

Plant schedules

Trees					
Number	Abbreviation	Species	Specification	Height	Girth
3	ACECAM	Acer campestre	3x; Extra Heavy Standard; clear stem minimum 200cm; 5 breaks;	400-450cm	14-16cm
1	ACEPS8	Acer pseudoplatanus 'Brilliantissimum'	3x; Heavy Standard; clear stem 175-200cm; 5 breaks	350-425cm	12-14cm
4	AIa	Alnus incana 'Aurea'	3x; Heavy Standard; clear stem 150-175cm; 5 breaks; RB	350-425cm	12-14cm
1	A x s	Alnus x spaethii	3x; Extra Heavy Standard; clear stem minimum 200cm; 5 breaks; RB	400-450cm	14-16cm
3	GLETRS	Gleditsia triacanthos 'Skyline'	3x; Extra Heavy Standard; clear stem 175-200cm; 5 breaks; RB	400-450cm	14-16cm
3	PRUPA	Prunus padus	3x; Extra Heavy Standard; clear stem 175-200cm; 5 breaks	400-450cm	14-16cm
1	QUE PAL	Quercus palustris	3x; Extra Heavy Standard; clear stem 175-200cm; 5 breaks; RB	400-450cm	14-16cm
2	SaA	Sorbus aucuparia 'Asplenifolia'	3x; Extra Heavy Standard; clear stem minimum 200cm	400-450cm	16-18cm
Total :18					

Shrubs						
Number	Abbreviation	Species	Specification	Pot Size	Height	Density
121	AUCJAR	Aucuba japonica 'Rozannie'	Bushy; 4 breaks	5L	30-40cm	0.7Ctr
27	CSMF	Cornus sanguinea 'Midwinter Fire'	Branched; 7 breaks	15-20L	100-125cm	Counted
77	CSMF	Cornus sanguinea 'Midwinter Fire'	Branched; 3 breaks	3L	40-60cm	0.6Ctr
260	Cav	Corylus avellana (Hedge planting)	1+2; Transplant - seed raised; branched; 3 breaks' B	-	60-80cm	0.3Ctr Double Staggered at 0.25m offset
20	CORAV	Corylus avellana (Specimens)	Branched; 5 breaks; RB	-	100-125cm	Counted
15	CmP	Corylus maxima 'Purpurea'	Branched; 4 breaks	10L	60-80cm	Counted
6	EUOAL	Euonymus alatus	Branched; 8 breaks	15L	60-80cm	Counted
58	EFEG	Euonymus fortunei 'Emerald Gaiety'	Bushy; 9 breaks	5-7.5L	20-30cm	0.7Ctr
10	HPG	Hydrangea paniculata 'Grandiflora'	Branched; 10 breaks	15L	60-80cm	Counted
32	LIG VUL	Ligustrum vulgare	Bushy; 9 breaks	10L	100-125cm	1Ctr
28	OSMBU	Osmanthus burkwoodii	Bushy; 7 breaks	10L	60-80cm	1Ctr
5	PHIBET	Philadelphus 'Belle Etoile'	Bushy; 8 breaks	15-20L	60-80cm	Counted
2	Pte	Phormium tenax	Triple crown	25L	100-125cm	Counted
112	PIOL	Prunus laurocerasus 'Otto Luyken'	Bushy; 5 breaks	5-7.5L	40-60cm	0.7Ctr
6	SaBB	Sambucus nigra 'Black Beauty'	Branched; 5 breaks	25L	80-100cm	Counted
60	SARCO	Sarcococca confusa	Bushy; 7 breaks	5-7.5L	30-40cm	0.6Ctr
8	VIBOP	Viburnum opulus	1+2; Transplant - seed raised; branched; 3 breaks; BR	-	100-125cm	Counted
Total :847						

Herbaceous					
Number	Abbreviation	Species	Specification	Pot Size	Density
139	ATS	Amsonia tabernaemontana salicifolia	Full pot	2L	0.5Ctr
153	ERYBM	Erysimum 'Bowles Mauve'	Full pot	2L	0.4Ctr
117	GAULI	Gaura lindheimeri	Full pot	2L	0.5Ctr
159	Ge WP	Geranium 'Wargrave Pink'	Full pot	2L	0.5Ctr
161	HmAu	Hakonechloa macra 'Aureola'	Full pot	2L	0.5Ctr
252	IRSI	Iris sibirica	Full pot	2L	0.5Ctr
97	PbS	Persicaria bistorta 'Superba'	Full pot	2L	0.5Ctr
36	PHLRU	Phlomis russeliana	Full pot	2L	1Ctr
172	SCS	Schizostylis coccinea 'Sunrise'	Full pot	0.5L	0.35Ctr
76	V b	Verbena bonariensis	Full pot	2L	0.5Ctr
86	VES	Veronica spicata	Full pot	2L	0.6Ctr
Total :1448					

