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Circle Square No.3

Landscape Management and Maintenance Plan

PLANIT

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1 INTRODUCTION

1.1 Introduction

Scope and Purpose

The proposals for the Circle Square No.3 site and Symphony Gardens have been developed to achieve a balance between functionality, sustainability and ecological benefit.

To ensure the site continues to positively contribute to the surrounding landscape and local community it's vital that there is a long term commitment to management and maintenance, whilst providing a befitting and lasting legacy.

Long term monitoring and management aims to ensure the landscape fulfils its potential providing a high quality and ecologically rich landscape.

The management plan must be fluid and adaptable, used as a working handbook for day to day management activities as well as annual reviews. It should be capable of being added to and updated to capture changes in the natural evolution of each area as well as any changes in the use of the site, biodiversity ambitions / opportunity and climate change.

The effects of climate change on the landscape are unclear and therefore having a management plan that is adaptive to future conditions is required to ensure the site responds to the changing climate. This management plan is intended to be part of a cycle of action, monitoring, review, and, if necessary, revision of actions. Effective monitoring of changes in the species, habitats and other features of the site is essential while monitoring and reviewing the effectiveness of interventions is also required.

The detailed scheme demonstrates adherance to the relevant sections of DFA2 and MCC-recommended guidance in relation to an age-friendly public realm including 'Age Friendly Seating and Sense of Place' and the 'Alternative Age-Friendly Handbook'. Management of the scheme shall maintain this standard.

Brief

The brief below describes the framework:

- The initial management plan will cover a time period of 5 years, during which the planted material will become fully established. Anticipated management operations post 5 years, and up to a minimum of 30 years, are shown with the caveat that this plan should be thoroughly reviewed following Year 5, and every subsequent 5year period, to ensure that it meets the future management needs of the site post establishment and delivers the long-term aims stated within this document.
- The Management Plan must give consideration to environmentally sensitive design and management.
- The Management Plan will seek to provide, as a minimum, no net loss in the nature conservation value of the site with the ambition to achieve a net gain over time.

Roles and Responsibilities

It is vital, for any Management Plan to move forward, that the key parties and their roles are defined at the earliest stage. For Circle Square District Company Limited (CSDC) the Maintenance Manual will be adopted, controlled and enforced by the joint venture management company (Affinity Living & Bruntwood) who are committed to excellence in maintaining the area. It is envisaged that for the first 12months post implementation all landscaped areas will be subject to a 12months defects period during which the effective management of the site will be the responsibility of the main contractor and their associated sub-contractors. At the completion of this 12month period a thorough inspection of the site will be carried out by the Landscape Architect and Qualified Ecologist. Any defects, failures or areas of concern should be rectified before maintenance responsibilities are handed over to the client. It is then the client's responsibility to ensure that maintenance is undertaken following this management plan for a minimum of 30 years.

Purpose of the Plan

The purpose of the Landscape Management & Maintenance Plan is to:

- Provide a detailed breakdown of the proposed management approach that relates to Circle Square No.3 and Symphony Gardens.
- To give assurance that Management requirements are integral to the development and that they are sustainable for a minimum of 30years.
- To ensure there is a long term management plan in place that will maintain a high quality scheme for the future. This includes the management of habitats and publicly accessible areas, maintaining a site that adheres to the relevant sections of DFA2.

Scope of the Plan

This document is intended to provide:

- Description and evaluation of the features to be managed.
- Aims and objectives of management.
- Appropriate management options for achieving aims and objectives.
- Prescription for management actions.
- Preparation of maintenance work schedule.
- Details of body or organisation responsible for implementation of the plan.
- Ongoing monitoring and remedial measures.

Timescales

This Landscape and Ecological Management Plan initially covers a five-year period from completion to ensure adequate establishment. It also includes prescribed maintenance operations for the long term future management of the site over a minimum of 30 years.

Review

The Management Plan and work maintenance prescriptions should be reviewed annually to ensure a high quality and ecology rich environment is maintained. These will be used as the basis for evolving the plan and setting reviewing targets for the long term future.

Monitoring is of fundamental importance, since this is the means by which the success of the plan will be measured. It is therefore important to establish standardised survey and monitoring methods, which enable valid year on year comparisons to be made. There will be a need for flexibility during its implementation. The Management Plan must be an evolving one, able to adapt to the specific needs of the landscape and nature conservation as these change.

The maintenance provider should undertake an annual review of the site, providing written documentation as to the ongoing establishment of the planting. This report should include a condition review of all new and existing plant material, success rates of newly planted material, and recommendations for future management regimes and immediate management requirements.

1.2 Proposals

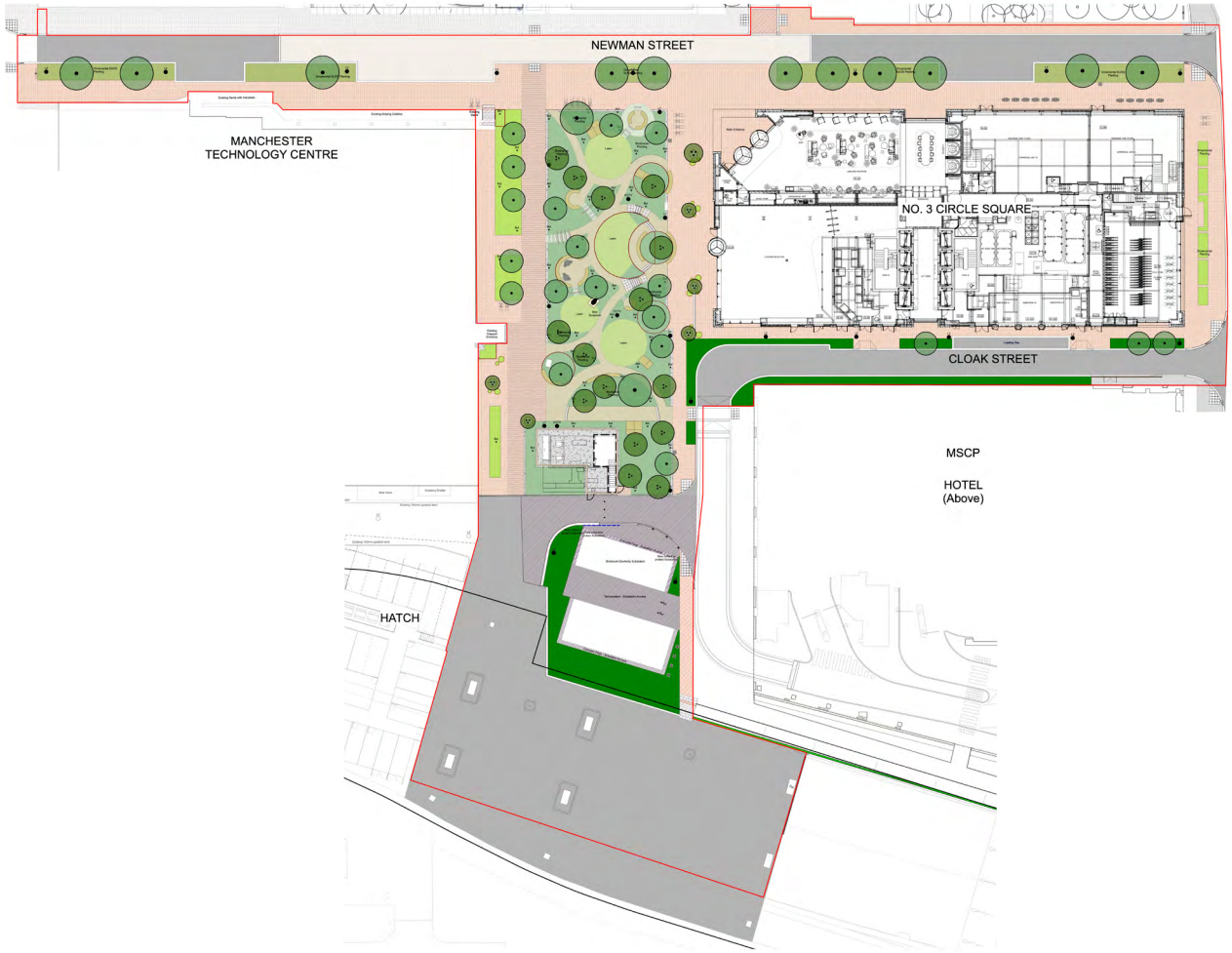
Design objectives

The design proposal for Circle Square No.3 is the creation of a new public garden, set within the heart of the southern portion of the Circle Square development.

Wider public realm improvements will be delivered alongside the gardens. High quality tree lined streets and spaces will continue to maximise permeability across the entire masterplan.

The landscape design seeks to achieve the following design objectives:

- Demonstrate a biodiversity value net gain.
- Increase tree cover and increase the network of green links and corridors.
- Utilise a high percentage of native or ecologically beneficial species.
- Provide ecological enhancement measures, including bird and bat boxes.
- Maximise pedestrian permeability around and across the wider Circle Square Estate through direct and in-direct accessible routes, maintaining adherance to guidance given in DFA2/3



Circle Square No.3
Site Plan

1.3 Management Objectives and Principles

Aim

To prescribe all necessary management and maintenance principles and management tasks to enable successful establishment and ensure the continued maturing of all landscape elements.

Objectives

- To ensure the successful integration of proposed vegetation.
- To ensure that the management and maintenance regime is appropriate to the site and demonstrates longevity of approach.
- To provide a mechanism for the ongoing monitoring and reviewing of the management plan and the specific maintenance operations contained therein.

Principles

Hardworks

- To put in place procedures for regular inspections of all paved areas.
- Specification and Requirements for work by Public Utilities and general surface reinstatement.
- Procedures for non-attributable damage reinstatement.
- To outline specification and sources of materials for repair/reinstatement; refer to landscape specification L014-PIE-90-ZZ00-T-000013.
- To establish winter maintenance procedures.
- To outline procedures for the maintenance of Street Furniture.
- To outline street and amenity lighting requirements.
- Procedures for refuse collection and use of litter bins.
- Procedures for street cleaning.
- To outline procedures for the maintenance of pathways so that appropriate widths are retained for accessibility for all, in accordance with DFA2/3.

