

Soft Landscape Report

Soft Landscape Specification & Maintenance Plan

Hayes Bridge Retail Park, Hayes

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1 SUMMARY REPORT

- 1.1 This landscape report has been commissioned by CongentBC to assist with discharging condition 4.1 4.4 and 4.5 of planning approval, reference number 71371/APP/2019/2699 in relation to proposed development located Hayes Bridge Retail Park.
- 1.2 The purpose of this report is to provide a detailed specification and maintenance plan for the proposed new landscaping associated with the development.
- 1.3 This report includes:
- A detailed planting scheme;
 - Specifications for proposed tree and shrub planting;
 - Methodology for the preparation and planting of new landscaping;
 - General principles to avoid damage to existing trees during proposed landscaping; and
 - 5-Year post construction maintenance plan.

Scope and limitations

- 1.4 The contents of this report are copyright of Tim Moya Associates and may not be distributed or copied without the author's permission. Tim Moya Associates Standard Limitations of Service apply to this report and all associated work relating to this site. A copy has been supplied with our original quotation and further copies are available on request.

Methodology and guidance

- 1.5 This report has been prepared in accordance with:
- British Standard 8545:2014 *Trees: from nursery to independence in the landscape – Recommendations*;
 - British Standard 8601:2013 *Specification for subsoil and requirements for use*;
 - British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*;
 - British Standard 3998: 2010 *Recommendations for Tree Work*;

- British Standard 3882:2007 *Specification for Topsoil and Requirements for Use*;
- British Standard 7370:1993 *Recommendations for Maintenance of Soft landscape*;
- British Standard 3936:1992 *Specification for nursery stock*;
- British Standard 4428:1989 *Code of Practice for general landscape operations*;
- British Standard 4043:1989 *Recommendations for Transplanting root balled trees*;
- The GRO Green Roof Code of Best Practice; and
- Horticultural Trades Association - National Plant Specification.

Relevant plans and documents

- 1.6 As well as any other approved plans and particulars, the following landscape plans are to be read in conjunction with this report.

Document	Drawing Reference
Soft Landscape Plan including pod 01 of 02	190139-LP-06
Soft Landscape Plan including pod 01 of 02	190139-LP-07
Tree pit in soft landscape	190139-LP-08
Tree pit in existing car park	190139-LP-09

2 IMPLEMENTATION

- 2.1 All planting as specified within the approved landscape scheme shall be carried out in the first available planting season following the proposed development works.
- 2.2 All works shall be carried out in accordance with the specifications detailed within this report and no variation shall be allowed unless specifically authorised in writing by the Landscape Architect or Local Planning Authority.
- 2.3 All landscape operatives must be appropriately trained, certified, and qualified to undertake the tasks required.
- 2.4 All landscape works are to be carried out in accordance with industry best practice British Standard 4428:1989 *Code of Practice for general landscape operations*.

Time of Year for Planting

- 2.5 Planting should be carried out at the correct time of year:
 - **Trees and shrubs** - Late October to late March.
 - **Herbaceous plants** - September/ October or March/ April.
 - **Container grown plants** - At any time if ground and weather conditions are favourable.

Soil and Climatic Conditions

- 2.6 All planting must be carried out into moist (not waterlogged) friable soil when weather conditions are suitable.
- 2.7 Planting operations shall not be carried out when the ground is waterlogged or frozen or during periods of high winds.

Machines and Tools

- 2.8 Use only machinery and tools suitable for the site conditions and the work to be carried out.
- 2.9 Use hand tools within tree root protection areas, around existing plants, and in confined spaces where it is impractical to use machinery.

Preparation, Planting and Mulching Materials

- 2.10 Preparation, planting and mulching materials must be free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.

Maintenance

- 2.11 Maintenance of the landscaped areas should be carried out from completion of planting until the end of the rectification period (defects liability period) as specified within this report and in accordance with the relevant conditions outlined within the planning approval.

Protection of existing trees

- 2.12 All retained trees on the site are required to be protected in accordance with British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations* throughout the proposed landscape operations as recommended by the arboricultural consultant.
- 2.13 No fires will be permitted within 20m of the crown of any tree.
- 2.14 No changes in soil levels will take place within the tree protection zones without prior written consent of the Local Planning Authority.
- 2.15 No materials, vehicles, plant or personnel will be permitted into the tree protection zones at any time without the prior consent of the arboricultural consultant.
- 2.16 Any liquid materials spilled on site will be immediately cleared up and removed from the site. If liquid fuel or cement products are spilled within 2m of the tree protection zone, the contractor will report the incident to the arboricultural consultant immediately.
- 2.17 The contractor will report any damage to trees or shrubs, whether caused by construction activities or from any other cause, to the arboricultural consultant immediately.