Implementation specification - generally

Ground preparation: Protect retained trees/areas of retained soil where structural landscaping is proposed in accordance with an approved Arboricultural Method Statement and Tree Protection Plan. Tree protection fencing shall be erected as noted within an Arboricultural Method Statement and Tree Protection Plan. The fence is to be maintained for the duration of the works. Protection of existing trees against damage to be in accordance with the BS 5837:2012 - Trees in relation to design, demolition and construction - Recommendations. Protective fence to be approved by the LPA. Any excavations shall be in accordance with B.S. 8000 part 1:1989.

Imported soil: Soils may need to be imported to make up for any deficiency of soil on site.

Subsoil: Where required, supply approved imported subsoil to B.S. 8601:2013 Specification for subsoil and requirements for use - Multipurpose subsoil, to make up any deficiency in on-site subsoil.

Topsoil: Where required, supply approved imported topsoil to B.S. 3882:2015 Specification for topsoil - Multipurpose topsoil, to make up for any deficiency in on-site topsoil. Certification of soil shall be in accordance with BS 8601/3882.

Soil profiles: Soil profiles outside of retained, in-situ soil, should comprise:

- 300mm topsoil over 600mm subsoil for trees planted within shrubs or where trees are planted in grass areas.
- 300mm topsoil over 300mm subsoil for shrub planting areas (with no trees) and the adjacent grass areas, and 150mm topsoil over 150mm subsoil for grass areas only.

Excavation: Any excavations in order to win soil for re-use as part of landscaping must be undertaken in accordance with BS 3882:2015, BS 8601:2013 and the 2009 DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

Trees: excavate a few centimeters shallower than root-ball and twice its width with sloping, scarified sides. Root-balls of trees shall be set on a 150mm depth of horticultural grade sharp sand. Semi-Mature trees shall be set on a 400-450mm depth of horticultural grade sharp sand. **Shrubs:** excavate 300 x 300 x 300mm depth.

Backfilling: Trees: Backfill to reinstate 300mm over 600mm profile and do not add compost or fertiliser unless soil analysis demonstrates the need. If compost is applied it should be worked in generally to the top 150mm, not back-filled into tree pits. Shrubs: Backfill to reinstate soil profiles provided above and do not add compost or fertiliser unless soil analysis demonstrates the need.

Cultivation: Do not cultivate tree and shrub planting soils, only cultivate prior to planting if the soil is compacted (for example due due site/construction activities). For grass seeding areas, cultivate topsoil to a loose friable tilth suitable for grass seeding. Collect and remove from site all stones, builders' rubble and other deleterious material over 50mm in any dimension. **Amenity grass:** Grass areas to be sown at a rate of 35g/m² with a suitable grass seed mix such as Germinal A19. Initial grass cutting and edge trimming down to 50mm.

Planting areas: Plant specification to be in accordance with the HTA National Plant Specification. Tree planting to be in accordance with BS 8545:2014 - Trees from nursery to independence in the landscape recommendations.

Tree planting: No tree to be planted that does not conform in full with **Table 1, p.21, BS 8545:2014**, to be established via nursery inspections prior to and on delivery of trees. The positioning of proposed trees are to avoid underground services. **No tree to be substituted by an alternative without formal agreement by the LPA, but prior consultations with nurseries should clearly establish availability.**

Tree anchoring: Rootball fixing strap system to be provided by Platipus to secure the trees.

Supplier: Platipus. Product: Tree Anchoring with Strap. Product Code: RF1s/RF2s (depending on tree size). Ref: www.platipus-anchors.com/applications/tree-and-irrigation/rootball-fixing-system---strap/

Note: Above ground stake supports for trees shall only be used where ground anchoring methods prove ineffective, but shall not be used to support trees with defective root-balls. Staking shall comprise x3 untreated wooden stakes set with two to the SW side and attached low (never more than one-third tree height) using flexible ties such as hessian nature-ties, arbor-tie or rubber straps. Ties shall allow for flexure without abrasion of the stem and all stakes and ties shall be removed before the third growing season.

