

VNIF-PLA-ZZ-YYY-RP-L-0001

REFERENCE
2700

PROJECT

RED BANK NEIGHBOURHOOD VICTORIA NORTH

DOCUMENT

MANAGEMENT & MAINTENANCE REPORT

CLIENT

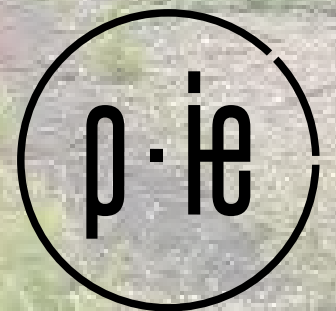
**MANCHESTER CITY COUNCIL &
BAM NUTTALL**

STATUS

PLANNING

DATE

02/03/22



DOCUMENT CONTROL

FILE NAME

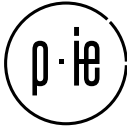
VNIF-PLA-ZZ-YYY-RP-L-0001

PREPARED BY (INITIALS)

SR

CHECKED BY (INITIALS)

GB



Contents

1 INTRODUCTION	4
1.1 Introduction	6
1.2 Proposals	8
2 HARD LANDSCAPE MANAGEMENT	10
2.1 Hard Landscape Management Overview	12
2.2 Specific Maintenance	14
3 SOFT LANDSCAPE MANAGEMENT	24
3.1 Soft Landscape Management Overview	26
3.2 Specific Maintenance	
Woodland	28
Woodland Matrix	32
Woodland Edge	36
Designed Landscape & Access Areas	38
Aquatic Marginal	42
Native Hedgerow	44
5 STREET FURNITURE MANAGEMENT	46
4.1 Management Overview	48
4.2 Specific Maintenance	



1.1 Introduction

SCOPE & PURPOSE

The masterplan for the proposed Red Bank Neighbourhood, Victoria North has evolved out of an in depth understanding of the site's history, context and existing features, and has developed through regular design workshops and consultations.

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.

Proposals looked to retain and enhance the existing high quality vegetation where possible. 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 and 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 an essential while monitoring and reviewing the effectiveness of interventions is also required.

It is important to make the aims and ambitions of the Management Plan clear and accessible, to encourage a sense of ownership and responsibility amongst all users from those who live and use the site to the surrounding communities and visitors from further afield.

Brief

The brief below describes the framework:

- The management plan will cover a time period of 5 years
- The Management Plan must give consideration to environmentally sensitive design and management
- The conservation of existing features will be a prime consideration
- The Management Plan will seek to provide a net increase in the nature conservation value of the site

Scope of the Plan

This document is supplementary to the Design and Access Statement, and is intended to fulfil the requirements of the consented Planning Application in providing;

- 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 work schedule (including an annual work plan).
- Details of body or organisation responsible for implementation of the plan.
- Ongoing monitoring and remedial measures.
- Details of legal and funding mechanism(s) by which the long term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery. The plan shall also set out how contingencies and/or remedial action will be identified, agree, and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme. The approved plan will be implemented with the approved details.

Purpose of the Plan

The purpose of the Landscape and Ecological Management Plan is to:

- Provide a detailed breakdown of the proposed management plan that relates to the redeveloped Red Bank Neighbourhood, Victoria North site.
- To give assurance that Management requirements are integral to the redevelopment and that they are sustainable.
- 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.

Roles & Responsibilities

It is vital for any Management Plan to move forward the key parties and their roles are defined at the earliest stage. In respect of the Red Bank Neighbourhood, Victoria North site, the maintenance mechanism is yet to be determined though it is recognised by Manchester City Council and Far East Consortium as development partners that a suitable maintenance structure must be put in place to ensure long term effective maintenance and thus delivery of the HIF vision.

Timescales

The adopted Landscape and Ecological Management Plan will initially cover a five-year period from the redevelopment works although it is intended that this can be implemented for the long term future management of the site. Works will be carried out in phases and therefore the maturity of the new vegetation will vary between the phases. The plan should be reviewed annually to ensure a high quality and ecology rich environment is maintained.

Review

The Management Plan and work maintenance prescriptions cover a 5 year period, although many of the management operations include for future long term monitoring and management. These will be used as the basis for developing 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.

At the outset of the plan Manchester City Council's public realm maintenance team will need to work alongside the initial landscape and maintenance sub-contractor to monitor and provide guidance on ongoing wider management and maintenance issues. This 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 masterplan for the Red Bank Neighbourhood, Victoria North has evolved out of an in depth understanding of the site's history, context and existing features, and has developed through regular design workshops and consultations.

The public realm improvements for Red Bank Neighbourhood, Victoria North have been carefully considered to achieve successful integration into the fabric of the neighbourhood and improve wider legibility.

There is the intention to create a sense of place and local distinctiveness in an area where these characteristics have been absent for many years.

There are a significant number of new proposed trees which help create character. The trees in and around St. Catherine's Wood are largely native species chosen for their biodiversity value and to strengthen the natural character of the woodland. A mix of native and non-native ornamental species have been chosen around the public realm areas of Red Bank Terraces for their seasonal interest.



