in relation to the habitat target condition. These judgements are based on realistic targets according to the location and context of the development. Future management of the landscaping at the Site should be informed by an appropriate management and monitoring plan to achieve these target conditions.

4.0 Results

4.1 Baseline

Baseline habitats are shown in Figure 1 and were predominantly hardstanding, with a narrow strip of poor semi-improved grassland, scattered young trees, scrub and ruderals, in addition to areas of ephemeral vegetation. Overall, the baseline for the Site is calculated to provide 0.1545 area BUs.

Table 1, below, provides a summary of the baseline habitats, areas, and biodiversity units for the Site.

Table 1 - On-Site Area Habitat Baseline Score

Existing Habitats (Area)	Area (m ²)	Biodiversity Units
Sparsely vegetated land - Ephemeral	59	0.0236
Urban - Developed land; sealed surface	999	0.0000
Grassland - Modified grassland	228	0.0912
Heathland and shrub - Bramble scrub	40	0.0160
Sparsely vegetated land - Ruderal	24	0.0096
Urban - Urban Tree	23*	0.0181
Total	1298	0.1585

*As trees do not provide a groundcover area, their areas are not included in the total within this table, meaning that the total areas presented remain the same as the area of the Site. Within the calculator, however, they are included in addition to the ground vegetation areas.

4.2 Proposed Scheme

Post-development habitat compositions are shown in Drawing 1 and detailed in Table 2, below. The majority of the Site post development will comprise built form with no retained habitats, however, the addition of boundary grassland planting, new trees and raised planters will add biodiversity through the landscaping. Table 2, below, provides a summary of the post-development habitats, areas and biodiversity units for the Site.

Table 2 - Post-Development Area Habitat Score

Proposed Habitats (Area)	Target Condition	Area (m ²) Created	Biodiversity Units Delivered
Urban - Developed land; sealed surface	N/A - Other	1027	0.0000
Urban - Developed land; sealed surface	N/A - Other	34	0.0000
Grassland - Other neutral grassland	Moderate	133	0.0890
Grassland - Other neutral grassland	Moderate	88	0.0589
Urban - Ground level planters	Poor	8	0.0015



Proposed Habitats (Area)	Target Condition	Area (m ²) Created	Biodiversity Units Delivered
Urban - Biodiverse green roof	Moderate	60	0.0269
Urban - Urban Tree	Moderate	96*	0.0207
Total		1298	0.2027

* The total BU delivered includes the changes in Urban Trees On-Site, detail in Table 3 below.

Table 3 - On-Site Urban Tree Area Calculator

Tree Size (Diameter at breast height)	Number Pre-Development	Number Post-Development	Area Lost (m ²)	Area Gained (m ²)
Small - DBH ≤ 30cm	5	19	23	86
Medium - DBH > 30 to ≤ 90cm	-	-	-	-
Large - DBH > 90cm	-	-	-	-
Total			23	86

5.0 Conclusions

The above assessment results in a total net unit change of:

Area Units = +0.0442 **Total net % change = +27.88%**

See the attached completed Defra Metric for detailed results (Appendix A).

Based on the information currently available, this assessment indicates that the development will achieve a net gain in biodiversity over 10%. The main contributors to this are the addition of new grassland, and additional tree planting.