Supervision

- 2.18 It will be the responsibility of the landscape foreman to ensure all works are carried out in line with this report and associated specifications.

3 SITE PREPARATION

Setting out

- 3.1 All plants shall be set out by the landscape contractor in accordance with the details specified within the approved Soft Landscape Plans L190139-LP-02 and L190139-LP-04 . Setting out to be agreed with Landscape Architect before planting begins.
- 3.2 All measurements must be taken from existing fixed points. The landscape contractor must ensure that all setting out conforms to the proposed plan before cultivation and planting works are carried out. Failure to do so may result in the rejection of works by the Landscape Architect and may require amendment at the contractor's expense.
- 3.3 Any alterations to the approved landscape scheme must be approved in advance by the Landscape Architect and Local Planning Authority.

Subsoil

- 3.4 Subsoil should be reclaimed from site and reused where possible. Where new subsoil is required, this shall be locally sourced and is required to have a similar structure and pH level to that of existing subsoil on site. Subsoil should conform with BS 8601:2013 *Specification for subsoil and requirements for use*.
- 3.5 Subsoil must be free from toxic substances, weed seeds, plastic, metals etc. Subsoil to be spread by hand or using a back-acting track vehicle to cause minimum compaction and loss of soil structure. No soil handling shall be undertaken when the soil is waterlogged.

Topsoil

- 3.6 Ideally existing topsoil will be stripped and stored prior to construction works commencing. Where topsoil is required to be imported to carry out landscaping works, General Purpose Grade topsoil as specified within BS3882:2007 *Specification for Topsoil and Requirements for Use* is required to be sourced and used.
- 3.7 Existing or imported soil must be stored in heaps not exceeding 1.5 metres high and graded to shed water and avoid ponding. It must be maintained in a weed-free condition and protected from contamination or trespass by heavy machinery.
- 3.8 Topsoil shall be lightly consolidated in layers not exceeding 150mm using track laying machinery. Works shall not be undertaken in periods of wet or frosty weather.

- 3.9 All soils are required to be inspected prior to spreading. Imported soils are to have a certificate of analysis on suitability from an approved soil science laboratory, testing a 1kilo sample to every 500m³.
- 3.10 Do not use topsoil contaminated with subsoil, rubbish or other materials that are corrosive, explosive, flammable, hazardous to human or animal life, detrimental to healthy plant growth. Give notice if any evidence or symptoms of soil contamination are discovered on the site, or in topsoil to be imported. Contamination levels to be in accordance with soil guidelines values for residential developments.
- 3.11 Depths after firming and settlement (minimum): 150mm for turfed and seeded areas, 300mm for shrub planting, refer to the tree planting section for tree pits.

Cultivation

- 3.12 All working operation within tree root protection area must be carried out manually with the use of handheld tools only and no roots greater than 25mm in diameter or large clumps of fibrous roots are permitted to be removed during these works.
- 3.13 All areas to be planted shall be cleared of all surface rubbish and checked for underground services prior to excavation works occurring.
- 3.14 All debris and weeds will be cleared from the planting areas prior to the soil preparation.
- 3.15 All cultivation works should be carried out in suitably dry conditions a few days before planting operations are required to be undertaken.
- 3.16 Planting areas will be prepared to a depth of 300-400mm ensuring the topsoil is not compacted.
- 3.17 Any weeds, perennial weed roots, stones with a diameter greater than 50mm and other extraneous material are required to be removed from the topsoil and disposed of offsite.
- 3.18 With the use of suitable machinery or hand tools, a fine tilth (soil particles between 2-8mm) will be created and PAS 100 Compost soil amelioration added and mixed within the top 75-100mm of the soil.
- 3.19 The topsoil shall be graded to remove minor hollows and ridges and bring it to a uniform and even grade at the correct finish level. The soil should be of a crumb structure, not compacted.

- 3.20 Where existing soil has been compacted due to construction activities, this will be cultivated, and the required soil ameliorations incorporated prior to planting being carried out.