MANAGEMENT OBJECTIVES & 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 continuing health of existing vegetation
- To ensure the successful integration of existing and proposed vegetation
- To ensure that the management and maintenance regime is appropriate to the site
- To provide a mechanism for the ongoing monitoring and reviewing of the management plan and the specific maintenance operations contained therein.
- To increase the diversity of habitats across the site, achieving biodiversity net gain
- To create a balanced environment whereby human activity is monitored against impact on the ecology

Principles:

Hardworks

- To put in place procedures for regular inspections of all paved areas.
- To outline specification and requirements for work by Public Utilities and general surface reinstatement
- To outline specification and sources of materials for repair/reinstatement (NBS Spec Public Realm)
- To establish winter maintenance procedures
- To put in place procedures for street cleaning
- To outline procedures for the maintenance of Street Furniture

Existing Woodland

- To maximise the health and longevity of all existing vegetation and restore a varied woodland structure.
- To retain and support the existing habitat value and create addition opportunities for them to thrive.
- To manage woodland in accordance with best practice to protect, sustain and improve the environmental quality.
- To contribute to the health and well being of the residents and visitors through low level recreational opportunities.

- To ensure woodlands are resilient to climate change and plant diseases.
- Introduce a programme of re-planting to replace any tree that fails over the next 5 years.
- To ensure the safety of the all retained vegetation and the implementation of any required arboricultural works found necessary.

Proposed Woodland, Woodland Edge & Hedgerows

- To ensure satisfactory establishment and continuing health of proposed vegetation
- To maintain trees and hedgerows in a healthy and attractive condition and develop the site tree structure.
- To contribute to site wide species diversity and create wildlife corridors and connections to the wider landscape
- 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

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 planting within public areas is maintained below a maximum height of 1m to meet the guidance set within Secure by Design with the exception of wall mounted climbers.

Aquatic Vegetation

- Enhancement of the water body to create a high quality ecological habitat and visually attractive pond with aquatic vegetation.
- To ensure the long term management of the water body.
- To ensure satisfactory establishment and continuing health of bankside and aquatic vegetation
- To contribute to site wide species diversity and create a varied waters edge habitat
- To ensure the safety of areas that are accessible to the public.



2.1 Hard Landscape Management

GENERAL MAINTENANCE OPERATIONS

Surfaces need to be maintained such that they provide a safe passage for all pedestrians and highway users. 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 greatly depend 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 Main Contractor that delivered the works.

The maintenance and defects liability period will generally be 12 months. The Main Contractor should visit the site at regular intervals during the maintenance period, to inspect all paved areas, 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

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 quantities 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 $\geq 10\text{mm}$. 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.

- 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 next page summarises some common defects, resulting problems and treatments.

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	x3

HARD LANDSCAPE MAINTENANCE

Paving surfaces need to be maintained such that they provide a safe passage for all footpaths and highway users. 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.

The regularity of the surface should be monitored as per the schedule 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)
- Precast concrete flags or natural stone slabs: 3 mm.
- 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 flags

- 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 30° 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 manufacturers 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 & 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 & 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.

Gritting and De-Icing

During winter conditions, despite their effective ability to dissolve and loosen ice or snow from cold surfaces, salts and de-icing agents can have detrimental effects to the appearance of sandstone paving. Spalling, scaling or pitting is a common problem that often occurs after the application of de-icing salts over sandstone surfaces. The only product recommended for de-icing purposes is the use of regular sand as it is safe and effective and will not affect the integrity of the paving stone.

PROPOSED HARDWORKS PLAN

KEY

SITE BOUNDARY

PROPOSED HARDWORKS

S1

CLAY PAVING
Location: to pedestrian public areas
Material: natural clay paving
Colour: two colour mixes in warm buff tones TBC
Size: 200 (l) x 65 (w) x 85 (d)mm
Finish: sanded/waterstruck TBC
Laid: stretcher/herringbone bond TBC

S2

TEMPORARY ASPHALT SURFACE (PERMEABLE)
Location: to vehicular carriageway on Red Bank Plateau
Material: permeable tarmacadam. Preference for recycled plastic content
Spec: vehicular build up. TBC

S2.1

TEMPORARY ASPHALT SURFACE (PERMEABLE)
Location: to pedestrian routes sitewide
Material: permeable tarmacadam. Preference for recycled plastic content
Spec: pedestrian build up. TBC

S3

NATURAL STONE SETTS
Location: to St Catherine's Wood entrance area
Material: natural granite setts
Colour: warm buff tones TBC
Size: 100 (l) x 100 (w) x 80 (d)mm
Finish: cropped sides, sawn top TBC
Laid: stretcher bond

S4

RESIN BONDED GRAVEL
Location: to St Catherine's Wood and viaduct paths
Material: resin bonded natural gravel stones
Colour: warm buff tones TBC
Spec: TBC

S5

GREEN GAP BLOCK PAVING
Location: to Union Bridge Waterfront
Material: opportunity to use reclaimed cobbles (to be developed more in stage 4)
Colour: TBC
Size: TBC
Finish: TBC
Laid: stretcher with gaps for planting/grass TBC

S6

STEEL DECKING
Location: Red Bank Terraces and St Catherine's Wood
Material: steel frame with galvanised steel mesh infill. To meet required slip resistance standards
Finish: TBC

S6.1

STEEL DECKING STEPS
Location: Red Bank Terraces and St Catherine's Wood
Material: steel frame with galvanised steel mesh infill. To meet required slip resistance standards
Finish: TBC

S6.2

TACTILE HAZARD WARNING STRIPS
Location: Red Bank Terraces and St Catherine's Wood wherever there are steel steps
Material: steel strips welded to metal decking or roof fixed into groundplane
Spec: TBC

S7

COMPOSITE TIMBER DECKING
Location: to elevated walkway/cycle route in St. Catherine's Wood
Material: composite decking (opportunity to use recycled content) TBC
Colour: buff/natural tones TBC
Size: TBC
Finish: to meet required slip resistance TBC
Laid: stretcher bond TBC