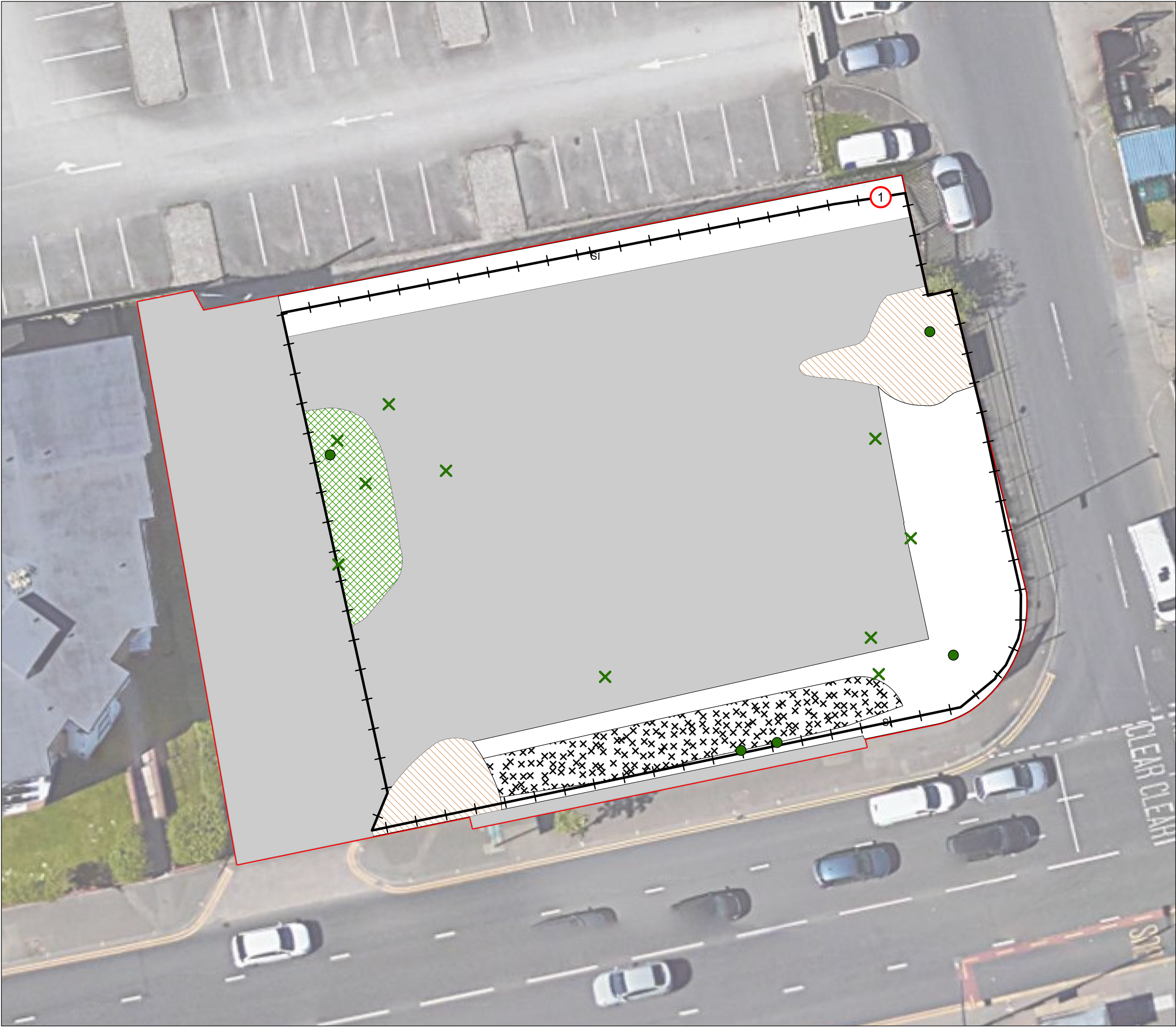
It should be noted that any habitat creation is required to be managed in perpetuity to ensure habitats meet the target conditions (which for the purposes of BNG is considered to be 30 years). Monitoring of this should be implemented through an appropriate LEMMP.

6.0 Disclaimer

The recommendations contained in this Report represent Lucion Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this Report, exercising the duty of care required of an experienced Ecology Consultant. Lucion Delta-Simons does not warrant or guarantee that the Site is free of Bats or other protected species.