Preparation of undisturbed topsoil

- **Standard** - In accordance with British Standard 4428:1989 *Code of Practice for general landscape operations*.
- **Hard surfaces** - Break up thoroughly to a minimum depth of 400mm for planting areas.
- **Areas covered with turf** – Use a suitable translocated non-residual herbicide and wait the prescribed time in accordance with the manufactures specification before rotovating topsoil to a depth of 300-400mm.
- **Weed control (General)** – Treat areas when and if required with a suitable translocated non-residual herbicide.

Herbicides

- 3.21 All herbicide handling and application should be carried out by a trained contractor in accordance with the manufacturers specification and COSHH Regulations.

Fertiliser

- 3.22 Incorporate the following soil ameliorations during cultivation within the within the top 75-100mm of all planting beds.
- PAS 100 Compost.

Finished levels

- 3.23 Final grading of the top 150mm is to be carried out to ensure a true specified level and slope to avoid any dishing or other depression where water may collect.
- 3.24 For shrub beds adjacent to hard surfaces, the soil should finish 75mm below all finished surfaces, allowing 25mm for shrinkage and settlement and leaving a clear depth of 75mm from finished surface level to take specified mulch.
- 3.25 Soil levels should be 150mm below damp proof courses after settlement.

- 3.26 The contractor should liaise with the Landscape Architect while carrying out the works in order to ensure that the correct profiles are achieved. Cultivation of the top 150mm of topsoil should be carried out in accordance with British Standard 4428:1989 *Code of Practice for general landscape operations*.

4 PLANTING SPECIFICATION

Planting Schedule

	Planting Schedule					
	Trees					
Abb	Plant Name	Root Stock	Height (cm)	Girth (cm)	Size	Quantity
AO	Amelanchier alnifolia 'Obelisk'	RB	400 - 450	16-18cm	Extra Heavy Standard	6
BJ	Betula utilis 'Jacquemontii'	RB	450 - 550	20-25cm	Semi-mature	3
PCC	Pyrus calleryana 'Chanticleer'	RB	450 - 550	20-25cm	Semi-mature	4
AC	Acer campestre	RB	400 - 450	16-18cm	Extra Heavy Standard	5
SC	Salix caprea	RB	300 - 350	12-14cm	Heavy Standard	3
	Native planting mix B					
	Plant Name	Root Stock	Height (cm)	% mix	Quantity	
	Acer campestre	90-120cm	BR	15	212	
	Cornus alba	90-120cm	BR	10	141	
	Corylus avellana	90-120cm	BR	15	212	
	Crataegus monogyna	90-120cm	BR	30	424	
	Prunus avium	90-120cm	BR	10	141	
	Rosa canina	90-120cm	BR	10	141	
	Viburnum opulus	90-120cm	BR	10	141	
	Single species bed					
Abb	Plant Name	Root Stock	Height (cm)	Density	Quantity	
SH	Sarcococca hookeriana 'Humilis'	2L	30-45cm high	4/ml	50	
	Native hedge mix					
	Plant Name	Root Stock	Height (cm)	% mix	Quantity	
	Acer campestre	90-120cm	BR	15	90	
	Corylus avellana	90-120cm	BR	15	90	
	Crataegus monogyna	90-120cm	BR	40	238	
	Prunus padus	90-120cm	BR	10	60	
	Rosa canina	90-120cm	BR	10	60	
	Viburnum opulus	90-120cm	BR	10	60	
	Climbers to screen					
Abb	Plant Name	Root Stock	Height (cm)	Density	Quantity	
HH	Hedera helix	3L	80-90cm high	4/ml	37	
HH 'WR'	Hedera helix 'White ripple	3L	80-90cm high	4/ml	37	

Planting mix A													
Plant Name	Root Stock	Height (cm)	Density	A1	A2	A3	A4	A5	A6	A7	A8	A9	
Hebe albican	2L	30-45cm high	5/m2	18	14	17	11	17	25	63	56	17	
Olearia haastii	2L	30-45cm high	5/m2	18	14	17	11	17	25	63	56	17	
Rosa kent	2L	30-45cm high	5/m2	18	14	17	11	17	25	63	56	17	
Sarcococca confusa	2L	30-45cm high	5/m2	18	14	17	11	17	25	63	56	17	
Spiraea thunbergii	2L	30-45cm high	5/m2	18	14	17	11	17	25	63	56	17	

Plant Specification

4.1 All plant stock, plant handling and planting to be undertaken in accordance with the following British Standard Specifications and Code of Practice:

- BS 3936: 1992 *Part 1 Nursery Stock. Specification for Trees and Shrubs.*
- BS 3936-9: 1998 *Nursery Stock - Specification for bulbs, corms and tubers.*
- BS 4428: 1989 *Recommendations for general landscaping operations.*

- BS 8545:2014 *Trees: from nursery to independence in the landscape*.
 - Horticultural Trades Association - *The Code of Practice for Plant Handling 1985*.
- 4.2 Plants not covered by BS 3936 shall be healthy specimens of good shape and balanced branch structure with abundant fibrous roots. Plants are to show vigour of growth within the growing season prior to lifting.

Plant Stock

- 4.3 Plant stock to be supplied in accordance with the size and description specified on the plant schedule. Plants shall have been grown and handled according to good horticultural practice and according to all current UK Government regulations. The supplying nursery shall be expected to carry out thorough and rigorous production methods to ensure that the stock is of highest standards.
- 4.4 The conditions of all plants shall be materially undamaged, sturdy, healthy and vigorous and be of good shape, without elongated shoots. They shall be grown in a suitable environment and sufficiently hardened off prior to delivery to site. They shall be free from pests, diseases, discolouration, perennial weeds and physiological disorders. Budded or grafted plants must be bottom worked. Plants should be lifted at a time in accordance with good nursery practice.
- 4.5 The root system and condition must be uniform and well developed with fibrous root hairs typical of a healthy tree of the species, age and number of transplantations.

Rootballed trees

- 4.6 Rootball trees should conform with BS 4428:1989 *Recommendations for general landscaping operations* and BS 8545:2014 *Trees: from nursery to independence in the landscape*.
- 4.7 Trees shall have a good well-formed rootball with dimensions according to the size of the tree. The minimum diameter of the rootball is required to comply with Table D.5 of BS 8545:2014 *Trees: from nursery to independence in the landscape*.
- 4.8 Rootballed trees shall be adequately supported by wire mesh and hessian, or other suitable material to prevent collapse of the rootball. The rootball shall be of sufficient size to contain the fibrous roots. Trees, which have a collapsed rootball or expose major parts of the root system will be rejected.

Table D.5 Relationship between tree size, size of rootball and number of times transplanted/undercut on the nursery		
Girth of tree measured at 1 m	Minimum diameter of rootball	Minimum number of times transplanted/undercut on the nursery
cm	mm	
8 to 10	300	—
10 to 12	300	—
12 to 14	400	3
14 to 16	450	3
16 to 18	500	3
18 to 20	550	3
20 to 25	600	4
25 to 30	700	4
30 to 35	800	4
35 to 40	900	5
40 to 45	1 000	5
45 to 50	1 200	5
50 to 60	1 300	6

Figure 1: Table D.5 of BS 8545:2014.

Clear stem trees

- 4.9 All clear stem trees shall have a full and well developed crown with a uniform leaf coverage appropriate to their age and species. All shall bear a single upright straight central leader. Unless otherwise stated, they shall have a 1.8m clear stem height.

Container grown shrubs

- 4.10 All plants will be true to name and character and shall be supplied container grown. They shall have been grown and handled according to good horticultural practice and to all current UK government regulations.
- 4.11 All plants shall be well developed and bushy and shall have been grown in the same container for at least one full growing season prior to delivery.
- 4.12 All specimen shrubs shall have a balanced, well developed crown with a strong main stem and lateral branches. All specimen shrubs shall be well furnished to ground level, unless otherwise specified.
- 4.13 The root systems will adequately fill the capacity of the container to show clear evidence of the proper establishment of a healthy fibrous root system. Plants showing signs of being pot-bound or waterlogged will not be accepted.

- 4.14 All plants shall show a high degree of extension growth typical of the species or type and appropriate to the specified container size. The requirements given in the plant schedules constitute a guide to the required heights.
- 4.15 The compost will hold sufficient reserves of nutrients to maintain the plant in a satisfactory condition for a reasonable period of time after leaving the Growers Nursery. The compost shall be free from any perennial weeds and have a reasonable moisture content. The compost shall not contain peat from UK sites of Special Interest or the equivalent from other countries. The compost shall contain the additive SusCon Green, mixed in accordance with the manufacturer's recommendations.