S8

PRE-CAST CONCRETE STEPS
Location: to Union Bridge Waterfront and Red Bank Terraces
Material: pre cast concrete
Colour: buff/natural tone
Finish: acid etched with contrasting nosings

S8.1

PRE-CAST CONCRETE SEATING STEPS
Location: to Union Bridge Waterfront and lower Red Bank Terraces
Material: pre cast concrete
Colour: buff/natural tone
Finish: acid etched with contrasting nosings

PAGE 16

2.2 Specific Management

CLAY PAVING - REF S1



Supplier: Wienerberger or equal & approved

Description:

Clay pavers

Colour Range Considered:

Warm/buff tones

Location:

To pedestrian footways throughout the masterplan

Initial Maintenance

During the initial life of a flexible clay pavement, the joints between paviors will be relatively porous. The ingress of water may consolidate the joining sand and it is important that the joints are refilled at the earliest opportunity. The joints will soon become relatively impervious due to a build up of detritus. Until this has occurred, the paving should be cleaned, preferably by brushing with hand-held brooms or by low suction mechanical sweepers. Mechanical sweepers with high suction forces should not be used until flexible pavements are established. Even then there is a risk of loss of jointing sand from between the paviors.

Materials are available for sealing the surface of clay pavements. These are not necessary to protect the clay paving, but may provide some benefit in stabilising the sand in the joints in the short and longer term.

Should paviors become loose or start to rock, the reason for this should be ascertained and then appropriate measures taken to avoid any ongoing problems. Paviors should be laid in accordance with the recommendations in BS 7533: Part 3:1997.

Where new services are to be installed or access is required to existing services under the paved area, the paviors should be lifted carefully, cleaned and stockpiled for later use. Devices for removing individual paviors are available. Once the initial paviors have been removed, it should be relatively straightforward to uplift an area of paving. When work on underground services is complete, trenches should be backfilled using layers of suitable material detailed in BS EN 13285: 2003 or the Specification for Highway Works. These materials should be laid in thicknesses of 100-125mm and compacted with suitable equipment. Non-settling

items such as foamed concrete can also be used. The paving should then be relayed on a sand bedding course in accordance with the recommendations of BS 7533: Part 3: 1997. During relaying a slight surcharge should be created in the sand bedding course to allow for settlement of the paving following initial compaction and early trafficking. Typically, reinstated areas of paving should have a surcharge of 2-3mm over the surrounding paved area. As the majority of clay paviors are rectangular in shape, there should be no difficulty in obtaining replacement paviors. Ideally, these should be obtained from the original supplier. Any replacement paviors should be mixed with the existing paviors to ensure an adequate colour blend between the old and new products. The new areas should be carefully maintained until detritus has sealed the joints.

Winter Maintenance

Clay paved areas may be treated with de-icing materials. Normal de-icing salts can be applied without any risk of damage to the pavement. Once the pavement has dried out after a thaw, however, the paving may be temporarily discoloured by the de-icing salts, as is the case for any other surfacing material. Normal weathering should soon remove such discolouration. If there is a concern about the temporary discolouration of paved areas, then other de-icing materials, such as urea, should be used.

Cleaning

Wienerberger clay pavers are resistant to chemicals and harsh cleaning fluids, so are best cleaned using biodegradable detergents. However, Wienerberger doesn't recommend that new paving is cleaned within

the first three months.

A pressure washer can be used to clean clay paving, however Wienerberger would not recommend this on a regular basis. The high pressure can disrupt the paving bed surface and jointing material, which can cause pavers to crack or come loose. Mechanical or high-water pressure cleansing operations will require re-sanding of the joints.

Wienerberger does not recommend that sealants are used on clay paving products, as any dirt or spills can be easily cleaned up. Oil will not penetrate the body of clay pavers, it will sit on the surface until it is washed away.

TEMPORARY ASPHALT SURFACE (PERMEABLE) - REF S2



Supplier: Breedon or equal & approved

Description:

BreedonPorous is a permeable system with a modified bitumen surface course

Colour Range Considered:

Grey tones

Location:

To vehicular & pedestrian routes on Red Bank Plateau

BREEDONPorous requires infrequent maintenance and the following procedures should be followed:

- If used for vehicle parking, the vehicles shall 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.
- Weeds and grass should not be pulled up to avoid disruption to the surface.
- To prevent clogging and damage, power washing should be avoided, unless absolutely necessary.
- When applicable, the surface should be allowed to dewater.
- If used, snow ploughs should exercise caution to prevent surface damage.
- Ploughed snow accumulations shall not be allowed to melt on the pavement as they often

contain high sediment contents which can block the voids.

- Prevent use by heavy vehicles (e.g. refuse collection vehicles).
- Prohibit use of sand, salt or other deicers which may clog the surface. Sealing or overlaying with non- porous materials should never be undertaken.

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.

NATURAL STONE SETTS - REF S3



Supplier: Hardscape or equal & approved

Description:

Natural stone (granite) setts

Colour Range Considered:

Grey/buff

Location:

To entrance space to St. Catherine's Wood

Initial Maintenance

Materials are available for sealing the surface of the paving. These can be either impregnators or sealants to help with stain removal or to provide some benefit in stabilising the sand in the joints in the short and longer term. Surface sealant must be applied in strict accordance with the manufacturers instructions. Sealants may affect the colour of the pavement and its slip/skid resistance and may require ongoing maintenance during the life of the paving. It is important that the surface of the paving is dry and clean before any sealant is applied. Should any paving become loose or start to rock, the reason for the damage should be ascertained and then appropriate measures taken to avoid any ongoing problems. Where new services are to be installed or access is required to existing services under the paved area, the paving should be lifted carefully, cleaned and stockpiled for later use.