Root barriers: Root barriers shall be installed (to be provided by GreenBlue Urban. Product: ReRoot 2000) and at a suitable depth to protect buried services. It shall be installed approximately 250mm parallel to the buried services and within 3m of the proposed trees.

Bark mulch (other than SuDS): Provide and spread evenly over all planting areas an organic graded bark flakes or similar approved bark mulch to a depth of 50mm. For trees, and in particular those planted in grass, apply a 50mm depth of mulch to give Mulching shall be free from toxins, pathogens and other extraneous substances harmful to plant, animal or human life. Ensure that all weeds have been cleared and that the soil have been watered thoroughly prior to mulching.

Mulching of SuDS: The use of an organic mulch should be avoided for systems where there is an overflow pit, owing to the risk of clogging. Spread a layer of clean stone gravel, 20mm particle size, to a depth of 50-70mm, as an alternative to standard organic mulches over the SuDS to protect the soil from erosion. No geotextile/ membrane to be installed under the gravel.

Species-rich grass to swales and ayttenuation basin: to be sown with a suitable seed mixture such as Emorsgate EM8 Meadow mixture for Wetlands, or similar and approved.

Maintenance: All landscape areas to be maintained in accordance with B.S. 7370 Part 3:1991 and Part 4:1993; including weed control, and adjustment to tree stakes and ties. Refer to the below.

General notes: Substitutions, if made, should be similar in size, form and water demand. Plants shall be arranged to avoid straight lines and geometric patterns.

Climbers				
Number	Abbreviation	Species	Specification	Density
9	HEDHE	Hedera helix	Several shoots; 3 breaks	0.3Ctr

Marginal / Aquatics					
Number	Abbreviation	Species	Specification	Pot Size	Density
90	LOBCA	Lobelia cardinalis	Full pot; C	3L	0.5Ctr
96	MENPU	Mentha pulegium	Full pot	2L	0.5Ctr

Grasses					
Number	Abbreviation	Species	Specification	Pot Size	Density
110	Cbr	Calamagrostis brachytricha	Full pot	2L	0.6Ctr
223	MOC	Molinia caerulea	Full pot; Sept to April planting; British native-origin	2L	0.6Ctr
204	PEH	Pennisetum alopecuroides 'Hameln'	Full pot	2L	0.6Ctr
Total :537					

Mix 1: Native trees and shrubs						
Number	Abbreviation	Species	Specification	Height	Density	Percentage Contribution
72	CORSA	Cornus sanguinea	1+1; Transplant - seed raised; branched; 3 breaks	60-80cm	1.5Ctr	15%
77	CORAV	Corylus avellana	1+2; Transplant - seed raised; branched; 3 breaks	60-80cm	1.5Ctr	16%
39	CRA MON	Crataegus monogyna	1+2; Transplant - seed raised		1.5Ctr	8%
34	EUOEU	Euonymus europaeus	1+2; transplant - seed raised; branched; 5 breaks	60-80cm	1.5Ctr	7%
24	LIGVU	Ligustrum vulgare	0/2; Cutting; branched; 3 breaks	80-100cm	1.5Ctr	5%
39	PRUSP	Prunus spinosa	1+2; Transplant - seed raised; branched; 4 breaks	100-125cm	1.5Ctr	8%
24	QUE ROB	Quercus robur	2x; Feathered; 3 breaks	150-175cm	1.5Ctr	5%
48	ROSCA	Rosa canina	1+1; Transplant - seed raised; branched; 3 breaks	60-80cm	1.5Ctr	10%
43	SAMNI	Sambucus nigra	1+1; Transplant - seed raised; branched; 3 breaks	80-100cm	1.5Ctr	9%
34	SOR AUC	Sorbus aucuparia	2x; Feathered; 3 breaks	125-150cm	1.5Ctr	7%
48	VIBOP	Viburnum opulus	1+2; Transplant - seed raised; branched; 3 breaks	80-100cm	1.5Ctr	10%
Total :482						