Proposed Trees

- To ensure satisfactory establishment and continuing health of proposed vegetation.
- To maintain new planting in a healthy and attractive condition and develop the site tree structure and coverage.
- To ensure the successful establishment and continuity of the overall design concept.
- Introduce a programme of re-planting to replace any tree that fails over the next 5 years and beyond
- To ensure planting is resilient to climate change and plant diseases.

Ornamental, herbaceous planting

- To ensure satisfactory establishment and continuing health.
- To maintain plants in a healthy and attractive condition.
- To ensure the successful establishment and continuity of the overall design concept.
- To establish a mechanism for the replacement of any failing plant or one that has reached maturity.
- To ensure that planting is resilient to climate change.

Lawn

- To ensure satisfactory establishment and continuing health of lawn areas.
- Procedures for mowing and irrigation of lawn areas.
- To establish a mechanism for the replacement of the lawn/part of the lawn in the event of lawn failure.



2 HARD LANDSCAPE

2.1 Hard Landscape Management

General Maintenance Operations

Paving surfaces need to be maintained such that they provide a safe passage for all footpaths and highway users, in compliance with guidance from DFA2/2, DFA2/3, DFA2/6, and DFA2/8. It is also essential that areas, which have been subject to major investment, are protected and sustained through an effective maintenance regime. The success of any streetscape project will depend strongly on the attention given to maintenance.

It is important that paved surfaces are regularly inspected so that defects can be identified and rectified. Typically, early life maintenance, or aftercare of new works will be the responsibility of the Contractor. The maintenance and defects liability period will be 12 months. Contractors should visit the site at regular intervals to inspect all paved areas regularly during the maintenance period, and to undertake any remedial works. At the end of the maintenance period, the contractor will be required to undertake remedial works to the satisfaction of the Client.

Paving Defects - Rigid and Flexible

Common defects - Paved roads deteriorate in a variety of ways, depending upon the type of construction and cause of distress. When deterioration presents a safety hazard then maintenance becomes essential. Timely maintenance, in some instances can prevent deterioration progressing to a state where reconstruction is required. The majority of failures tend to be confined to the surface layers of paved roads, i.e. they concern the bedding and jointing that surrounds stone elements.

Descriptions and illustrations of common defects are given below:

Punching - Vertical downward movement occurs in and around wheelpaths. Punching shear is resisted by both the joints and bedding. The lower of the two capacities, joint shear or bed bearing will control the elements resistance to punching. The defect occurs in flexible and rigid surfacing. Localised or isolated areas of punching are likely to be due to poor workmanship. More widespread punching is more likely to be due to under design.

Progressive cracking - Debonding of the jointing material from stone elements commonly leads to progressive cracking. The continuous action of heavy vehicle tyres on the elements dislodges and pulverises sufficient of the jointing material to cause a breakdown of the joint matrix. Inappropriate design and poor workmanship are likely causes. Factors likely to have contributed to this type of failure are:

- poor compaction of the bedding
- inadequate moisture content in stabilized bedding
- depth of elements
- low jointing strength
- early pavement trafficking
- inappropriate laying pattern

Movement - If the homogeneity of the upper layer is broken, it is impossible to control lateral movement with joint widths ≥10mm. Once the surface matrix is broken, it allows the tyre interaction of the traffic to move the setts in angular directions, thus perpetuating the breakdown of the rigid surface. Ingress of water then adds to the problems. Rutting is common and depending on the construction of the pavement the underlying layers of the structure will gradually deteriorate.

Flexible Movement - During the very early life of flexibly laid pavements, the joints between the units will be relatively porous. The ingress of water can consolidate jointing sand and it is important that the joints are regularly ‘topped up’ to replace the sand consolidated by rainwater or removed by other factors.

The joints will soon become semi-impervious as the build up of surface detritus seals the joints. Until this has occurred the paving should only be brushed by hand. Mechanical sweepers, and in particular sweepers with high suction forces, should not be

used as there is a real risk of further loss of jointing sand.

When high traction forces exist such as with braking, accelerating and cornering. The surface profile and element orientation can be lost with flexible construction. The ability of the surface elements to move and the surface to deform without, necessarily, a loss of stability defines the layer as being a 'flexible' layer.

Loss of jointing material - Mechanical breakdown or loss of jointing material in large elements allows the ingress of water. Load spreading ability will reduce if the bedding layer is broken down by the action of water, freezing effects, lateral movement etc.

Rocking of large elements - A stone element that is not evenly supported will rock when loaded. The problem is compounded as rocking pumps water and fines out from under the element, reducing the support further. Rocking or loose elements result in higher stresses being imposed on surrounding elements due to dynamic effects.

Broken or damaged elements - Apart from being unsightly, cracking and spalling can become a hazard if it creates a trip. Spalling occurs during transport and laying, but can less commonly be a fault in the material. It can result during manufacture, impact loading, abrasion and weathering. Inappropriate size or depth of element results in fracture under loading.

Treatment Options

Maintenance treatment will depend on the type of defect and what has caused the deterioration. For some surfacings, topping up of jointing may be all that is required, but poor surface profile may require a site investigation to provide information on the condition of the pavement at depth. Suitable strategies can then be formulated based upon informed engineering judgment.

The Table on the page to follow summarises some common defects, resulting problems and treatments.

Lifting, Repair and Relaying

Relaying elements of flexible (unboud) construction should be carried out in the same way as new construction (Refer to landscape specification L014-PIE-90-ZZ00-T-000013). Additional guidance for flags is given in BS 6677. Removing a damaged single element prior to relaying can be difficult, particularly if it is small element, as breaking it out may disturb adjacent modules. It may be necessary to consider relaying all elements, which abut the damaged area, or to relay a full line of elements back to an edge restraint. If the surface has poor profile, elements will need to be lifted over the whole of the affected area. In all cases a complete renewal of the bedding material should always take place. An experienced paver is required to execute a good reinstatement.

Joint Repairs

Where elements are part of a rigid construction and degradation of the cement mortar joint has occurred, it will be necessary to refill the joint. If necessary the joint should be raked out, which is time-consuming and costly. It may be more appropriate to use a small hand-held grinder with an attachment to remove the dust and debris, in a controlled manner, into some form of hopper. Once the joints have been cleaned out they can be refilled with a mortar appropriate to the trafficking category. Care is required to confine the mixture to the joint and prevent staining of the surface. Trafficking should only be allowed once the mortar has gained the appropriate strength.

Retexturing

Re-texturing of stone surfaces which have become slippery due to vehicular or heavy pedestrian traffic can be undertaken by various methods including scabbling, sand or shot blasting, high pressure water jetting or application of a weak acid. Scabbling is slow but can be used successfully on flags, especially where there is some form of surface growth. Sand blasting can be successful but results in a lot of fine particles and debris, which have to be removed separately. Shot blasting with steel shot involves the use of specialised machinery, which sucks up the debris and shot by vacuum. The steel shot is separated magnetically in the return loop for continuous re-use. This is a very successful process that tends to form a lightly-exposed aggregate surface on flags, giving a pleasing appearance. However, regular use of this technique can sometimes cause problems and retexturing areas around street furniture is difficult. Flexible Joints may need resealing with sand after any high pressure method has been used.

Guidance: Stone surfacings will become slippery and an appropriate re-texturing technique should be used to restore skid resistance.

Sealing

Proprietary sealing agents are commonly used on paved surfaces, to reduce moisture penetration of the laying course material, and minimise staining from spillages.

The paving surface must be completely dry and clean before any sealer is applied with the manufacturer instructions adhered to at all times. Whilst such products may offer certain advantages, careful consideration must be given to the suitability of the sealant and any subsequent effect on the colour appearance and slip/skid resistance of the paving.

Defect	Problem	Treatments	
		Temporary	Long-term
Debonding of jointing material	Initiation of failure mechanism	Monitor / investigate	Check paving & build-up as in accordance with the design & relay if required. Input from Civil Engineer required to review design.
Broken or damaged elements	Trip hazard, water ingress leading to frost heave	-	Replace or reconstruct asap
Missing pavers/setts	Trip hazard, water ingress leading to frost heave	Fill holes	Replace element
Rocking elements	Trip hazard	Relay	-
Spalling of arises or surfaces	Trip hazard	-	Replace affected paving units
Depressions and bumps	Trip hazard	Fill or ramp. Contact undertaker if cause is failed reinstatement	Relay affected area
Rutting	Trip hazard	Monitor, warn users	Relay affected area
Slippery surface	Slip hazard	Warn users or restore texture	Clean, restore texture or renew surfacing
Surface contamination	Slip hazard	Clean or neutralize	Replace surfacing if necessary
Vegetation	Slip hazard	Warn users, clean	Consider increasing frequency of maintenance
Water	Slip hazard if frozen	Application of sand if freezing	Relay surfacing to correct gradients and crossfall

Operation Number	Description	Year (s)	Season / Month	Frequency (per year)
	Cleaning of paving with street sweeper	Ongoing	Year round	x52
	Stain removal	Ongoing	As required	n/a
	Removal of algae, moss, lichen using pressure washer	Ongoing	As required to maintain slip resistant surface	n/a
	Application of sand to keep surface free from ice	Ongoing	As required	n/a
	Leaf removal	Ongoing	Autumn	Monthly as a minimum (x3)

Hard Landscape Maintenance

The regularity of the surface should be monitored as per the list below to ensure that it is safe for use by the public - maximum deviation between individual pavers in case of settlement etc. is as follows:

Regularity of paved surfaces

Maximum variation in gap under a 3m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface), as described within BS 7533-101