During relaying of paving, a slight surcharge should be created in the sand bedding course to allow for settlement of the paving following initial compaction and early trafficking. This should typically be 2-3mm over the surrounding paved area. Replacement paving should ideally be obtained from the original supplier. Any replacement paving should be mixed with the existing paving to ensure an adequate colour blend.

Winter Maintenance

Granite paved areas may be treated with de-icing materials. Normal de-icing salts can be applied without any risk of damage to the pavement. Once the pavement has dried out after any thaw, however, the paving may be temporarily discoloured by the de-icing

salts. Normal weathering should soon remove such discolouration. If there is concern about the temporary discolouration of paved areas, then other de-icing materials, such as urea should be used.

Cleaning

The removal of deep seated stains can be removed using Grimelifter Ultra applied neat to the area and left for 20 minutes and then washed off using a pressure washer or a mop system continually using clean water. Chewing gum removal should be carried out using low pressure steam using either a hot water pressure washer or steam generator for the best results. Hardscape advises that a good housekeeping policy is in place that ensures regular / weekly cleaning rather than a singular annual clean.

From New

Hardscape advise that newly laid granite is deep cleaned using low pressure steam and impregnated using Pavesaver or Pavesaver Ultra. This will protect the surface from contamination and prevent staining, where areas are susceptible to heavy staining such as outside eateries it is advised that 2 applications of Pavesaver Ultra is specified. The process of reapplication should always be carried out within a 5 years.

Granite that is protected with Pavesaver can be maintained on a daily or weekly basis using Grimelifter, this can be applied through nebular spray bottles, scrubber driers and street washing machines using soft bristle brushes, preferably cylindrical brush head as this will maintain a good surface finish.

Health & Safety

Some of the cleaning methods described above involve the use of chemicals, which may be damaging or dangerous. It is important that safety warnings issued by the manufacturers of the chemicals should be read carefully and strictly adhered to. In general, the following precautions should be taken:

- When using chemicals, protective clothing such as gloves, goggles, boots and overalls should be worn.
- Ensure there is adequate ventilation in confined spaces.
- When using flammable materials, ban the use of cigarettes, naked flames and other sources of ignition in the immediate vicinity.
- When diluting acids, always add acid to water and not water to acid.
- Dispose of safely any clothing which is contaminated with chemicals.
- Ensure care is taken not to damage, contaminate or stain any adjoining material.
- Protect personnel operating near the area to be cleaned from any injury or hazard created by the cleaning.
- Whenever possible care should be taken to ensure that the disposal of 'run-off' materials containing chemicals does not harm personnel, animals or any part of the environment.
- Trials should be carried out on a small, preferably inconspicuous, area of paving to determine the effect of the chemicals before treating a larger area.

RESIN BONDED GRAVEL - REF S4



Supplier: Addagrip or equal and approved

Description:

Addastone Resin Bonded Surfacing System using 2-5mm natural aggregate.

Colour Range Considered:

Buff/Natural

Location:

To pedestrian paths in St. Catherine's Wood

General Cleaning

Oil, dirt or other common stains should be removed by applying a household detergent or similar degreaser. Apply neat to the contaminated surface using a stiff brush and allow to penetrate for 10-15 minutes, all areas should then be pressure washed or hosed down with clean water as required.

Under normal external usage ADDASTONE PLUS surfaces require little maintenance or cleaning. In areas where high direct contamination is likely a regular blast by a suitable pressure hose is advisable.

Mechanical sweepers using metal bristles must not be used at any time.

Vegetation

Any moss or weed growth that occurs should be treated using an appropriate herbicide. Any ingrained algal growth can be removed and the colour of the original ADDASTONE PLUS surface restored by applying a strong bleach solution. The bleach solution however should be applied in accordance with manufacturers guidelines and local environmental constraints. After application with the bleach the surface must be rinsed well with clean water.

Please note that staining may occur from tanning if surfaces are not kept clean from leaf debris, conkers etc.

Chewing Gum

Chewing Gum should be removed by using a specialist Gum Removal company. Hydro Power Systems Limited offer this service and they can be contacted via www.hydro-power-systems.com.

NOTE: ADDASTONE PLUS Resin Bonded Surfaces are resistant to acid and alkali, however some staining of the aggregates may occur.

Damage Repair

Damaged surfaces should be repaired as soon as possible. Please contact the contractor who installed the surface.

Reinstatement

Where a trench has been taken out or deep intrusion made, a saw cut should be made around the surrounding area to achieve a neat and straight edge. The asphalt reinstatement must be well compacted and allowed to settle for a minimum of 28 days. The chosen ADDASTONE PLUS resin should then be carefully butted up to the existing ADDASTONE PLUS Surface and then blinded out with the chosen aggregate. When the resin is cured the excess aggregate should be swept off.

Snow and Ice Clearance

Snow may be cleared using a rubber bladed Squeegee, Scraper or shovelled using a Nylon Bladed Shovel. Salt or grit may also be used as required.

GREEN-GAP CONCRETE BLOCK PAVING - REF S5



Supplier: Hardscape or equal & approved

Description:

Concrete block pavers with spacing nibs to create growable surface. The Hydro Lineo 22 has a growable surface of 22%; for the Hydro Lineo 40 it is 40%.

Colour Range Considered:

Natural/Grey

Location:

To Union Bridge waterfront

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 concrete block 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 is correct.