Plant Sourcing and Substitutes

- 4.16 Plants are to be obtained from an approved source and confirmed in writing. The source of plants is to have soil and climatic conditions similar to those prevailing at the site.
- 4.17 Plants, which are unobtainable, are to be clearly identified and alternatives are to be submitted for approval, stating species, size, form and price and how they differ from the specifications. These substitutes must be the equivalent or better quality than the species specified. Such substitutes may not be acceptable, and submission of further alternatives may be required. Obtain approval before making any substitution.
- 4.18 Single species from more than one source must be of the same clonal type and cultivator, and be similar in form, root structure and size.

Labelling and Information

- 4.19 Plants shall be identified until planting with a label to each plant or group of the same species. Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:
- Full botanical name;
 - Total number of plants/trees;
 - Number of bundles;
 - Part bundles;
 - Supplier's name and address;
 - Plant passport number; and

- Employer's name and project reference or order number.
- 4.20 Plant specification in accordance with scheduled National Plant Specification categories.

Unloading on Delivery

- 4.21 All plant species will be inspected upon delivery to the site. Where significant diseases, defects or disorders that have the potential to impact the future establishment of the plant are observed, these will be replaced with a clean healthy plant by the nursery.

Plant Handling

- 4.22 All plant materials shall be lifted, bundled, labelled, packaged, transported, temporarily stored and planted in accordance with the procedures and methods illustrated in the publication, 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association).
- 4.23 All plants and trees shall be handled with care and protected from frost and mechanical damage, do not subject to shock, e.g. by dropping from a vehicle. Plants, which are not to be planted on the day of delivery to the site, are to be stored as follows or by other approved methods:
- Bare root trees that are to be stored for subsequent planting shall be stored on site by laying them horizontally, resting the branches on straw bales and covering roots with soil, firming in well to prevent air pockets. Watering regularly until planting.
 - Container grown plant material shall be stored upright in a location on site agreed with the Contract Administrator. Any plant material stored shall be protected from drying winds and watered regularly.
 - Rootballed plants that are not to be planted within 24 hours of delivery are to be grouped together and their rootballs covered with moist non-peat organic matter suitable for protecting from frost and from drying out.
- 4.24 All plants will be appropriately maintained until used and be kept away from possible sources of contamination or damage. The drying out of all plants will be avoided by watering of the roots when required.
- 4.25 The contractor shall allow for all costs associated with undertaking correct storage of plant material. The contractor shall operate a method of "just in time" plant deliveries to minimise plant storage on site.

- 4.26 Exposure to adverse weather conditions will be avoided. Plants will not be allowed to dry out and will be stored away from strong winds.

5 PLANTING

Tree Planting in Soft Landscaped Areas

- 5.1 The locations, specifications, species, numbers and sizes of trees to be planted are detailed on the Soft Landscape Plans L190139-LP-02 and L190139-LP-03.
- 5.2 A planting specification for general tree planting within soft landscaped areas is shown on the Tree Planting drawings L190139-LP-04 and L190139-LP-05
- 5.3 Only well branched trees with symmetrical crowns and straight stems and leaders will meet the approval of the Landscape Architect. Trees of the same species shall be uniform in size, shape and in good condition. For further details refer to the Plant Stock section above.
- 5.4 It will be the responsibility of the Contractor to ensure that all trees are protected from injury during planting works. If any tree is damaged due to lack of protection, the tree shall be replaced at the Contractors own expense.
- 5.5 Formative pruning, which includes the removal of any dead, damaged, diseased or crossing branches must be carried out on all tree species prior to planting. These works must be undertaken in accordance with BS8545:2014 *Trees: from nursery to independence in the landscape – Recommendations*.
- 5.6 Any dead, damaged, diseased or girdling roots must also be removed prior to planting operations.
- 5.7 All pruning works must be carried out with the use of a sharp clean secateurs and must not to change the natural habit or shape of the trees concerned. All tree work shall comply with the recommendations set down in BS3998: 2010 *Recommendations for Tree Work*.
- 5.8 All arisings are to be removed from site by the Contractor and disposed of accordingly.
- 5.9 Tree pits will be square and excavated at least two times the width of the rootball diameter. The planting pit should be no deeper than the existing rootball or container depth.
- 5.10 The tree should be planted at the correct depth taking into account the position of the root flare and the finished level. Allowance should be made for settling of the soil after planting. The rootball or root–stem transition should be level with the existing host soil or surface.