- All surface finishes: 3 mm
- Difference in levels at the join of adjacent paving units: 2mm
- Sudden irregularities: Not permitted

Cleaning generally

The following recommendations deal with vehicles and associated equipment for use on paved footways/footpaths/pedestrian areas and roads:

- The equipment should be purpose designed to sweep the particular area and surfacing product. If there is any doubt, the vehicle manufacturer should be consulted.
- Where possible, low ground pressure tyres should be fitted to reduce the risk of breaking or cracking of units.
- Tyres should be inflated according to the manufacturer's recommendations, again to ensure minimum weight distribution per square mm.
- Polypropylene, not wire, brushes should be used.
- Sweeping brush pressures should be set to the minimum required to suit the particular task, i.e. surfaces swept regularly will require a lower setting than those swept infrequently or those covered with heavy deposits.
- When sweeping, engine revolutions should be set at the minimum required to maintain vacuum (suction) pressure.
- Operators, including reliefs, should be trained to manufacturers' recommendations and tyre and brush pressures should be regularly checked.
- Advice should be given to operators that, when equipment is stationary or left unattended, suction, brush rotation and water jetting equipment should be switched off to avoid the risk of damage to the area below the stationary equipment.
- In new or re-laid areas, agreement should be reached on a period of manual cleaning (at least four weeks) to allow the paving to settle and the joints to seal. This period may be reduced by using either a water-based bonding agent or elastomeric prepolymer sealant and by agreement with the cleansing authority on an appropriate sweeping regime.
- Following the use of mechanical cleaning operations, re-sanding of the joints in flexibly laid areas may be necessary.

The use of power washing equipment on paved areas

To aid in the removal of surface staining power washing equipment is often considered. Whilst such techniques offer certain benefits, particularly for larger areas, it is important that care is taken in their use to avoid damage to the structural integrity of the paving.

When using any form of Power Washer the following guidelines should be strictly adhered to:

- The power washer should be used on a setting, which is sufficient to remove the dirt without causing any further distress. A low-pressure setting is recommended.

- Do not direct the power lance directly down on to the paving, as this can result in loss of jointing material.
- Ideally a spraying movement should be adopted holding the power lance at a shallow angle, not greater than 300 across the diagonal (i.e. not parallel to joints).
- Certain high-pressure jetting machines have been known to mark / damage the surface of certain types of paving material. It is therefore prudent to carry out a small test area before commencing on a larger area.
- The area should be inspected after cleaning to ensure that joints are full.

General dirt and detritus

To remove general dirt and detritus regular brushing is recommended. If detritus reduces the intensity of the colour of the material then this can be re-established by scrubbing with a mild detergent e.g. washing up liquid, and hot water. Ensure all the detergent has been thoroughly washed from the surface on completion of the cleaning and the resulting run-off is carefully channelled to either drainage points or containers where it can be safely disposed of.

Moss, lichens and algae

Moss, lichen and algae can be prevalent on hard surfacing where the area is heavily shaded, is under trees or is not laid to an adequate fall. If such growths do occur and are considered undesirable then the area should be treated with a proprietary weed or moss killer used in accordance with the manufacturers' instructions. Such products take some days to be effective and are most effective when applied during a spell of dry weather. The washes work best if any thick growths are scraped off first and the wash is well brushed in. Some treatments leave a residue to discourage the re-growth of the moss and algae but this will only be of limited value if the surrounding conditions leave the paving damp and in shade.

Rust stains

Initially action must be taken to eliminate the sources of staining. To remove the rust stain, the surface should first be wetted with clean water and then the affected area treated with a 7 to 10% dilution of Hydrochloric acid solution. Refer to manufactures recommendations to ensure safe use.

Oil stains

Oil can penetrate readily into hard surfacing materials, but it should not stain if any spillages are removed promptly with an absorbent material e.g. paper towels, cloth or absorbing granules.

Do not attempt to wipe the stain as this will drive the oil into the surface of the units and spread it over a wider area.

If the stain persists then an emulsifying degreaser should be employed. Brush the cleaner onto the affected area, leave for a period of time according to the manufacturers instructions and then wash the emulsified oil away with plenty of clean water.

Alternatively the surface can be scrubbed with a detergent and hot water taking care to ensure that the strength of the detergent is not detrimental to the appearance of the paving. However, for persistent oil staining, steam cleaning may have to be considered.

Bitumen stains

Fresh bitumen should be allowed to cool down before removing it with a paint scraper or similar. If it is particularly resistant, the use of ice to make the bitumen brittle may be required prior to scraping it from the paving. Any residue should be removed with an abrasive powder and finally the whole area rinsed with clean water. Certain proprietary cleaning agents are available to remove bitumen but these should be tested on an inconspicuous area of paving first.

Graffiti and paint stains

Both paint and graffiti are difficult to remove from most hard surfacing materials. Fresh wet paint should be soaked up with an absorbent material without wiping the paint, as this will spread the stain. It should then be treated with a suitable solvent such as white spirit and then the area washed with a de-greasing agent taking care in the disposal of the run-off material.

Dried paint should be scraped off as far as possible and then an appropriate paint remover applied.

Paint manufacturers may often be able to give more detailed advice on the removal of paint and graffiti. Therefore they should be consulted directly for specific recommendations.

Epoxy and polyester stains

Areas of solidified epoxy or polyester resin can be removed by carefully burning off the area with a blowtorch. Care must be taken not to inhale any fumes given off. If, after burning, a black stain remains, this can be removed by scrubbing with detergent and hot water. For larger areas grit blasting may have to be considered, however the effect of such treatment on the micro texture of the surface should be carefully considered. Again it is advised that a small area be tested before any large-scale operations are undertaken.

Smoke, fire and tobacco stains

Normally such stains can be removed by scrubbing with detergent and hot water. Where the stains persist, a mixture of scouring powder and household bleach can be used. It is important the bleach is washed from the area with clean water once cleaning is completed and the run-off carefully disposed of.

Beverage stains

These can normally be removed by scrubbing the stain with detergent and hot water. If the stain is persistent, apply a household bleach solution and then rinse the area with clean water taking care to dispose of the run-off safely.

Chewing gum

Chewing gum is a particularly difficult substance to remove from hard surfaces. Newly discarded gum can be scraped off by using a mechanical scraper but hardened gum can only be removed by both freezing the gum and chiselling it from the surface of the paving or utilising a hot water/steam cleaner. For specific advice on chewing gum removal it is recommended that specialist contract cleaning companies be contacted directly for further details.

Scuff marks from vehicle tyres

These can normally be removed by steam cleaning, or by scrubbing the area with detergent and hot water.

Cement and lime staining

Both types of staining can occur on paved surfaces, usually as a result of contamination from other sources, such as concrete street furniture or the use of on-site mortars and concrete.

Cement and lime deposits are generally insoluble and therefore require treatment by a suitable acid cleaner to fully remove them. Guidance on the safe use of chemical treatments is given in section 7.0 (Acid Washing) of this document.

Drainage channels and slot drains

Inspections should be carried out regularly. Drainage channels should be inspected for damage from high stress. Broken channels / gratings should be replaced.

Particularly following storms, the efficiency of the gullies should be checked. The bucket should be removed periodically and checked for blockages. Occasionally water should be poured into the gully and checked that it disperses freely.

Levels of paved areas should be checked and compared with the installation drawings. Paving should be regularly checked for signs of lateral movement (opening or closing of joints) possibly induced by vehicle braking or manoeuvring.

The channels should be cleaned out carefully ensuring the surface finish is not damaged. A shaped shovel (e.g. a trowel) may be used within channels with removable gratings.

On completion of cleaning operations, the channel bore should be flushed through with water. Where required, joint sealant should be repaired in accordance with the relevant manufacturer's instructions. The buckets of sumps or gullies should be removed, emptied, cleaned and their drain holes cleared. On no account should boiling water or cleaning agents be brought into contact with polyester channels.

Hardworks Proposals

KEY - HARDWORKS

S1 CONCRETE SETT PAVING
Location: To pedestrian and occasional vehicle areas within streets
Size: 300x100x80mm
Laying: Reverse Stretcher Bond
Type / Colour: Breccia, Magma
Finish: Washed finish
Notes: Flexible Construction

S1.1 CONCRETE SETT PAVING
Location: To pedestrian and light vehicle areas within streets
Size: 300x100x80mm, 300x150x80mm, 300x200x80mm
Laying: Reverse Stretcher Bond
Type / Colour: Kellen Breccia, Magma
Finish: Washed finish
Notes: Flexible Construction

S1.2 CONCRETE SETT PAVING
Location: To occasional heavy vehicle areas within streets
Size: 300x100x80mm
Laying: 450Herringbone - Longitudinal
Type / Colour: Kellen Breccia, Magma
Finish: Washed finish
Notes: Flexible Construction

S2 TARMACADAM
To vehicle areas
To engineers details and specification - Planing of existing surfaces. Overlay tarmacadam

S2.1 TARMACADAM
To pedestrian areas (Cloak Street footpath)
To engineers details and specification

S2.2 TARMACADAM MAINTAIN EXISITING LEVELS, PLANE AND OVERLAY TARMAC

S2.3 ULTICOLOUR TARMAC
Colour: Buff Quartzite
To vehicle areas
To engineers details and specification

S4 RESIN BOUND GRAVEL
Location: To Symphony Gardens paths
Product: Daltex by the Derbyshire Aggregates Group
Laying: 18mm thick
Aggregate size: 6mm
Type / Colour: Daltex Golden Pearl
Notes: Permeable buildup to Engineers design & specification

T1 GRANITE TACTILE CORDUROY PAVING
Location: At bottom and top of steps
Size: 400mm x 400mm x 80mm (D)
Laying: Stack Bond
Type / Colour: Kobra grey (contrasting to surrounding paving)
Notes: N/A