Surface protection

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

STEEL DECKING - REF S6



Weland hot-galvanized gratings are operational and maintenance free as regards surface treatment.

After approximately six months' use, it will be advisable to check and if necessary retighten bolted joints.

Winter Maintenance

In the autumn and in the winter, it will be advisable that the grating surfaces on steps and landings are cleaned for leaves and snow so that the surface will not be unnecessarily smooth or slippery. In periods with glazed frost and frozen water on the surface, extra attention will be necessary.

Furthermore, you will always be welcome to contact us in case you may have any questions about the maintenance of the gratings.

Supplier: Weland or equal & approved

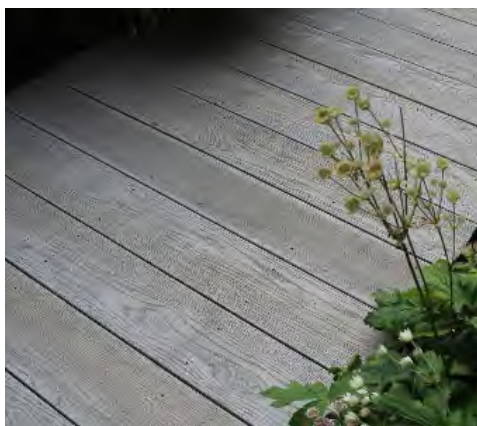
Description:

Steel Pedestrian Grating Walkways

Location:

To steps & bridges to Red Bank Terraces and in St. Catherine's Wood

COMPOSITE TIMBER DECKING - REF S7



Supplier: EcoDeck or equal & approved

Description:

Wood effect decking made from wood polymer composite

Colour Range Considered:

Natural grey/brown

Location:

To elevated walkway in St. Catherine's Wood

To keep your ecodek® in tip top condition we advise you use our recommended (WPC) Wood Polymer Deck cleaner at least twice a year (More in heavy use areas or areas subjected to high levels of contamination).

Important Points:

- Ensure ventilation underneath boards and required spacing between boards is maintained.
- Keep debris out of gaps between boards.
- Avoid any contact between boards and construction materials such as plaster, masonry, gravel, cement, and organic materials during construction and after.
- Recommended mould cleaners may be used as directed.
- DO NOT USE JET WASHERS

Cleaning:

- Remove all furniture and other items from decked area.
- Sweep the decking removing all leaves and other debris.
- Clean all debris from gaps between boards to allow for proper drainage. Make up the cleaning solution as directed on the bottle and apply to the surface of the deck using a soft mop (or very soft nylon bristle brush) and gently work into the surface. Allow the solution to sit for 15 – 20 minutes. Go over the surface again with any remaining solution and immediately rinse off the solution using a garden hosepipe ensuring all the solution is removed. Do not be tempted to use jet wash. Using our recommended WPC cleaner

and a common garden hose is more than enough to clean and restore your ecodek® and you may risk damaging the deck surface due to the high pressure some jet wash machines can produce.

- Let the decking dry fully before putting any furniture and other accessories back.

If you discover any difficult to remove stains, please contact our Technical Department for advice on how best to remove it. Please do not use a jet wash or harsh chemicals as they may cause damage to the surface.

If you see dark spots on the surface of the deck, it may be the start of a mould/fungal infection. It is very important you apply an anti-fungal solution to the surface immediately to prevent any infection spreading.

Anti-fungal deck/ patio washes are readily available from any DIY store; however we do recommend Simply Gone and Wet and Forget. For best results please follow the manufacturer's instructions.

While applying, please keep young children and pets away from the area that is being treated. Once the solution has dried the area will be safe to use as normal including after rainfall or washing of the surface.

Simply Gone or any other anti-fungal washes are harmful to aquatic life and must not be allowed to enter ponds and any other water system. Be kind to the environment and store any remaining solution until needed.

Winter Maintenance

If the winter weather has left your decking slippery or ice covered use sodium chloride (table salt) to remove the snow/ice.

BARK CHIPPINGS



- To have annual inspection of Walkway Chippings to paths and topped up as required. Expected twice yearly, with areas of higher wear being topped up more frequently
- After initial laying, allow a couple of weeks for the material to settle, after which we expect approximately 10% of the material will fall within itself.
- Litter picking by hand will be required on the footways and play areas. To be undertaken all year around, as required as part of general maintenance routine.

Supplier: AHS-Ltd. or equal & approved

Description:

100% British Timber Walkway Chippings to Paths

Play Area Wood Fibre to Play Areas

Colour Range Considered:

Natural

Location:

To informal footpaths & play areas in St. Catherine's Wood



3.1 Soft Landscape Management

MANAGEMENT AREAS

The site can be divided into six soft landscape components that each have their own objectives in terms of ecology and land use.

The following sections outline the Key aims and Objectives for the management and maintenance of each the landscape components within the site followed by the maintenance prescriptions proposed during an initial 5 year period, with the intention for this to be rolled out for long term future management of the site.

This document encompasses all aspects of management into a single, practical document that has been prepared as a working tool to guide and monitor the future development of the site.

The following guidance is based a 5 year programme although this document should be reviewed annually to ensure the aims of each component are being met and are still appropriate. To obtain the desired landscape objective some of the maintenance actions extend to 10 years.



A Health and Safety plan is an important consideration for any area of public realm. The landscape maintenance team will be expected to produce a risk assessment and method statement for the maintenance of the planting areas.

Highways

Maintenance works associated with works adjacent to highways will need to be considered as part of the general management and maintenance procedures

Chemicals

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

Maintenance Operations

Set out in the tables overleaf are the maintenance operations that should be carried out over the next 5 years 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 and 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.