This Report was prepared by Lucion Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Lucion Delta-Simons was instructed as defined in Section 1.0 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Lucion Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Lucion Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Lucion Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Figure 1 – Baseline Habitats



- Legend**
- Scrub - dense/continuous
 - Poor semi-improved grassland
 - Tall ruderal
 - Ephemeral / short perennial
 - Hardstanding
 - Site boundary
 - Scattered broadleaved tree
 - Scattered scrub
 - Fence
 - Target note

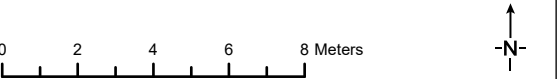
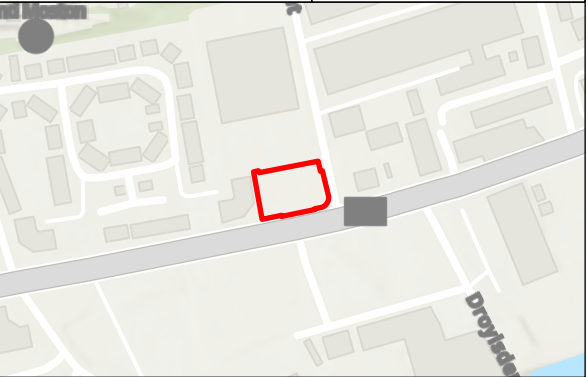


Figure	Baseline Habitats		
Job	Reliance Street, Manchester		
Client	Lipton Plant Architects		
Figure No.	1	Revision	A
		Date	13/06/2024
Drawn	KH	Checked	CD
		Scale	1:200 @ A3
Job No.	87687.544956		Central GR
			388068E 400732N



Appendix A - Defra Small Site Metric Calculation Tool

(Issued Separately)

Appendix B - B.ev RELIANCE STREET FFLO Landscape Planting Proposal REV G 10 06 24