T2 GRANITE TACTILE BLISTER PAVING
Location: Crossings
Size: 400mm x 400mm x 80mm (D)
Laying: Stack Bond
Type / Colour: Kobra grey (contrasting to surrounding paving)
Notes: N/A

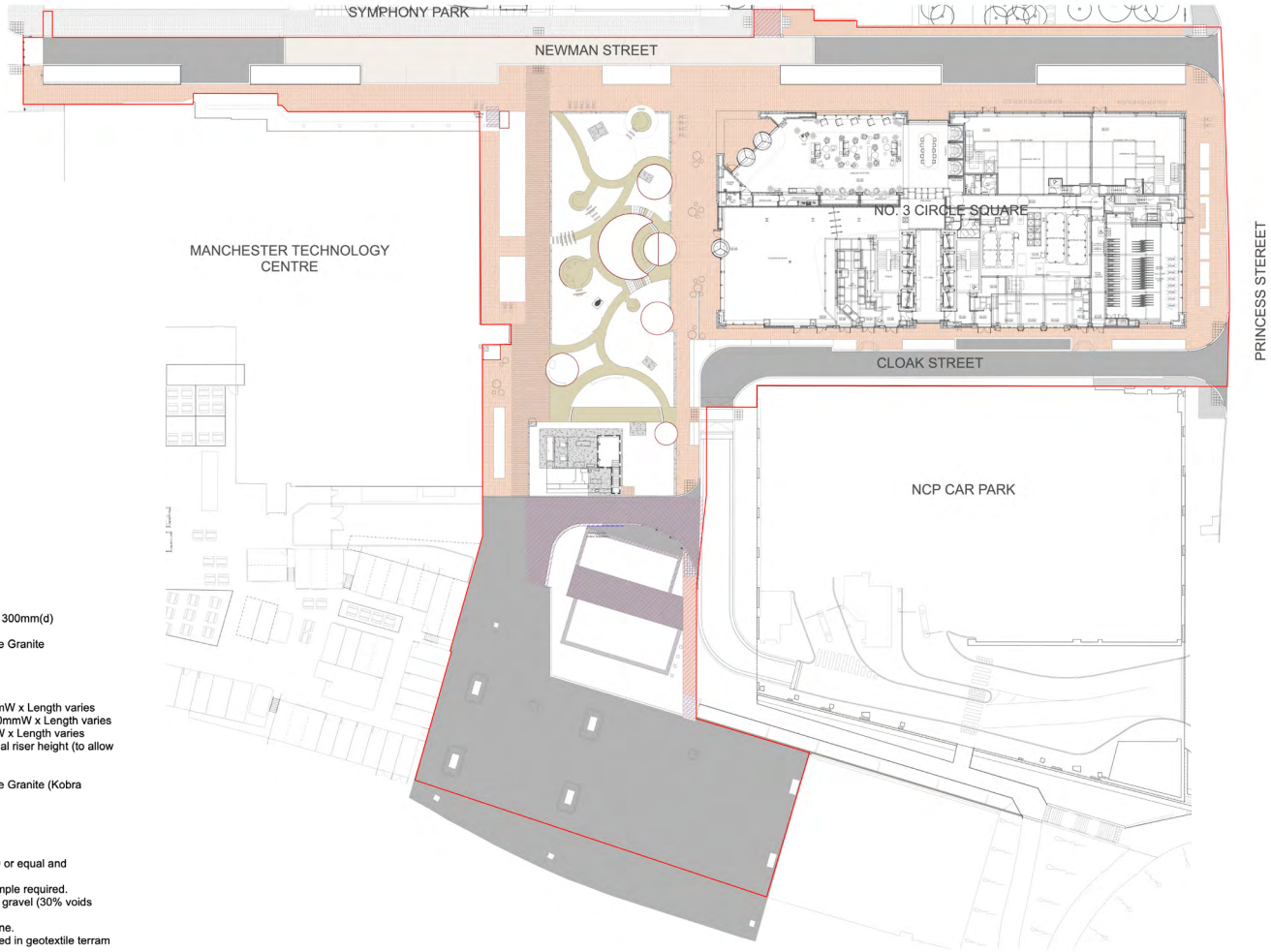
S5 GRANITE STEPPING STONES
Location: Symphony Gardens
Size: 900 x 200 x 75mm
Laying: Concrete haunching
Type / Colour: Hardscape Kobra Granite
Finish: Fine Picked
Notes: To include artwork granite inlay (TBC)

S6 GRANITE STEPS NOSING
Location: Symphony Gardens
Size: 2000(l)/varied length x 100(w) x 300mm(d)
Laying: Concrete haunching
Type / Colour: Hardscape Royal White Granite
Finish: Fine Picked

S7 GRANITE STEPS
Location: Symphony Gardens
Size: Top step: Height varies x 400mmW x Length varies
Intermediate step: Height varies x 350mmW x Length varies
Bottom step: Height varies x 350mmW x Length varies
Bottom step 50mm higher than nominal riser height (to allow for bedding)
Laying: Concrete haunching
Type / Colour: Hardscape Royal White Granite (Kobra nosing) Bullnosed front edge
Finish: Bush Hammered finish

G LOOSE GRAVEL TRIM
Location: Symphony Gardens
Source: CED Stone Tel: 1708 867230 or equal and approved.
Colour: Staffordshire Pink Gravel, sample required.
Single sized stone: 14-20mm angular gravel (30% voids ratio)
Trench lined with permeable membrane.
300ø fully perforated pipework wrapped in geotextile terram 1000 or similar approved.
To engineers details and specification

ALREADY INSTALLED



Hardworks General Arrangement

Asphalt Surface

REF S2, S2.1, S2.2 & S2.3

Asphalt surfacing should require infrequent maintenance and the following procedures should be followed:

- If used for vehicle parking, the vehicles should be moving when the wheels are turned and shall be parked in different positions.
- Any heavy vehicles, trailers, caravans and ladders with small footprints parked on the material should use wooden boards to disperse the loading.
- Fuel spillages should be removed immediately (oil absorbent pads and spill kits can be useful for this task). The surface should be inspected at least annually for deterioration.
- Debris and detritus (mud, leaves or grit) should be removed on a regular basis by gentle brushing or preferably, vacuum sweeping. Should algae, moss, weeds or grass develop on the surface, these should be treated with a suitable weedkiller as soon as possible.

Major repairs

If possible, any damaged areas are to be removed by planing to the appropriate depth to provide a minimum length of 15m for paver resurfacing. The sections will be resurfaced using material to the same specification.

Minor repairs

Minor repairs can be carried out by cutting out the damaged section and replacing it with a material of suitable specification.

A K1-40 (C40 B 4) or K1-60 (C60 B 4) tack coat, or an acceptable proprietary bond coat, will be lightly applied to the receiving substrate. Joints must be saw cut vertical, cleaned and painted with a thick uniform coating of hot bitumen, hot elastomeric polymer modified bituminous binder, or cold applied thixotropic bituminous compound prior to laying.



Supplier	Tarmac or other approved
Description	Ulticolour or other approved
Colour range considered	Buff Quartzite
Location	To vehicular routes, parking bays and pedestrian footpaths to Keckwick Lane

'Kellen' Pre-cast Concrete Block Paving

Ref. items S1, S1.1, S1.2

Equipment required

The best results are achieved by using the correct equipment correctly.

- Hot / cold water pressure washer with variable pressure and temperature
- Rotary floor cleaning tool
- Lance with high and low pressure option

Cleaning process

For the best results the cleaning of Kellen paving requires hot water pressure washing, initially the surface should be pre-swept to remove any loose debris. Once the debris has been removed then set the machine to between 80 and 100 bar and the temperature to 100 degrees centigrade. The first process is to remove the chewing gum using the lance with the low pressure option, using the high pressure keep the nozzle at a 45 degree angle 5cm away from the gum and remove in a methodical movement, once the gum is removed turn the lance to low pressure lift and move to the next piece without causing joint damage and repeat the process, When the gum is removed attach the rotary floor tool you may need to increase the pressure to 120 bar (depending on your nozzle sizes) use the rotary floor tool in a uniform manner cleaning either up and down or side to side slightly over lapping each pass.

Finishing process

On completion of the cleaning using the rotary floor tool re- attach the lance and turn it to low pressure, keep the lance a distance from the paving and rinse the loose sand back into the joints leaving the paving clean.

Once the surface is completely dry the joints may require a topping up using dry kiln sand, this should be minimal as long as the cleaning process us correct.

Surface protection

To preserve and protect from staining and gum adhesion on the Kellen paving Planit would advise that it is protected using Pavesaver or Pavesaver Ultra a surface impregnator available from Hardscape.

Supplier	Hardscape T: 01204565500 E: enq@hardscape.co.uk
Description	Pre-cast concrete block with exposed natural stone aggregate finish. Kellen - Breccia Magma
Location	To vehicular cross-overs and running lanes



Kellen 'Breccia Magma'

Resin Bound Gravel

Ref. item S4



Normal Use:

Resin Bound surfaces are intended to be used by normal pedestrian or vehicular traffic for which they have been designed. Protection should be provided wherever possible against abnormal damage. Heavy goods vehicles should not be permitted to park on or regularly traverse Resin Bound surfacing unless it has been allowed for in the overall construction. The Resin Bound installation will have no problem with parked cars or other regular uses for a driveway.

Dry Steering:

Dry steering, where the wheel is turned whilst the car is stationary, is likely to leave tyre marks and with the action being constantly repeated could see the surface damaged with the aggregate being crushed and coming away from the driveway.

Abnormal Use:

You should be careful not to damage the Resin Bound surface with any of the following abnormal usages:
Skips: Heavy skips with edges should not be placed directly onto the Resin Bound installation.
For lighter skips, load bearing planks may be used, but we recommend placing a skip elsewhere if possible.