Tree Work Generally

- All tree work be carried out by an approved member of the Arboricultural Association.
- Any trees found to have bat roosting potential should be retained where possible. Incidental damage to a breeding site or resting site of any European bat species an offence under the

Habitats Regulations (revised 2017).

- 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;
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'
- Removing branches: Cut as shown in Arboricultural Association Leaflet No 8 'Mature tree maintenance'. Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Chain saw work: Operatives must hold a Certificate of Competence
- Defective, diseased, unsafe or weak parts of trees additional to those scheduled for attention: Give notice if detected.
- Prevention Of Wound Bleeding. Standard: To BS 3998, clause 8.
- Prevention Of Disease Transmission. Standard: To BS 3998, clause 9 and Appendix B.

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.

Projected Maintenance

The tree species have been carefully chosen for their suitability to the location. Formative pruning has already been carried out on the nursery and this will produce suitable growth and canopy shape for the space provided.

In the event of any structural damage to the trees by unknown circumstances such as an extreme weather event the following guidelines should be observed:

Where possible, pruning should be carried out in the dormant season to avoid excessive sap loss. The onset of sap pressure varies with species so the correct time to undertake pruning should be investigated for individual species before work is undertaken.

Irrigation

Irrigation of the trees and shrub areas particularly during the first 3 years will be fundamental to their long term successful establishment.

Nutrition

The tree pits have been backfilled with a suitable growing medium containing nutrition sufficient for the initial period of establishment.

After three years it would be advisable to apply an application of fertiliser in the Spring as a top dressing. A broad spectrum fertiliser such as HortiTop Complete (available from Hortifeeds) would be suitable. A routine soil test carried out every 2 years would establish the need for any supplementary fertiliser.

Trees with hard standing should have a liquid fertiliser applied annually during spring.

3.2 Specific Maintenance

AREA 1 - EXISTING WOODLAND

Current:

- The majority of the existing woodland is of planted origin, however it is a locally extensive habitat and provides habitat value in the local context.
- There is a dominance of non-native species, particularly Sycamore, some of which are structurally poor. There is also an abundance of colonising species such as Birch and Willow.
- There is a lack of woodland ground flora species - few common species are dominating such as nettle.
- Invasive species are wide spread throughout the woodland, particularly Japanese Knotweed and Indian Balsam which are locally dominant along the rivers edge.
- The existing woodland generally feels unwelcoming due to lack of management, as the site has become overgrown and access routes have become disconnected. Resultantly, there are areas of vandalism and fly-tipping.

Aims:

- Retain and **support the existing habitat value** of St. Catherine's wood and create addition opportunities for them to thrive.
- Restore a **varied woodland structure** through management methods and introduction of new native species.
- **Strengthen local vegetation character** by using

species of local provenance to provides year round interest and diversity, and support an increased range of species.

- Create a **low maintenance woodland** that feels safe and welcoming to it's visitors.
- Use vegetation **structure to influence the trail experience** and character of spaces within the woodland. This includes elements such as maintaining sightlines, or creating a sense of enclosure or exploration.
- Manage woodland in accordance with **best practice** to protect, sustain and improve the environmental quality.
- Ensure woodlands are **resilient** to climate change and plant diseases.

Key Actions:

- Selective retention of existing broadleaf species (considering biological, cultural or aesthetic value).
- Selective thinning of existing trees, removing the poor, weak, diseased or overcrowded trees to allow more space for the remaining trees to develop and to allow light to penetrate to ground level to establish understory layers. Thinning will be undertaken in accordance with best practice and the Arboricultural Method statement and will remove non-native species.
- Selective rotational coppicing of suitable species such as Common Hazel to create a broad, open habit with a light canopy and encourage the development of understory, field and ground

layers.

- Introduce additional native tree species where appropriate throughout the woodland to increase species diversity, including species bearing berries and nectar.
- Control invasive/ornamental species which currently compromise the biodiversity value of the woodland.
- Allow the woodland field and ground flora to naturally regenerate by allowing light to penetrate through. Review in 5 years time and use plug planting if required to establish a species rich layer.
- Create a complex vegetation structure in the proposed understory/shrub layer with a variety of species and heights to provide food sources & nesting habitats for birds.
- Retain standing deadwood where safe to do so as this can provide food for various animal, fungus, lichen and moss, in addition to homes for bats, woodpeckers and many invertebrates. Subject to review to identify public health and safety concerns.
- Opportunities for habitat creation will be created and maintained such as bat and bird boxes. On ground habitat creation such as log piles and fallen leaf litter will provide areas for hibernation & cover for invertebrates & mammals.
- Monitor the woodland management regime every 5 years with an annual review to identify public health and safety concerns.

Target Species:

- Locally scarce **Yellow Bird's-nest** to be protected and retained
- **Badger** - suitable habitat for sett excavation, commuting and foraging. Management methods must maintain a range of vegetation structure for sett building and a variety of feeding opportunities for foraging.
- **Hedgehog** - creation of sheltered areas for hibernation, such as fallen leaves or habitat piles may encourage the hedgehog to use the site, in addition to supporting a diversity of invertebrates as feeding opportunities.
- **Leisler, Noctule & Common Pipastrelle bats** - these species of bats are already present in the local area, and utilise trees for roosting. Managing the long term health of trees which offer roosting potential is essential, and must be allowed to reach maturity where possible.
- Management of **existing habitats of nesting & breeding birds**, including Blackbird, Blackcap, Blue Tit, Bullfinch, Chaffinch, Goldcrest, Long-tailed Tit, Robin, Song Thrush, Treecreeper and Wren.
- **Willow tit** - will occupy habitat which is generally damp and can support thickets of dense scrub. Managing a low woodland canopy with a dense understory, standing deadwood and young trees is ideal for the Willow tit. They nest in trunks of small diameter, so young woodlands or areas of coppice woodland can also provide structure suitable for nest sites.