Mix 2: Native shrubs							
Number	Abbreviation	Species	Specification	Pot Size	Height	Density	Percentage Contribution
54	CORSA	Cornus sanguinea	1+1; Transplant - seed raised; branched; 3 breaks		60-80cm	1Ctr	15%
107	CORAV	Corylus avellana	1+2; Transplant - seed raised; branched; 3 breaks		60-80cm	1Ctr	30%
54	E e	Euonymus europaeus	1+2; Transplant - seed raised; branched; 5 breaks		60-80cm	1Ctr	15%
19	HEDHE	Hedera helix	Several shoots; 3 breaks	2L	40-60cm	1Ctr	5%
19	LONPE	Lonicera periclymenum	Caned; several shoots; 2 breaks	2L	60-80cm	1Ctr	5%
54	ROSCA	Rosa canina	1+1; Transplant - seed raised; branched; 3 breaks		60-80cm	1Ctr	15%
54	SAMNI	Sambucus nigra	1+1; Transplant - seed raised; branched; 3 breaks; B		60-80cm	1Ctr	15%
Total :361							

Soft landscape areas to be maintained in accordance with **B.S. 7370 Part 3:1991** and Part 4:1993. The maintenance of trees should be in accordance with **BS 3998:2010** and **BS 8545:2014**. Maintenance operations to successfully establish plants shall be carried out for the first 5 years after planting.

Maintenance operations for successful plant establishment shall include watering; weed control; fertiliser application; pest and disease control; pruning; and litter picking. Watering for trees should follow an irrigation plan in accordance with BS 8545:2014 and must be in anticipation of drought.

Tree pruning should be in the winter months or summer (July-August). Cherries must be pruned only in the summer months after flowering.

The replacement of failed trees should occur once reasons for failure have been identified and amendments to the specification are made as necessary. Shrubs which die, are removed or become seriously damaged shall be replaced in the next planting season with others of similar size and species, to be agreed in writing by the Local Planning Authority. For all new landscape areas, the following maintenance programme shall be undertaken:

Inspections:	January - December. Replace dead plants when necessary.
Watering:	When necessary in accordance with an irrigation plan.
Pest and disease control:	January.
Litter removal:	January - December
Weed control:	February - May; July; and September.
Prune:	Winter months or summer.
Fork over planting beds:	March.
Cut grass and trim edges:	March - October.
Apply fertiliser:	April.
Lightly fork over planting beds:	September.
Rake / scarify grass	September.
Mulch:	Mid to late spring.

Watering: Water trees in accordance with an irrigation plan as per BS 8545:2014. Watering shrubs shall be carried out to maintain vigorous plant growth. Water shall soak into the ground; it is not sufficient to dampen the surface. Water must be applied slowly to avoid damage to plants.

Weed control: Hand weed to remove all weeds and their roots using a hoe, trowel or fork. Apply a herbicide to kill re-growth when required.

Fertiliser: Applications of fertiliser to be carried out early in the growing season. Ensure correct fertiliser application. Inspect once a month and after very heavy winds. Adjust ties if necessary to conform to stem growth or to prevent chafing.

Pruning: At the appropriate season for the species, pruning to be carried out to remove all damaged diseased or dead wood. Prune shrubs to ensue the plant is kept well balanced and in good shape. For trees, pruning shall be in accordance with **BS 3998:2010**.

Pest and disease control: To be carried out if necessary and in accordance with best practice.

Litter removal: Collect and remove all extraneous rubbish.

Fork over planting beds: Prick up trodden or compacted soil surfaces to aerate the soil without damaging the plants.

Mulching (other than SuDS): Mulching to be topped up annually over the duration of the agreed maintenance period. At the end of the maintenance period, undertake a final mulch. Ensure that the soil is thoroughly moistened prior to remulching, applying water where necessary. Planting beds and trees: re-mulch to a minimum depth of 50 mm.

Mulching of SuDS: The use of an organic mulch should be avoided for systems where there is an overflow pit, owing to the risk of clogging. Spread a layer of gravel as an alternative to standard organic mulches over the SuDS to protect the soil from erosion.

Mowing: Amenity grass areas shall be managed to a height of 40mm. Species rich grass areas to be mowed as advised by the supplier.

Raking/Scarifying: Relieve thatched conditions and remove dead grass in the autumn over all grassed areas.

Spiking (Aeration): Aerate to increase water, nutrient and oxygen movement into the soil.

General: If grass surface is disturbed by over use, restore by firming or lifting with a fork

Any newly planted trees, plants or hedgerows, which within a period of 5 years from the completion of the development die, are removed, become seriously damaged or diseased, or in the opinion of the Local Planning Authority otherwise defective, shall be replaced. Replacement planting shall take place during the first available planting season

Specification for SuDS

Above ground SuDS within the site include Rain Gardens. They are designed as shallow depressions with filtration medium to manage the flow of water and to extract pollutants before the water enters the pipe network. The rain gardens will be planted with a range of shrubs, grasses, and herbaceous species.