Sharp points: Avoid anything that applies a sharp point of pressure onto the surface, such as the stand of a heavy motorcycle.

Dragging: Heavy objects should never be dragged across the Resin Bound surface.

Spillage risks: Protection should be provided during building and construction work to avoid unsightly contamination from oil, grease, cement and dirt. Spillage of solvents should be avoided as these will soften and damage the resin binder.

Routine Maintenance:

The Resin Bound surface should be regularly swept clean with a stiff broom, removing leaves and detritus materials in order to prevent moss growth and hosed with clean water.

Washing:

The surface must be cleaned periodically using a pressure washer or a sweeper fitted with water jetting and vacuuming equipment. Washing can be carried out using a portable pressure washer (up to 150 bar rating) to remove dirt, grime and moss. Ensure care is taken not to damage the surface with excessive pressure. Only cold water should be used and the water lance must be kept at least 200mm from the surface and a fan type jet used.

Cleaning:

Chewing gum removal: Removal of individual pieces of chewing gum can be carried out by treating each piece with a freezing spray and then scraping off the hardened gum with a wall/paint scraper. For more extensive gum removal, contact a specialist cleaning contractor.

Weed Resistance:

Due to its construction, a Resin bound surface is resistant to weeds. However, no matter how much care is taken, weeds may occasionally appear (as on any surface), usually as a result of windblown seeds. Ensure customers understand weed resistant doesn't mean weed free when you are discussing the advantages of Resin Bound. Small numbers of weeds can be removed by hand without damaging the surface. If the weeds are removed by hand, it is important to ensure that the full root of the weed is extracted, not broken off. Some weeds are more prolific if they are simply cut off at surface level.
If the weeds are deep rooted, it is advisable to kill them off with an appropriate herbicide or weed killer. Localised areas of weed seeding infestation can be treated with domestic weed killers without causing damage to the surface. Please note that staining may occur from tanning if surfaces are not kept clean from leaf debris, twigs, seeds etc.

Moss and Algae Growth:

Weed growth should be treated prior to surfacing and it is highly unlikely that any new growth will be sustained. Periodical application of a proprietary moss and algae killer, such as “algon”, in accordance with the manufacturer’s instructions, will remove and prevent any regrowth.
Ingrained algae growth can be removed and the colour of the original surface restored by the application of a strong bleach solution. This should be used in accordance with manufacturers guidelines and local environmental constraints. After application, the surface should be well rinsed with clean water.

Cement or Concrete Marks:

Cement or concrete marks can be removed with careful use of diluted hydrochloric acid or a proprietary cement remover, immediately followed by a thorough rinsing with clean water.

(Please note that if a lime based aggregate is used, the acid will tend to dissolve this as well).

Oil/Fuel Contamination:

Oil stains must be removed as soon as possible by using a mild detergent to prevent possible staining and degradation of the surface. A good quality detergent should be applied neat using a stiff brush. This should be allowed to penetrate for 10 minutes and followed with pressure washing.

Spillages:

It is important that any spillages or contamination are dealt with promptly otherwise permanent staining, marking or physical damage to the surface and underlying materials may result.

Sand/Soil:

Shovel up material and sweep the surface with a stiff brush. Pressure washing up to 150 Bar can also be used to clean sand from Resin Bound surfacing.

Mineral Staining:

The system is made up from natural aggregates. Whilst every step is taken to minimise its presence, naturally occurring iron pyrites may be present. If staining occurs, oxalic acid is an effective method of removing the stains from the surface and is readily available. The specialist acid solution should be washed off using cold water immediately after use.

Ice/Frost:

Salt can be used on the surface to help eliminate ice and frost. Once weather conditions return to normal, the salt/grit needs to be washed off thoroughly to remove all salt traces.

Chemical Resistance:

Resin Bound surfacing is resistant to a wide range of chemicals. The full chemical resistance builds up over time and care should be taken within the first 7 days of installation to not expose the surface to chemicals. Spillages need to be cleaned by power washing to avoid any potential staining.

Patch Repairs:

If the surface is damaged, small areas can be repaired. The damaged area should be chiselled out to a solid edge. The same aggregate blend can then be mixed with DALTEX UVR Resin and installed in the area. Care should be taken to ‘feather’ the edges of the repair into the surrounding area, to give a strong, seamless and durable repair.

Note:

The information provided is intended only as a guide, formal procedures should be developed considering the particular circumstances applicable. Always trial any treatment on an unobtrusive area first to assess suitability.
Derbyshire Specialist Aggregates assumes no responsibility for improper reliance upon or misuse of the information. Appropriate precautions should be taken when using chemicals and advice sought from the statutory authority for their correct disposal.

Source:
https://resinbondedaggregates.com

Technical And Sales Helpline

CALL: 01629 636500
https://resinbondedaggregates.com

Gritting / De-icing

De-icing materials on hard surfaces to be urea prills, to be 'Ice Melt Original' or equivalent, without stone grit or other corrosive components.

This is important to prevent damage to all plants where gritting material can be expected to run off surfaces into vegetation.
No rock-salt based products should be used.

Ice Melt Original prills (as well as equivalent no-name urea prills) are known to be completely non-corrosive to metals and reinforced concrete, non-toxic to humans, animals and vegetation.

The supplier of the paving materials have confirmed that urea prills will not damage the concrete paving used on the scheme.
The supplier of Ice Melt confirmed the prills are not a trip hazard as they start to dissolve immediately on ice.

Usage: to manufacturer's recommendation, about 1/6 as much as rocksalt required.
The price per kg for urea prills is higher than that for rock salt, but it's about 6 times more efficient when used correctly.









No rock salt to be used



Hedge damaged by rock salt



3 SOFT LANDSCAPE

Introduction

This guidance outlines the key aims and considerations for the management and maintenance of each of the landscape components within the site followed by the specific maintenance operations proposed during an initial 5 year period and beyond.

The recommended operations should be reviewed at the end of the defects liability period and agian after about 5 years and adjusted as needed to provide long term future management of the site.

Maintenance Operations

Set out in the tables overleaf are the maintenance operations that should be carried out in order to achieve the design objectives. They have been set out in a format that can be easily followed by all parties, ensuring that the Management Plan exists as a working document and not an archived report. The management prescriptions are flexible such that each section can be changed and updated on an annual basis, allowing targets to be set, progress monitored and accurate reporting made.

Works in the Adopted Highway

Landscape maintenance works in the adopted highway along Princess Street are assumed to be undertaken by the Estate Management Team in accordance with requirements set our by Manchester City Council.

Chemicals

Chemicals generally should be restricted in use. All chemicals, herbicides, pesticides and fertilisers, should be approved by DEFRA and should be used, stored and disposed of in accordance with EN guidelines and COSHH Regulations 2002.

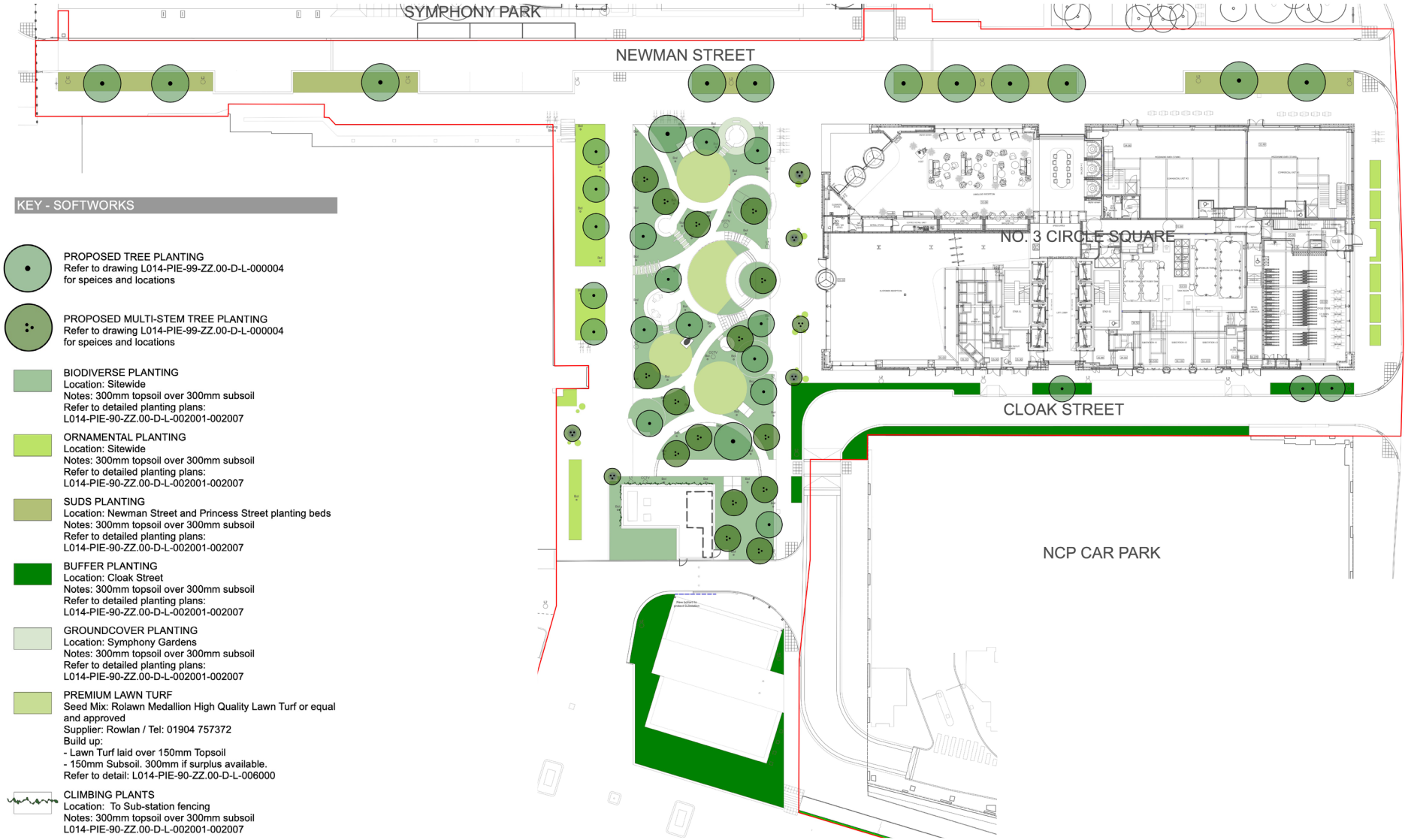
Irrigation

Irrigation of the trees and planting areas particularly during the first 3 years will be fundamental to their long term successful establishment. No piped irrigtion system is proposed as part of the scheme. The chosen maintenance contractor is responsible for watering as and when needed to ensure sucessful establishment and continued longevity.