- 5.11 Tree pit sides should not have compacted, glazed, or smeared from digging. Sides of a planting pit that have been smeared during excavation should be scarified to allow root penetration.
- 5.12 During excavation of the tree pit, soil removed should be placed to one side, separating topsoil and subsoil as far as is practical. There must be no standing water within the tree pit.
- 5.13 Following pit excavation, the tree will be carefully placed into the hole and held upright in the middle of the pit.
- 5.14 Prior to backfilling, the tree will be double staked as detailed within Section 5.25.
- 5.15 To backfill, soil should be added gradually, in layers of 150mm to 230mm depth, ensuring the tree is held upright. At each stage, the fill should be firmed in to eliminate all air pockets under and around the root system, but with care being taken not to excessively compact the soil.
- 5.16 The final layer of backfilling should not be consolidated but should be of a sufficient depth to allow for settlement and mulching.
- 5.17 After planting, the tree pit should be watered to field capacity before applying a 75-100mm layer of organic mulch which extends beyond the trees root spread. The layer of mulch should not bury the root flare of the tree.

Staking

- 5.18 Trees within soft landscaped areas will be double staked using round pressure treated softwood stakes, 75-100mm diameter pointed at one end and of a straight form.
- 5.19 Prior to planting, stakes are to be vertically driven into the bottom of the excavated pit by at least 300mm, ensuring no damage is caused to the roots.
- 5.20 Once the pit has been backfilled, the tree shall be secured to the stakes using a plastic buckle type adjustable tie and rubber spacer or hessian ties.
- 5.21 Stakes must not chafe against any part of the tree and must be approximately 1200mm above ground level.

Anchor system

- 5.22 Trees in car park to be secured by an underground earth anchoring system in full accordance with the manufacturer's instructions.

- 5.23 Trees are to be secured by an underground earth 'Arborguy and AnchorPlate' anchoring system or similar . The root ball is to be secured to the AchorPlate with cable guys and a top strap with ratchet tensioner.

The Contractor is to ensure that the anchoring system is tensioned in accordance with the manufacturer's instructions.

GreenBlue Urban or similar approved

Tree irrigation

- 5.24 An irrigation and aeration system as manufactured by 'Greenleaf' is to be installed into each tree pit at the time of planting – RootRain metro (Refer to GreenBlue Urban for product codes and lengths required) in landscape areas or similar.

RootRain Metro Plastic with chain.

- 5.25 Loop the free end of the 35mm perforated irrigation pipe around the root system approximately 250mm below finished level.
- 5.26 Plug the pipe into the bracket bottom cap. Nail the bracket to the tree stake to prevent theft. Backfill the rest of the tree pit. It is important to ensure the inlet pipe and top cap protrude between 10mm and 50mm from the finished surround levels. The main bracket section should not be visible.
- 5.27
- 2.5m pipes used for selected standard and heavy standard trees
 - 4m pipes used for ex heavy standard & semi mature trees

GreenBlue Urban or similar approved

Root direction management

- 5.28 'Re Root 600' (RER600A) by GreenBlue Urban, to be used where required to protect pavements and shallow service ducts and utilities from tree roots. To tree pits in car park.
- 5.29 Excavate narrow trench to a depth of 600mm. Ensure that the base of the trench is firm and level. Remove any sharp objects from close proximity to the trench walls. Install root barrier with the ribs facing the tree roots.
- 5.30 Backfill the tree side with top soil and the rear side of the barrier simultaneously with sub soil allowing for surface finishing.

- 5.31 Backfilling should be in layers. Concrete is permissible on the rear side of the barrier if required to support hard landscape surfaces. Care should be taken to remove any sharp objects from the backfill material. The top edge of the root barrier must remain 10mm above the surface tree side. To join roll ends tape both sides with GreenBlue Urban ReRoot joining tape.

GreenBlue Urban or similar approved

Tree Guard

- 5.32 'Swaledale' by Greentech, to be used to protect tree within car park as show on detailed plan.
- 5.33 1800mm high x 500mm dia with 400mm ground fixing legs. Painted in black rust resistant gloss and oven baked.
- 5.34 To be installed to manufacturers detail.
- Greentech or similar approved.