Be.EV - RELIANCE STREET . MANCHESTER

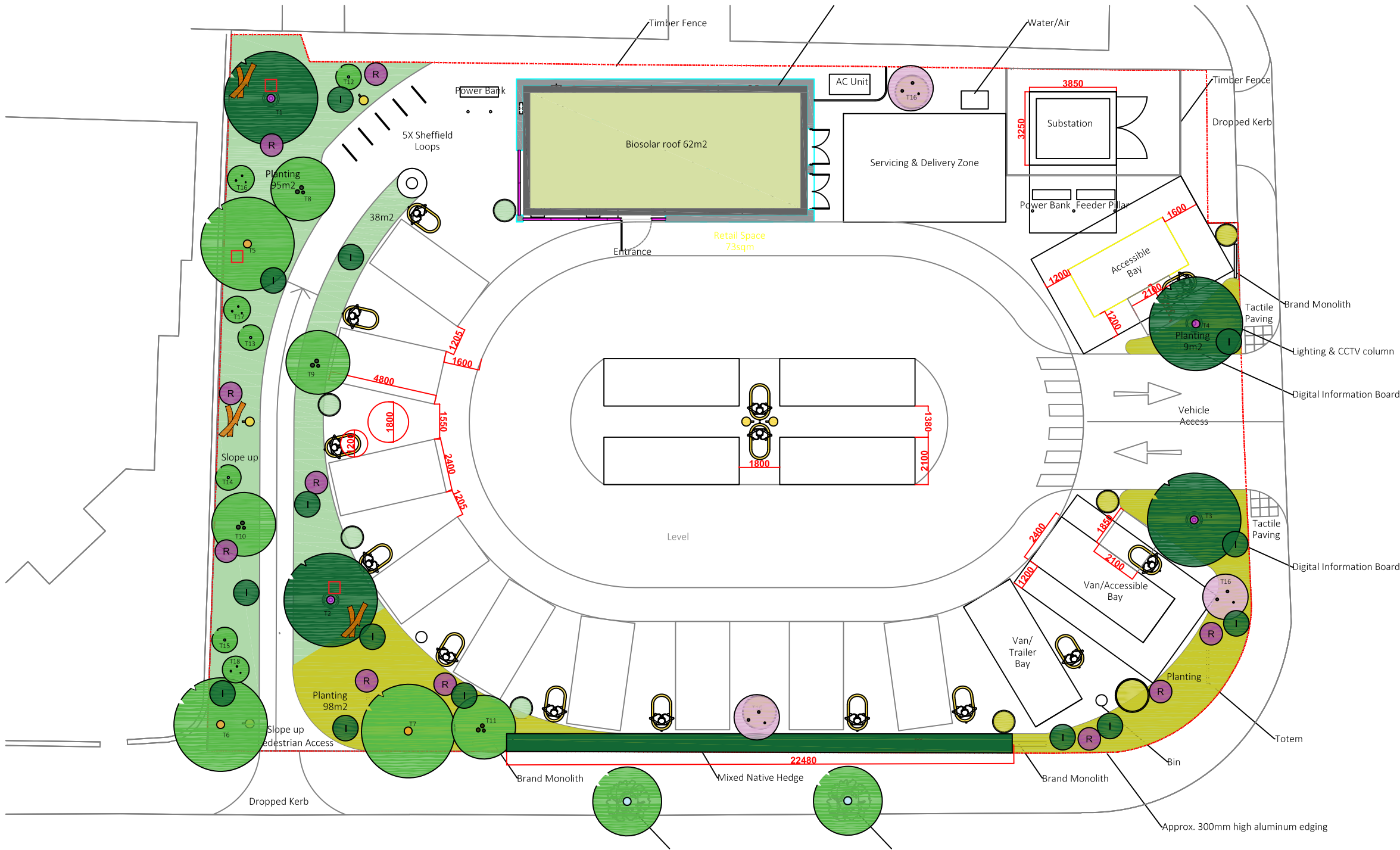
10 06 2024 REVISION G

PLANTING - UPDATED LAYOUT

FOR PLANNING

FFLO Landscape Architects

contact:claire@fflo.co.uk 01892512669 . www.fflo.co.uk

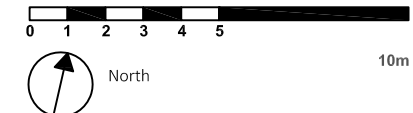


- refer to planting schedule
- Mix A 133m2 planted at 9 plants/m2
- Mix B 90m2 planted at 9 plants/m2
- Biosolar roof, 62m2 with 300mm gravel fire break (to architects details)
- Raised planter, 1m dia., 450mm H
Mix A 3m2 planted at 9 plants/m2
- Raised planters, 3x1.5m dia., 450mm H
Mix B 6.5m2 planted at 9 plants/m2
- Native mixed hedge 22.5Lm

TREES

ALL TREES TO BE SELECTED BY FFLO PRIOR TO ORDER

- Betula pubescens - SMALL
T12-T14
Size 2-3m H, 140-160mm girth
Feathered
- Betula pubescens - SMALL
T16-T18 Size 2-3m H
Multistem
- Betula pubescens - MEDIUM
T8-T11
Size 4-5m H
Multistem
- Ilex aquifolium - various sizes, see schedule
- T5-7 Betula pubescens
standard, 2m clear stems
see schedule, to be selected by FFLO.
- T1-4 Pinus sylvestris
standard, 2.5m clear stems
see schedule, to be selected by FFLO.
- T18-19 Sorbus aucuparia
standard, 2m clear stems
see schedule, to be selected by FFLO.
- Malus sylvestris multistems, see schedule
- Rosa canina
- Deadwood for invertebrates, (see FFLO spec)
- Tree mounted bat / bird boxes, type to be determined.



NOTES:
To be read together with FFLO landscape spec and plant schedule

To fully understand the key please print in colour

In this project FFLO drawings should only be used in reference to soil type/depth and planting. For all other matters please refer to architects drawings

Plant mixes to be planted as a naturalistic tapestry. All plants per mix to be set out by the landscape architect, prior to any planting. This must be programmed into the installation.