	Task	Year	Season	Frequency
Existing Trees & Vegetation				
1	Review existing mature trees to be retained. Remove dead or dangerous limbs as and when necessary. An annual tree safety check of trees situated close to footpaths and other publicly accessible areas is required for H&S reasons. Over mature and dying trees also often possess suitable features for bat roosts. Such trees can pose a public health and safety risk and remedial action in the form of pruning may be necessary to prolong the life of trees and to maintain them in a safe condition. In some circumstances felling might be the only option.	On-going from Year 1	Timing dependent on level of risk - avoid spring and summer if possible	Review annually & following high winds. Limbs removed as and when required.
2	Review of standing deadwood - fell or prune specimens which pose a danger to public health and safety. Pruning of deadwood is required for H&S reasons. 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).	On-going from Year 1	Timing dependent on level of risk - avoid spring and summer if possible	Review annually & following high winds. Limbs removed as and when required.
3	Ensure clear & safe routes are maintained. Clearance of overhanging shrubs. Strimming of vegetation to path edge. Removal of dead or dangerous limbs	On-going from Year 1	July-September	As required/ Each maintenance visit
4	Selective thinning of unwanted, non-native trees and vegetation to increase crown growth on retained species and encourage understorey regeneration. Retain at least 75% canopy cover (to limit thicket regenerations), favouring native species. Establish gaps in the canopy of between 10m x 10m. Where possible, a proportion of thinned/clear-felled material should be used on-site to provide habitat continuity for deadwood species.	1	October-February	On a 15 year cycle
5	Rotational coppicing of selected species such as Hazel, Hornbeam and Willow. Coupes to be coppiced in rotation with one coupe being coppiced every other year. This method should not remove more than 25% of the habitat in a year to reduce disturbance.	1	November to February,	Each coupe on a 10 year cycle.
6	Review natural regeneration of ground flora to understand whether additional plug planting is required.	5	May-September	1
	Continued removal of invasive species as per Schedule to be agreed with specialist	1-5	September-February	1

New Native Tree Planting

Review species that have appeared through natural colonisation. Thinning should be undertaken to promote diversity of the ground cover layer and remove dominant species.	1-5	October-February	1
Pruning of woodland shrub species to promote healthy growth. Leave any cut material in place to create cover.	1-5	October-February	1
Review of newly planted tree species and tagging of trees that have failed to survive or are failing.	1-5	August-September	As required
Replace any dead or dying trees that failed to establish with equivalent or equal and approved species.	1-5	November-March	As required
Check stakes and ties on newly planted trees for looseness, breaks or decay and adjust, re-fix or replace defective items.	1-5	As required	Each maintenance visit
Remove all stakes and ties.	5	Autumn	As required
Trees are to be maintained upright and adjustments made during strong winds. Ensure trees remain firmly bedded after disturbance and re-firm if necessary.	1-5	As required	Each maintenance visit
New trees to be inspected by a suitably experienced arborist. Monitoring to inform action required to aid establishment, including watering and application of mulch and/or fertilisers.	1-5	May-September	1
Water as necessary to ensure establishment and continuing health. 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.	1-3	As required	As required

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 trees found to have bat roosting potential should be retained where possible. Incidental damage to a breeding site or resting site of any European bat species an offence under the Habitats Regulations (revised 2017).

All tree work undertaken in accordance with best practice and the Tree Protection Method Statement (Appendix C)

It is an offence to damage or obstruct a badger sett which shows signs of current use under the Protection of Badgers Act 1992. Forest operations such as tree felling and timber extraction are sources of damage and disturbance. See Forestry Commission publication 'Forest Operations and Badger Setts'. 1995. Practice Guide 009. This concentrates on methods of safeguarding setts and managing woodland for the benefit of badgers.

The bird nesting season from February to August inclusive. Forest management should avoid unnecessary disturbance during this period

Safeguarding of reptiles

Wildflower and reptile areas not to be cut below 150mm.

Prior to mowing wildflower grassland, walking through area to disturb any creatures and encourage them temporarily to move elsewhere. Refrain from flattening grass as this makes it difficult to cut.

Working slowly with machinery allows time for animals to escape.

Work in a way that offers an escape route i.e. from middle outwards.

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>

AREA 2 - WOODLAND MATRIX

Current:

- There is currently a steep level change across this part of the site, and the area is largely dominated by dense bracken cover. There are few other woodland ground flora species present.
- To the top of the bank, there are areas of self seeded pioneer woodland, predominately birch species.
- There are few riverside specimen trees of note, mainly large Willow, and few other non-native species such as Sycamore.
- Invasive species such as Japanese Knotweed and Indian Balsam that were locally dominant along the rivers edge are currently being treated by agreed eradication method.
- This area generally feels unwelcoming in places - access is restricted due to overgrown vegetation and fallen trees. This creates a large disconnect across the site. It is currently unmanaged and there are large areas of vandalism and fly-tipping.
- A new footpath will be established to the bottom of the embankment, along the rivers edge. The embankment itself will not be accessible to pedestrians.