Ornamental grass and herbaceous species shall be implemented during the first planting season after the hard landscape has been constructed to prevent damage to the new vegetation and to avoid compaction of soils. Avoid planting if the ground is waterlogged or if the ground is frozen.

Climatic conditions need to be observed with no planting/maintenance to be carried out in extremes of temperature <3°c or > 24°c (without suitable provision for irrigation). If the water supply is, or is likely to be, restricted by emergency legislation then planting/maintenance should be suspended.

Container grown plants: At any time of the year subject to weather conditions.

Maintenance objectives will include regular planting checks and maintenance to ensure that the planting is establishing, and the SuDS elements are consistent with the original design intentions. This will involve continuous / ongoing routine operations throughout the year, for which a detailed maintenance schedule is to be followed.

Regular maintenance and monitoring inspections of rain gardens should be undertaken to maintain SuDS performance and balance. Management and maintenance commitments would be more intense during the in initial establishment period, 1-2 years after planting. This would involve:

- Watering (as necessary)
- Weed control
- Pest and disease control
- Pruning
- Checking and cleaning of inlets and outlets
- Mulching (not bark mulch), and
- Litter picking.

Filter media for Rain gardens

The filter medium should be sufficiently permeable to allow water to pass through it, so that the surface of the retention area does not become waterlogged. It also needs to contain sufficient organic material and plant nutrients to support the proposed vegetation.

Filter media should be correctly specified. Any specification should take into account site specific requirements and constraints. The specification parameters should be clearly stated, so that in the event that a supplier ceases trading the filter material can still be replaced on a like for like basis.

Incorrect specification can cause reduced hydraulic conductivity through over compaction or structural collapse, leading to reduction in treatment capacity and surface ponding, loss of vegetation etc. The filter medium should be correctly installed with an appropriate level of compaction during installation to prevent migration of fine particles.

A filter medium that is placed uncompacted will initially show a very high hydraulic conductivity which will then rapidly decrease. So it is essential that testing of hydraulic conductivity be carried out on the compacted filter medium before installation.

A typical specification for the filter media:

clay and silt (< 0.063 mm) < 5%

fine sand (0.063-0.2 mm) <20%

medium sand (0.2–0.6 mm) 35% to 65%

coarse sand (0.60–2.0 mm) 50% to 60%

fine gravel (2.0-6.0 mm) <10%

The filter medium should be well graded, and the composition should contain limited particle size range.

Organic matter content

Organic matter content should be 3–5% (w/w).

pH

pH should be 5.5-8.5 (1:2.5 soil/water extract).

Electrical conductivity (salinity)

Electrical conductivity (EC) should be < 3300 µS/cm (1:2.5 soil/CaSO4 extract)

Major plant nutrients

Total nitrogen should be 0.10–0.30%

Extractable phosphorus should be 16-100 mg/l

Extractable potassium should be 120-900 mg/l

(Methods of analysis in accordance with BS 3882:2015, unless otherwise stated.)

Mulch layer

The use of an organic mulch should generally be avoided for systems where there potential for attenuation, owing to the risk of the mulch blocking the overflow (e.g Rain gardens). In the case of infiltration systems (with no overflow), a mulch may be used, but there is still a risk of excessive movement of material during high flows. A mulch layer (with a maximum depth of 75 mm) can be spread over the bioretention area to retain some soil moisture. Organic matting that degrades within six months, bonded fibre matric mulches or a layer of gravel can be used as an alternative to standard organic mulches. A gravel mulch may be valuable where there is a need to protect the soil from erosion or decrease the drop to the water storage zone (for safety reasons), while still maintaining an acceptable ponding volume; however, high planting densities should be used, to compensate for the reduced spread of plants.



Swansea Road Development

Schedules and Specifications

LA.3

Species-rich grass details

Damp grassland areas over soakaway area such as Emorsgate Seeds EM8: Meadow Mixture for Wetlands



Suggested Sowing Rates
40kg/ha 16kg/acre 4g/m2

Description
EM8 contains species suitable for seasonally wet soils and is based on the vegetation of traditional floodplain and water meadows. Soils in wet meadows may flood for short periods in winter, but are usually well drained in summer.

Ground Preparation
Endeavour to select ground that is not highly fertile and does not have a problem with perennial weeds. Good preparation is essential to success so aim to control weeds and produce a good quality seed bed before sowing.