Tree and shrub planting- bareroot

- 5.35 Bare root planting is to be carried out during the first available planting season of November to March after completion.
- 5.36 All plants to be true to the type and to be bare root to the size specified on the planting schedule. No substitutions are to be excepted unless previously agreed with the Landscape Architect.
- 5.37 Any plants that are rejected are to be replaced by the contractor at his own cost.
- 5.38 For all bare root material the roots are to be kept covered at all times to stop desiccation.
- 5.39 Plants are to be spaced at 4 per m² on raised beds
- 5.40 Pits for plants shall be of a sufficient size to take rootlets without breaking, bending or cramping. Planting pits shall be excavated 100mm wider than the root spread.
- 5.41 Bottom of planting pits to be forked over to a forks depth to alleviate and compaction.
- 5.42 A slow release fertilizer such as fish blood and bone shall be added to planting holes and back filled after planting and firmed down.
- 5.43 The surface of the bed is to be left cultivated and free from weeds, debris and stones.

- 5.44 Apply a layer of bark mulch of 75mm depth. See Mulch section of this specification for more details.
- 5.45 Plants to be supported with a cane and brown recycled rabbit guard. Available from Greentech or similar.
- 5.46 Guards and canes should be removed when plants are established (usually after 3-5 growing seasons).
- 5.47 Water implementation:
- Water to be clean and drawn from main supply using site external taps, licenced standpipes, or secondary water supplies
- Saturate the root ball of container grown plants before planting.
- Thoroughly water plants immediately after planting and again before mulching ensuring the full depth of the topsoil is evenly and thoroughly wetted and soil is moistened to the depth of the root zone.

Hedgerow, Shrub and Herbaceous Planting

- 5.48 The locations, specifications, species, numbers and sizes of shrubs and herbaceous perennials to be planted are detailed on the Soft Landscape Plan.
- 5.49 All planting to be carried out in the first available planting season following the proposed development works.
- 5.50 The delivery, handling and storage of plants will be carried out as specified within Section 4.
- 5.51 All plants will be inspected prior to planting and if required, formative pruning will be carried out to remove, dead, broken or diseased growth.
- 5.52 Prior to planting, all plants will be laid out in their planting location either by the landscape architect directly or by the contractor as detailed within the landscape architect's specifications.
- 5.53 All excavation works within the Root Protection Areas of existing trees must be carried out manually with the use of hand tools.
- 5.54 No planting will be carried out when the soil is waterlogged or frozen.

- 5.55 The depth of the planting pit excavated will equal that of the pot or root size to be planted, while the width of the planting pit will be excavated 25% greater than the diameter of the root size.
- 5.56 The plant will be positioned in the pit and roots gently teased out to ensure root girdling is not occurring. The soil will be backfilled in 150mm layers and firmed down accordingly to eliminate air pockets.
- 5.57 Once planting has been carried out, the area will be watered to field capacity and a 50-75mm layer of organic mulch will be applied.

Climbers

- 5.58 Planted 350mm clear of supporting fence with roots spread outward. Plant at 45 degree angle towards screen. Tie climbers bamboo cane and shoots to wire mesh using soft garden twine.

Planted as ornamental shrub specification above.

6 MAINTENANCE & MANAGEMENT

- 6.1 This maintenance programme will initially be used by the landscape contractor for a 12 month period following practical completion.
- 6.2 Following this the maintenance will be carried out by an appointed contractor by the client for 5 years post completion of the development.
- 6.3 The maintenance period should see any plants that warrant replacement, done so before handover. The maintenance notes below are to be read as outline guidance and should be implemented in conjunction with best practice.
- 6.4 Any necessary amendments to the implemented landscape proposals will be discussed with the landscape architect and written approval obtained from the Local Planning Authority.

Trees

- 6.5 Newly planted trees will be maintained for the first 5 years after planting. This will include inspecting, adjusting and removing tree ties and stakes, formatively pruning for crown structure as required, mulching and irrigation.

- 6.6 Fallen branches and debris will be cleared and trees respected after high winds.
- 6.7 All tree pruning works will be carried out by a reputable tree surgeon and in accordance with BS 3998:2010 *Tree Works - Recommendations*.
- 6.8 A 75mm layer of mulch will be applied to the rooting areas of all trees as part of the initial landscape works post development. Mulch will be reapplied on an annual basis to ensure a 75mm layer is maintained.
- 6.9 Where trees die or require removing for health and safety purposes, new trees will be planted within the first available planting season to maintain the tree canopy cover throughout the site.
- 6.10 The selection of new trees for planting must take into consideration the current risks posed by pests and disease, climate change and site specific conditions and constraints. The overall aim must be to create and maintain a diverse tree cover throughout the site.