Water Restrictions

General: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding.

Soft Landscape Plan



KEY - SOFTWORKS

PROPOSED TREE PLANTING
Refer to drawing L014-PIE-99-ZZ.00-D-L-000004
for speices and locations

PROPOSED MULTI-STEM TREE PLANTING
Refer to drawing L014-PIE-99-ZZ.00-D-L-000004
for speices and locations

BIODIVERSE PLANTING
Location: Sitewide
Notes: 300mm topsoil over 300mm subsoil
Refer to detailed planting plans:
L014-PIE-90-ZZ.00-D-L-002001-002007

ORNAMENTAL PLANTING
Location: Sitewide
Notes: 300mm topsoil over 300mm subsoil
Refer to detailed planting plans:
L014-PIE-90-ZZ.00-D-L-002001-002007

SUDS PLANTING
Location: Newman Street and Princess Street planting beds
Notes: 300mm topsoil over 300mm subsoil
Refer to detailed planting plans:
L014-PIE-90-ZZ.00-D-L-002001-002007

BUFFER PLANTING
Location: Cloak Street
Notes: 300mm topsoil over 300mm subsoil
Refer to detailed planting plans:
L014-PIE-90-ZZ.00-D-L-002001-002007

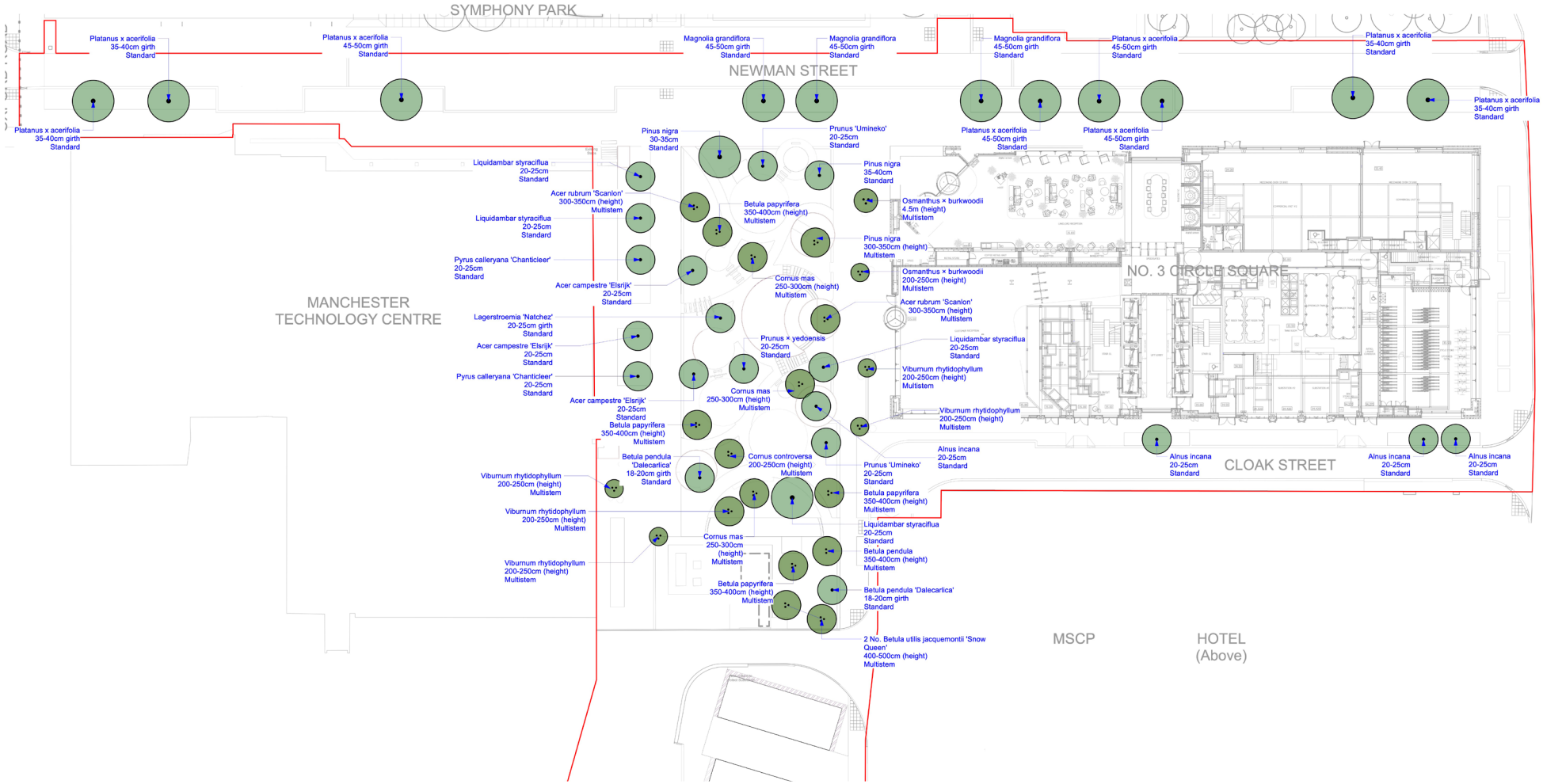
GROUNDCOVER PLANTING
Location: Symphony Gardens
Notes: 300mm topsoil over 300mm subsoil
Refer to detailed planting plans:
L014-PIE-90-ZZ.00-D-L-002001-002007

PREMIUM LAWN TURF
Seed Mix: Rolawn Medallion High Quality Lawn Turf or equal
and approved
Supplier: Rowlan / Tel: 01904 757372
Build up:
- Lawn Turf laid over 150mm Topsoil
- 150mm Subsoil. 300mm if surplus available.
Refer to detail: L014-PIE-90-ZZ.00-D-L-006000

CLIMBING PLANTS
Location: To Sub-station fencing
Notes: 300mm topsoil over 300mm subsoil
L014-PIE-90-ZZ.00-D-L-002001-002007

Softworks General Arrangement

Tree Planting Plan



Tree Planting Plan

Proposed Trees

Tree Work Generally

- All tree work be carried out by an approved member of the Arboricultural Association.
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
- Any trees found to have bat roosting potential should be retained where possible. Incidental damage to a confirmed breeding site or resting site of any bat species is an offence under the Conservation of Habitats and species Amendment (EU Exit) Regulations 2019.
- A bat licensed ecologist will be consulted and appropriate survey/licensing undertaken prior to any arboricultural works being undertaken in accordance with relevant wildlife legislation (particularly for roosting bats and nesting birds).
- Any tree and hedge planting should be carried out between October and February.
- All tree work to be carried out to BS 3936-1 Nursery Stock: Specification for Trees and Shrubs.

Review and monitoring

- Annually review for 30years the condition of retained trees for evidence of structural weakness, pests and diseases and undertake any arboricultural operations as needed to ensure the longevity of the trees. Arboricultural operations should be undertaken in accordance with good arboricultural practice and by approved operators.

Timing of tree pruning

- Where possible, pruning should be carried out in the dormant season to avoid excessive sap loss. Some deciduous trees will bleed if pruned in late winter. The onset of sap pressure varies with species so the following timetable should be observed.

References

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1037796/Managing_semi-natural_woodland_in_England.pdf

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/720995/FCPG201.pdf

https://woodlandwildlifetoolkit.sylva.org.uk/advice-management

Proposed Trees

	Prescription	Year(s)	Season	Frequency
	Newly Planted Trees			
	Replace dead or damaged trees to original specification. Remove as soon as possible and replace within the next available planting season. Where planting continually fails to establish, undertake investigations to ascertain any underlying cause.	1 - 5	Nov-mid March	1
	Top up mulching to original specification annually.	1 - 5	Throughout year	1
	Autumn Leaf Removal: Collect accumulations of drifted leaves from surrounding areas.			
	Carry out an annual inspection of all trees and carry out remedial work as necessary.	1-	Aug-Nov	1
	Staking / guying			
	Inspection: quarterly and after strong winds.			
	Ensure trees remain firmly bedded after disturbance and re-firm as necessary.	1 – 5	As required	1
	Broken or missing items: replace as required.			
	Loose stakes: re-firm in the ground or replace as necessary to provide support to the tree.			
	Ties: adjust to accommodate growth and prevent constriction or abrasion.	1 – 5	Throughout year	as required
	Remove stakes and ties in year 3 after planting, unless the tree is not stable.	3	Late summer/autum	as required

	Pruning			
	Prune in accordance with good horticultural practice, thin, trim and shape as appropriate and in keeping with the species' expected habit. Acer rubrum 'Scanlon' mid autum - mid winter Alnus incana mid autum - mid winter Betula papyrifera late summer - mid winter, Betula pendula late summer - mid winter Betula utilis late summer - early autumn Cornus controversa mid autum - mid winter Cornus mas winter Lagerstroemia 'Natchez' late winter - early spring Liquidambar styraciflua mid autum - mid winter Magnolia grandiflora mid-summer - early autumn Osmanthus × burkwoodii late spring Platanus x acerifolia mid autum - mid winter Pinus nigra spring Prunus 'Umineko' mid-summer Prunus × yedoensis mid-summer Pyrus calleryana mid autum - mid winter Viburnum rhytidophyllum late spring - summer	1-	Refer to notes on the left	1