Bulbs to be overplanted. If installation does not fit the season for bulb planting, potted bulbs must be used in place of bulbs. In this instance contractor must agree pot numbers / quantities with FFLO.

IMPORTANT NOTICE: Plant sourcing must be incorporated into the programme to ensure correct cultivars are procured. Substitutions should be a last resort and must be agreed with FFLO prior to order. Please send photos of multistems, shrubs and trees to FFLO for review and agreement prior to order.

Plants shall be first class examples of their species or variety, free from all pests and diseases, with good fibrous root systems and materially undamaged (refer to relevant sections of BS3936 Parts 1-4 'Specification of Nursery Stock').

PLANTING PLAN – UPDATED LAYOUT
B.E.V. RELIANCE STREET
Scale 1:100 @ A1 1:200 @ A3
NB to fully understand the key please print in colour
10.06.2024
Drawing no. L_101 Revision D
FOR PLANNING

Visual identity

The client Be.EV, working with Architect That have set out to create an electric car charging station with a visual identity defined by landscape as approved by Manchester City Council previously (app ref: 136359/FO/2023).

Sustainability

Electric car charging is an important step towards a more sustainable future. As such we must consider how the planting design can reinforce that step visually in real terms by bringing biodiversity and nature to the site.

Habitats are also for people

Alongside habitat creation we must also make a positive environment for people to sit and wait for their cars to be charged.

The Proposal

As a practice our interest is in extrapolating our designs from natural systems. By mirroring what is found in nature we provide biodiverse planting schemes with a soft natural feel. We think that natural habitats make good habitats for people too: the experience of nature is what makes people happy. The plants will be arranged on the matrix system developed by Nigel Dunnet at Sheffield University and will be set out in perosn by Claire Fernley, partner in the practice. The final setting out is quite critical to the success of the scheme in our opinion.

This approach is similar to the approach that we took at Exchange Square, Broadgate although that project has a more complex, high maintenance matirx. Notwithstanding the picture to the right is indicative of the general feel that we have in mind. A loose tapestry of naturalistic ground flora with an informal collection of trees above.



Naturalistic style planting by FFLO at exchange square broadgate. Planted as a tapestry mix the planting has an informal character



Naturalistic planting- a narrow belt of betula pubescens underplanted with woodland edge species: grasses, perennials and ferns similar to the palette we are proposing.

TREE PLANTING

There will be three larger *Pinus sylvestris*, chosen for their statuesque nature and evergreen structure. They are interspersed with a naturalistic grove of *Betula pubescens* of varying sizes, some as standard trees mixed with bifurcated and multistem specimens to create a naturalistic quality to the grove reminiscent of a woodland typology. Under this a small number of multistem crab apples will enhance the planting in early spring with blossom. Together the trees will create a soft, natural setting; offer shelter in winter and shade in summer.

Two *Sorbus aucuparia* will be planted as replacement to the existing street trees. They are suited to being an urban street tree as well as being native, offering berries for foraging birds and a naturalistic quality to compliment the planting of the site.



Betula pendula



Bifurcated Betula pubescens



Pinus sylvestris



Malus evereste multistem



Sorbus aucuparia

OLDHAM ROAD BOUNDARY TREATMENT

A native mixed hedge will be planted along the boundary to Oldham Road to provide enclosure from the busy road and a more robust edge to the site. The mix of native species will also contribute significantly to biodiversity on the site.

Native mixed instant hedging, 1.2m high.

- Hawthorn (*Crataegus monogyna*),
- Field Maple (*Acer campestre*)
- Hazel (*Corylus avellana*)
- Dogwood (*Cornus alba*)
- Hornbeam (*Carpinus betulus*)
- Blackthorn (*Prunus spinosa*)



BIOSOLAR ROOF

A wildflower flower mat by Bauder or similar will be laid on the roof of the cafe in combination with PV panels. The adjacent table from Bauder shows the typical buildup required.