Wildlife and habitat considerations

- 6.11 All tree and hedgerow works will be carried out in accordance with the Wildlife and Countryside Act 1981 (as amended) and the Habitat Regulations 2010. These regulations make it an offence to;
- Intentionally or deliberately kill, injure or capture protected species.
 - Deliberately disturb protected species.
 - Damage, destroy or obstruct access to a structure used for shelter or protection by a protected species.
 - Take, damage, disturb or destroy the nest of any wild bird while it is in use or being built.
 - Take or destroy the egg of any wild bird.
 - Damage, destroy or obstruct access to bat roosts whether or not bats are using roosts at the time.
- 6.12 It is the responsibility of the contractor to ensure that no protected species are harmed whilst carrying out site clearance or tree surgery works.

Planting areas

- 6.13 Planting areas are to be regularly maintained as required throughout the year. The maintenance activities will depend on time of year and weather conditions.
- 6.14 Annual maintenance activities will include the pruning/coppicing of shrubs and herbaceous plants, irrigation requirements during periods of drought and to enable establishment of newly planted species, hand weeding and reapplying mulch to planting beds.
- 6.15 Mature shrubs that outgrow their location and suppress surrounding vegetation will be removed, and replacement planting carried out as part of a long-term landscape strategy.
- 6.16 Gaps arising from plant death, disease or poor growth and establishment will be removed and replacement planting carried out with more suitable species.
- 6.17 The selection of plant species must take into consideration site specific constraints and soil types as well as ensuring that seasonal interest is maintained.

Leaf fall

- 6.18 Leaf litter from trees will be managed between the end of autumn and winter when leaf fall is at its highest. 3 to 4 visits will be carried out up until December to ensure the majority of leaf litter is removed from public areas.

Arisings

- 6.19 All arisings from tree, hedgerow and shrub pruning will be removed from site upon completion of works.

Mulch

- 6.20 Well composted organic mulch will be reapplied on an annual basis to ensure a depth of 75mm around the rooting areas of all trees and within all planting areas is maintained to benefit plant growth, health and vitality.

Litter

- 6.21 Litter and rubbish will be picked up and removed from within all public open areas throughout the year. All rubbish collected will be removed from site.

Irrigation

- 6.22 All areas of new planting will require irrigation throughout the growing season.
- 6.23 Water requirement will be dependent on species, soil types and weather conditions, however, as a guide, newly planted standard trees up to 18-20cm in girth will require approximately 30litres per day from April to September.
- 6.24 Watering will be carried out using a hose pipe fitted with a fine rose (subject to local restrictions).
- 6.25 Irrigation will be carried out for the first three growing seasons to ensure good root establishment.
- 6.26 Irrigation will be carried out first thing in the morning or late in the afternoon to avoid excessive evaporation or leaf scorch.
- 6.27 Refer to best practice guidance BS 4428: 1989 and with BS8545:2014 *Trees: from nursery to independence in the landscape – Recommendations*.

7 MAINTENANCE SCHEDULE

ITEM	ACTION	SEASON / TIME OF YEAR	FREQUENCY
Trees'	Check plant survival and replace if necessary.	All Year	As required
	Check mulching depth and reapply to a depth of 75mm.	Spring	Annually
	Formatively pruning young trees and recommended management of mature tree if necessary.	Winter / mid-Summer	As required
	Check tree stake and tie.	Summer	Annually
	*Irrigation.	Spring to Autumn	As required
	Weeding.	Spring to Autumn	As required
	Visual tree inspection	All Year	As required
Planting areas	Check plant survival and replace if necessary.	All Year	As required
	Check mulching depth and reapply to a depth of 75mm.	Spring	Annually
	Pruning/coppice shrubs and plants.	Winter / mid-Summer	As required
	*Irrigation.	Spring to Autumn	As required
	Weeding.	Spring to Autumn	As required
Leaf Fall	Collect leaf litter	Autumn & Winter	3 to 4 visits
Arisings	Remove all arising from site once working operation is complete	All Year	As required
Litter	Remove litter and rubbish from public open areas.	All Year	As required

* Water requirement will be dependent on species, soil types and weather conditions, however newly planted standard trees up to 18-20cm in girth will require approximately 30litres per day from April to September. This can be reduced in prolonged wet spells. Irrigation will be carried out for the first three growing seasons to ensure good root establishment.