	Prune all trees annually as needed to maintain a minimum 2.2m clear stem and desired form.	1-	Juli-Feb	1
	Obscuring of CCTV cameras, signs and other items: hard pruning should lead by qualified personnel who will take on board horticultural considerations.	1-	Juli-Feb	1
	Removing branches: do not damage or tear the stem. Wounds: keep as small as possible and cut cleanly back to sound wood. Cutting: Make cuts above and sloping away from an outward facing healthy, angled so that water will not collect on cut area. Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide. Tools: Use clean sharp secateurs, handsaws or other approved tools. Disease of infection: Give notice if detected. Growth retardants, fungicide or pruning sealant: Do not use unless instructed.			
	If the leader of the crown is broke, re-train the tree to form a new one by tying a cane to a suitable branch to encourage it to grow upright.			
	Do not screw cables or apparatus of festoon lighting to the tree itself. Remove such items, which are expected to damage and weaken the trees or strangle parts of the crown and create a breaking point.			
	Damage to bark: Cut back neatly with a clean sharp knife. Prevent further damage.			
	Monitor any excessive urinating and fouling by dogs and consider appropriate deterrent measures.	1-	as required	1
	Watering, Fertilising			
	Watering – Regular checks using a moisture probe testing during the first two years after planting on a monthly cycle during the summer months of May-September	1 – 2	monthly	24
	Water as necessary to ensure healthy growth	3	as required	As required
	Apply granular solid organic slow-release fertiliser for trees, such as Thomas Elliots 5-3-8 Organic Fertiliser, apply according to manufacturer's recommendations.	2–	spring - autumn	Bi-annual
	Control all pests and diseases as necessary.	1 – 5	as required	To be determined

Ornamental shrub and herbaceous planting

(Proposed as *Symphony Gardens Planting S1, Ornamental Planting S2, SUDS Planting S3, Buffer Planting S4, Groundcover Planting S5*)

Aims

- To successfully integrate the development into the site, providing a high quality, sustainable, durable and safe external environment for workers and recreational users of the site
- To increase the sites environmental and ecological value and strengthen local vegetation character by using species of local provenance to provide year round interest and diversity, and support an increased range of species.
- Manage the areas in accordance with best practice to protect, sustain and improve the environmental quality.
- Ensure species chosen are resilient to climate change and plant diseases.
- Acknowledging the design principles of Secure by Design to ensure safety and visibility to all users.

Key Actions

- Execute the recommended operations as per the table on the following page.
- Monitor the management regime annually to identify public health and safety concerns for at least 30years and beyond.

	Task	Year	Season	Frequency
Ornamental Planting				
1	Maintain weed free area to the surface of all planting areas	1-	March-October	x8
2	Fertiliser application, preferably slow-releasee organic. Consider bone or fish meal based products are expected to smell and attract animals to some degree. Use sparingly and work into the soil.	1-	Spring	x1
3	Re-firm all shrubs as necessary	1-	Spring-Autumn	x8
4	Prune woody species as necessary to encourage healthy growth	1-	July-Feb	x2
5	Prune early flowering shrubs after flowering	1-	After flowering	1
6	Prune late flowering shrubs before new growth	1-	Early Spring	1
7	Prune evergreen shrubs	1-	Mid Spring	x1
8	Cut back perennials in the spring once the risk as frost has passed as foliage cover protects the growing crown during winter.	1-	Spring	x1
9	Control all pests and diseases as necessary	1	As required	As required
10	Remove all dead or damaged material	1-	March-October	x8
11	Water as necessary to ensure establishment and healthy growth. Ensure regular checks using a moisture probe testing during the first year after planting on a monthly cycle during the summer months of May-September.	1-2	Spring, Summer, Autumn	As required
12	Replace dead or damaged material to original specification. Remove dry dead plant matter that may catch fire if torched.	1-	Autumn	x1
13	Top up mulch planting to original specification at the start of each year after the cutting back of tender perennials.	1-5	Spring	x1
14	Divide large groups of perennials every 3 years	1	Spring	x1
15	Litter removal from planted areas	1-	Year Around	As required
Bulb Planting				
16	Allow foliage to die back naturally once flowering has ended. Do not remove foliage when green.	1-	Note	Note
17	Do not mow grassed areas containing bulbs until foliage has browned	1-	Note	Note
	Operations post year 5 (in addition to year 1-5 operations)			
18	In year 5 commence thinning regime of any shrub planting implemented in year 1. Extent of thinning to be determined at the time. Selectively coppice shrub species where required.	5	Autumn	3 years
19	Replace any dead/under performing shrubs. Where planting continually fails to establish, undertake investigations to ascertain any underlying cause	6+	Spring	Annually

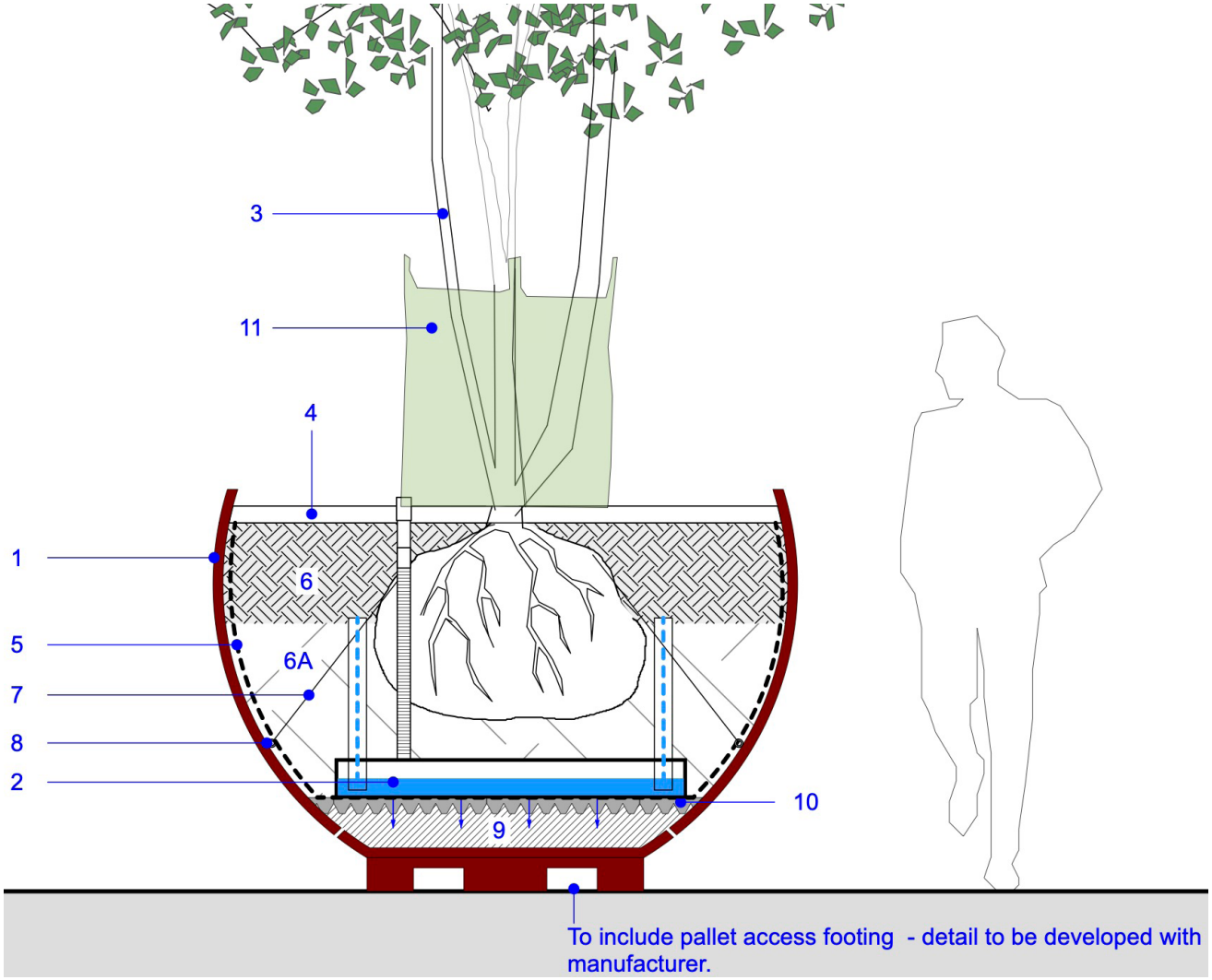
Climbing Plants

Aims

- To ensure that the climbing plants establish well and continue to thrive.
- To provide a good screening effect on the substation enclosure
- To prevent the plants from overgrowing the substation and associated area and elements within the enclosure

	Task	Year	Season	Frequency
1	Control weed and other growth to minimse root competition with the climbing plants	1-	March-October	x8
2	Water as necessary to ensure establishment and healthy growth.	1-2	Spring, Summer, Autumn	As required
3	Re-train both the Honeysuckle and the self-clinging Hydrangea and fix key branches to the training wires.			As required
4	Fertiliser application, preferably slow-releasee organic. Consider bone or fish meal based products are expected to smell and attract animals to some degree. Use sparingly and work into the soil.	1-	Spring	x1
5	Prune as required to prevent the climbing plants from over-growing the substation within the enclosure and near the access gate. Prune Hydrangea immediately after flowering in summer. Prune late-flowering Honeysuckle in spring. Prune early flowering Honeysuckle after flowering.	1-	See notes on the left	x1 and as required
6	Replace any dead/under performing plants. Where planting continually fails to establish, undertake investigations to ascertain any underlying cause	1-	Spring	Annually