The blanket includes up to 40 varieties of British native wildflowers with less than 10% grass species. It is RHS Certified perfect for pollinators.



	Function	Product name	Thickness (mm)	Weight (kg/m2)
1	Vegetation	BauderGREEN WB	30	30
2	Substrate	BauderGREEN SUB-BM UK	100	120
3	Filtration layer	BauderGREEN FV 125 100	1	0.13
4	Drainage layer	BauderGREEN DSE 40	40	15.3 (saturated)
5	Protection layer	BauderGREEN FSM 600	4	3.6
Green roof system build-up			175	169
6	Bauder Waterproofing	Options for Bituminous membrane, Hot Melt, Single ply or Cold applied liquid systems.	Not included	Not included
In-depth and up-to-date product specific technical data is available for each element within a system. Download from our technical-centre				

Native Wildflower Blanket Green Roof Buildup

GROUND FLORA - SUNNY MIX

The planting at the perimeter of the site will provide a naturalistic surround to the station. It will be formed of a rich tapestry of flowering species and ornamental grasses. An additional layer of larger shrubs and multistem plants will create structure and body to the planting.

- Deschampsia cespitosa,
- Briza media,
- Digitalis purpurea,
- Daucus carota,
- Knautia arvensis,
- Red campion,
- Stachys officianalis,
- Galium mollugo,
- Leucanthemum vulgare,
- Sesleria autumnalis,
- Hycinthoides non scripta,
- Knautia arvensis,
- Lunaria annua,
- Centaurea nigra,
- Anthriscus sylvestris Ravemswing,
- Primula vulgaris, Silene dioica,
- Valeriana officinalis,
- Euphorbia blue haze,
- Primula elatior,
- Galium verum,
- Dianthus carthusianorum,
- Stipa gigantea,
- Aquilegia vulgaris,
- Ranunculus acris citrinus,
- Gladiolus byzantinus
- Verbena bonariensis
- Salvia caradonna
- Lonicera nitida



UNDERSTOREY - SHADIER MIX

The Birch trees will be underplanted with a mix of grasses, ferns and flowering perennials. The ornamental grasses and ferns will hold interest and cover through the winter months and flowering perennials will bring colour and structure through summer.

This rich species selection, with a number of native and pollinator plants will create a more biodiverse habitat. A number of small shrubs and evergreen shrubs will be included amongst the mix to give further structure and year round interest.

- Deschampsia cespitosa,
- Briza media,
- Digitalis purpurea,
- Daucus carota,
- Galium mollugo,
- Leucanthemum vulgare,
- Sesleria autumnalis,
- Hycinthoides non scripta,
- Lunaria annua,
- Anthriscus sylvestris Ravenswing,
- Primula vulgaris, Silene dioica,
- Primula elatior,
- Aquilegia vulgaris,
- Ranunculus acris citrinus,
- Blechnum spicant,
- Polystichum munitum,
- Campanula rotundifolia.
- Lonicera nitida Tidy Tips
- Viburnum opulus



B.Ev Reliance Street . Manchester - updated layout
Planting schedule 10.06.2024 Revision D
FOR PLANNING
FFLO . www.fflo.co.uk . Tel: +44 (0)1892 512 669 email: claire@fflo.co.uk/james@fflo.co.uk

Any substitutions must be agreed with FFLO prior to order.
Please send photos of multistems and fruit trees to FFLO for review prior to order.

Plants to be set out as a random matrix across the roof to give a naturalistic appearance.
Planting to be toppedressed with a 45mm layer of fine bark mulch.

	SPECIES	%	QUANTITY	SIZE
	Trees			
T1-T4	Pinus sylvestris - clear stem		4	as selected and specified by FFLO, 2.5m clear stem
T5-T7	Betula pubescens - large - clear stem		3	6m H, 2m clear stem, standard, 200-250mm girth
T8-T11	Betula pubescens - medium - bifurcated		4	4-5mH multistem
T12-T15	Betula pubescens - small - clear stem		4	2-3mH feathered, 140-160mm girth
T16-T18	Betula pubescens - small - bifurcated		3	2-3mH multistem
T19-T20	Sorbus aucuparia - large - clear stem		2	6m H, 2m clear stem, standard, 200-250mm girth
	Malus sylvestris - multistem		3	2-3mH multistem
	Shrubs			
	Ilex aquifolium		14	1.5mH bushy with good branching structure and dense foliage
	Rosa canina		10	20ltr
	Native mixed hedge		22.5 lm	instant hedge 1m high, must be dense and bushy, mature enough to provide a solid hedge the full depth of the 830mm width. A double/triple layer of hedge may be necessary.

BIOSOLAR ROOF 62m2
BauderGREEN WB Wildflower Blanket System: FOR MORE INFORMATION VISIT THE LINK BELOW
chrome-extension://efaidnbmnnpbpcjpcglclefindmkaj/https://www.bauder.co.uk/technical-centre/downloads/system-summaries/wildflower-blanket.pdf

GROUNDFLORA PLANT MIX A - SHADIER MIX 136m2				
9 Plants per m2, total number of plants = 1224				
	Grasses & Ferns			
	Deschampsia cespitosa	5	612	
	Briza media	7	857	
	Sesleria autumnalis	13	1591	
	Blechnum spicant	8	979	
	Polystichum munitum	8	979	
	Perennials			
	Telima grandiflora	5	612	
	Digitalis purpurea	5	612	
seedheads	Daucus carota	5	612	
	Knautia arvensis	4	490	
seedheads	Silene dioica	4	490	
seedheads	Stachys officianalis	4	490	
	Galium mollugo	3	367	
	Leucanthemum vulgare	4	490	
	Campanula rotundifolia	3	367	
	Lunaria annua	3	367	
	Anthriscus sylvestris Ravenswing	3	367	
	Primula vulgaris	4	490	
	Primula elatior	4	490	
	Aquilegia vulgaris	4	490	
	Ranunculus acris citrinus	4	490	
		100	12240	
spring colour	Hycinthoides non scripta	bulb	750	planted throughout mix A in groups/swathes of 50-70.
	Galanthus nivalis	bulb	1500	planted throughout mix A in groups/swathes of 100-150.

	SPECIES	%	QUANTITY	SIZE
GROUNDFLORA PLANT MIX B - SUNNIER MIX 97m2				
9 Plants per m2, total number of plants = 873				
	Grasses & Ferns			
	Deschampsia cespitosa	5	44	
	Briza media	3	26	
	Sesleria autumnalis	13	113	
	Blechnum spicant	8	70	
	Polystichum munitum	8	70	
	Stipa gigantea	1	9	
	Perennials			
	Telima grandiflora	4	35	
	Digitalis purpurea	4	35	
seedheads	Daucus carota	2	17	
	Knautia arvensis	3	26	
seedheads	Silene dioica	3	26	
seedheads	Stachys officianalis	4	35	
	Galium mollugo	2	17	
	Leucanthemum vulgare	3	26	
	Campanula rotundifolia	3	26	
seedheads	Lunaria annua	3	26	
	Anthriscus sylvestris Ravenswing	3	26	
spring colour	Primula vulgaris	4	35	
spring colour	Primula elatior	4	35	
	Aquilegia vulgaris	3	26	
	Ranunculus acris citrinus	4	35	
seedheads	Centaurea nigra	3	26	
	Euphorbia blue haze	4	35	
	Galium verum	2	17	
	Dianthus carthusianorum	4	35	
		100	873	
spring colour	Hycinthoides non scripta	bulb	350	planted throughout mix B in groups/swathes of 50-70.
	Gladiolus byzantinus	bulb	200	dot throughout in groups of 3, 5 and 7
spring colour	Galanthus nivalis	bulb	1500	planted throughout mix A in groups/swathes of 100-150.