Mobile Tree Planters



LEGEND D7

1. Tree Planter - Supplier: Europlanters Ltd, Product: EYAM4 Eyam Europlanters, Finish: GRP Corten Effect 2, Size: ø1300x800mm(H). To include drainage holes as shown on detail (bottom of planter side wall). To include internal provisions for root ball anchoring as shown. To include C/W Pallet access to base. To be fitted with irrigation/reservoir system as below.
2. Irrigation/reservoir system. Supplier: Streetlife, Product: Treetec Bottom Up water reservoir system. To be installed as per supplier/manufacturer recommendations.
3. Tree. Refer to planting schedule.
4. 50 mm Mulching: to cover the surface inside the planters. Material: ornamental crushed stone on a weed suppressing woven membrane.
5. Terram geotextile membrane. To sit over base aggregate (hydroleca) layer and wrap up sides of planter as shown on detail.
6. Soil to be backfilled around rootball to 60mm below top edge of planter.
Product: Approved topsoil to BS 3882:2015- specification for topsoil with tree compost. 20% of topsoil volume to be compost - compost to be incorporated into topsoil prior to planting
Ratio: 80% soil / 20% compost, addatives - fertiliser
Soil grade: Multi purpose
Supplier: Contractor to provide details
Depth: 300mm
6A. Product: Approved sub soil to BS 8601:2013 Specification for subsoil and requirements for use
Supplier: Contractor to provide details
7. Anchoring system fixed to steel eyelets. To include 7x7 strand 8mm stainless steel cable and webbing straps over rootball, tensioning hooks secured firmly.
8. Steel eyelets/fixing hooks mechanically secured to side wall of planter as shown on detail. Alternatively dead man anchor system to be used.
9. 150mm depth aggregate to base. Aggregate to be expanded clay (hydroleca). NOTE: drainage holes in planter to be within drainage layer.
10. Drainage board by Alumasc or other equal and approved. 40mm depth drainage board to sit above gravel drainage layer at base of tree pot.
11. Product: Treegator slow release watering bag or equal and approved
Installation of two bags tied around a multistem tree as per suppliers recomendation
Size: 500mm width x 760mm height
Supplier: Treegator

Extracts from drawing L014-PIE-99-ZZ.00-D-L-006007-Typical Tree Pit Detail 7

Mobile Tree Planters

Tree anchoring

The anchoring of the tree in the tree tub by means of a guy system ensures that the tree will sooner make the shift from growing anchoring roots to developing water-searching roots, which enable it to grow.

Geotextile

On the inside of the tree tub, around the walls and on the bottom, 10 mm-thick root barrier geotextile fabric is applied. Geotextile serves as thermal insulation and ensures an adequate supply of oxygen to the roots. It also filters excess water so that nutrients are better retained and the substrate is not washed away via drainage openings. Geotextile does not require replacement.

Watering

The following are general instructions for the Treetec® Bottom Up System irrigation system by Streetlife.nl.

Capillary columns

The capillary columns situated next to the root ball provide water and oxygen, which enable the tree to quickly adapt to its placement in a tree tub. During the first year, the tree will demonstrate minimal growth. In the second year, normal growth can be anticipated. The tree will continue to grow until the volume of the substrate can no longer support further growth. The capillary function decreases over the years, and the columns will begin to serve as air tubes. These columns do not require replacement either.

Reservoir

The water reservoir provides an extra water buffer, in addition to the moisture-retaining substrate. The reservoir is not the primary source of water. This means that in addition to filling up the reservoir, the substrate also has to be kept moist. The volume depends on the type and size of the tub. Where it concerns stand-alone TTBU systems, this is 180 or 280 litres. For integrated systems, it depends on the size of the tree tub.

Important:
Leave the Bottom Up reservoir empty outside of the growing season by removing the screw cap(s) in the bottom. At the start of the growing season, tighten the screw cap in the bottom of the water reservoir.

Tree water demand

Calculate the water demand (for example, 1,000 litres per m2 canopy drip line). This volume of water should be distributed evenly throughout the growing season. As hardly any rainwater ends up in the tub, it is not included in the calculation. Each time the tree is watered, check the water level in the reservoir using the filling chute as well as the moisture level 10 cm below ground level. If the water absorption is less than calculated, the watering should be adjusted accordingly.
Ensure that the tub is water-tight (use Teflon tape to prevent leaking, if required). Fill the water reservoir with the filling chute up to a maximum of 80% of the total volume.
The volume of water distributed should be precisely measured. Any surplus water will run out of the water reservoir and out of the tub. The soil will then become very saturated, which has a negative effect on the soil climate (no oxygen, washing away of nutrients).

The large volume of water can be pumped quickly into the reservoir using the filling chute. The remaining water should be slowly distributed only closely around the root ball. The primary moisture-retaining function is carried out by the substrate. Depending on the type of soil, more or less moisture can be retained. (For example, tree sand: ±130 litre/m3).

Tree nutrition check

We recommend regular analysis of the soil composition to assess whether fertilisation is required.

Additional care

There are no additional instructions for the care of the tree. The application of a watering collar is not immediately necessary because the capillary columns will supply the root ball with water.

Special circumstances

In warm and sunny weather, the tree tub can heat up due to radiation from the sun. The rootball temperature may become too high, especially if using (CorTen) steel tubs. In the event of a multi-day period of heat and sunshine, check the root ball temperature. If the temperature is too high (above 25° Celsius), provide extra water for cooling.

Amenity Grass Lawns

Ref. item SW6

Aims

- To maintain neat and attractive grass swards to prominent approach routes.
- To ensure that grassed areas establish well and continue to thrive.

Key Actions

- Undertake the appropriate maintenance operations needed to ensure a healthy and complete grass sward
- Manage broad leaved weeds in an appropriate manner
- Monitor and manage any damage that may result from dog fouling and inappropriate use.

	Task	Year	Season	Frequency
	Amenity Grass			
1	Water as necessary during the establishment period to ensure healthy growth. This may require weekly or even daily watering in particularly hot and dry spells	1-5	March - Novemebr	As needed to establish sward
2	Cutting - maintain grass between 25-30mm (not the reinforced grass wall) using suitable machinery and remove arisings	1-	March - November	As needed to maintain sward height
3	Edge all close mown areas	1-	Spring	1
4	Apply a spring fertiliser at a rate of 60g/m2 or as per manufacturers recommendations	1-	Spring	1
5	Apply a winter fertilizer at a rate of 60g/m2 or as per manufacturers recommendations	1-	Autumn	1
6	Undertake hand weeding operations to remove broad leaved weeds, only apply herbicide when absolutely necessary. Maintain the sward substantially free (95%) of broad leaved weeds	1-	March - November	At each maintenance visit, no less than monthly
7	Remove damaged turf to a depth of 40mm, cultivate substrate to a fine tilth, re-seed or turf and water as needed to ensure establishment. Quality and appearance of the grassed area is to match existing	1-	Spring (-Autumn)	As needed



4 STREET FURNITURE

4.1 Street Furniture Management

General Maintenance Operations

In addition to the recommendations below, also refer to the maintenance and operational instructions from the individual street furniture suppliers. Advice from the suppliers can be sought regarding the maintenance of their products using the contact details supplied.

Street Furniture is also to be maintained to ensure compliance with DFA2/4, DFA2/5, and DFA2/9.

Safety

Monitor as required, if the street furniture items are safe to use as intended. Fasten fixings and remove hazards such as splinters, burrs, trip and pinching hazards.

Timber to Benches / Seating

The timber should be treated with Osmo or Owatrol Rubbing Oil. Every 2 years the wood should be cleaned down using the a pre treatment solution which de-oxidises the wood before re-coating with the Oil. As long as this is done, the wood will keep its colour and will have a much greater lifespan than if left untreated. Osmo/Owatrol Oil are commercially available products and will be available through any good wholesaler or exterior furniture supplier.

Litter Bins

The powder-coated steel should be washed down with proprietary cleaner clean water. All hinges on bins to be checked and oiled regularly being careful not to leave oil satins on surrounding paving.

Bollards and Cycle Stands

The steel should be washed down with soap or mild detergent and warm water followed by a clear water rinse.

For folding bollards, ensure the post is kept clean and free of debris. Clean and lubricate the lock using a lubricant similar to WD40. Always ensure the cover plate is closed when the bollard is not in use. Clear any debris around the cover plate and hinge. Contact the supplier for further advice.

Powder-Coated Metal Elements

Powder coatings can be treated like most other paints and will benefit from regular washing. If the powder coating is chipped or the steel is exposed in anyway, it is recommended that this should be ‘touched up’ using external grade paint. Cleaning should take place every 6 months. A mild detergent applied by cloth, sponge or soft brush should be used. The aesthetic life will be prolonged by waxing or polishing with good quality car shampoos and waxes.

Notify Users

Notify/warn users or prevent usage, when items are unsafe or operations are underway such as wet paint coats or curing foundations.

Description	Year (s)	Season/Month	Frequency (per year)
Benches / Seating			
Graffiti removal	Ongoing	As required	As required
Cleaning of gaps between timber slats to keep free from litter and other detritus	Ongoing	Year round	x6
Cleaning of stone. Wash down with soap or mild detergent and warm water followed by a clear water rinse.	Ongoing	Year round	x6
Cleaning of steel legs and supporting structure. Wash down with soap or mild detergent and warm water followed by a clear water rinse.	Ongoing	Spring	x1
Litter Bins			
Cleaning of steelwork. Wash down with soap or mild detergent and warm water followed by a clear water rinse.	Ongoing	Year round	x4
Maintenance of hinges. Door hinges to be oiled regularly being careful not to leave oil satins on surrounding paving.	Ongoing	Year round	x4
Metal furniture - including bollards, signage and cycle stands			
Wash down with soap or mild detergent and warm water followed by a clear water rinse.	Ongoing	Year round	x4

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