Aims:

- Restore a **varied woodland structure** and introduce new native species to the embankment
- Strengthen **local vegetation character** by using species of local provenance to provide year round interest and diversity, and support an increased range of species.
- Create a denser **areas of cover for wildlife** to thrive, as the embankment itself is not accessible to pedestrians, whilst still maintaining sightlines.
- **Improve stability** of existing slope by regrading and planting trees.
- Ensure the area remains free of **non-native and invasive species** as part of long term maintenance strategy
- Retain and **support the existing habitat value** in terms of existing trees of note, and create additional opportunities for them to thrive.
- Manage woodland in accordance with **best practice** to protect, sustain and improve the environmental quality.
- Ensure woodlands are **resilient** to climate change and plant diseases.

Key Actions:

- Combine primary planting with natural colonisation to enrich species composition and speed up the development of woodland structure. The period of prolonged shrub cover through natural colonisation, combined with areas of planted tree development, will create a range of habitats and food sources for birds and invertebrates.
- Control invasive/dominant species such as bracken which currently compromise the biodiversity value of the woodland.
- Selective rotational coppicing of suitable species such as Common Hazel to encourage the development of understory, field and ground layers.
- Introduce additional native tree species where appropriate throughout the woodland to increase species diversity, including species bearing berries and nectar.
- Allow the woodland field and ground flora to naturally regenerate by allowing light to penetrate through. Review in 5 years time and use plug planting if required to establish a species rich layer.
- Retain standing deadwood where safe to do so as this can provide food for various animal, fungus, lichen and moss, in addition to homes for bats, woodpeckers and many invertebrates. Subject to review to identify public health and safety concerns.

- Opportunities for habitat creation will be created and maintained such as bat and bird boxes. On ground habitat creation such as log piles and fallen leaf litter will provide areas for hibernation & cover for invertebrates & mammals.
- Monitor the woodland management regime every 5 years with an annual review to identify public health and safety concerns.

Target Species:

- **Badger** - suitable habitat for sett excavation, commuting and foraging. Management methods must maintain a range of vegetation structure for sett building and a variety of feeding opportunities for foraging.
- **Hedgehog** - creation of sheltered areas for hibernation, such as fallen leaves or habitat piles may encourage the hedgehog to use the site, in addition to supporting a diversity of invertebrates as feeding opportunities.
- **Garden warbler** - supported by creation of dense scrub and species rich woodland, offering a diversity of insects to feed on.



	Task	Year	Season	Frequency
Existing Trees & Vegetation				
1	Review existing mature trees to be retained. Remove dead or dangerous limbs as and when necessary. An annual tree safety check of trees situated close to footpaths and other publicly accessible areas is required for H&S reasons. Over mature and dying trees also often possess suitable features for bat roosts. Such trees can pose a public health and safety risk and remedial action in the form of pruning may be necessary to prolong the life of trees and to maintain them in a safe condition. In some circumstances felling might be the only option.	On-going from Year 1	Timing dependent on level of risk - avoid spring and summer if possible	Review annually & following high winds. Limbs removed as and when required.
2	Ensure clear & safe routes are maintained. Clearance of overhanging shrubs. Strimming of vegetation to path edge. Removal of dead or dangerous limbs	On-going from Year 1	July-September	As required/ Each maintenance visit
3	Review natural regeneration of ground flora to understand whether additional plug planting is required.	5	May-September	1
4	Continued removal of invasive species as per Schedule to be agreed with specialist	1-5	September-February	1
New Native Tree Planting				
5	Rotational coppicing of selected species such as Hazel, Hornbeam and Willow. Couples to be coppiced in rotation with one coupe being coppiced every other year. This method should not remove more than 25% of the habitat in a year to reduce disturbance.	1	November to February,	Each coupe on a 10 year cycle.
	Review species that have appeared through natural colonisation. Thinning should be undertaken to promote diversity of the ground cover layer and remove dominant species.	1-5	October-February	1
	Pruning of woodland shrub species to promote healthy growth. Leave any cut material in place to create cover.	1-5	October-February	1
	Review of newly planted tree species and tagging of trees that have failed to survive or are failing.	1-5	August-September	As required
	Replace any dead or dying trees that failed to establish with equivalent or equal and approved species.	1-5	November-March	As required
	Check stakes and ties on newly planted trees for looseness, breaks or decay and adjust, re-fix or replace defective items.	1-5	As required	Each maintenance visit
	Remove all stakes and ties.	5	Autumn	As required
	Trees are to be maintained upright and adjustments made during strong winds. Ensure trees remain firmly bedded after disturbance and re-firm if necessary.	1-5	As required	Each maintenance visit
	New trees to be inspected by a suitably experienced arborist. Monitoring to inform action required to aid establishment, including watering and application of mulch and/or fertilisers.	1-5	May-September	1
	Water as necessary to ensure establishment and continuing health. 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.	1-3	As required	As required

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 trees found to have bat roosting potential should be retained where possible. Incidental damage to a breeding site or resting site of any European bat species an offence under the Habitats Regulations (revised 2017).

All tree work undertaken in accordance with best practice and the Tree Protection Method Statement (Appendix C)

It is an offence to damage or obstruct a badger sett which shows signs of current use under the Protection of Badgers Act 1992. Forest operations such as tree felling and timber extraction are sources of damage and disturbance. See Forestry Commission publication 'Forest Operations and Badger Setts'. 1995. Practice Guide 009. This concentrates on methods of safeguarding setts and managing woodland for the benefit of badgers.

The bird nesting season from February to August inclusive. Forest management should avoid unnecessary disturbance during this period

Safeguarding of reptiles

- Wildflower and reptile areas not to be cut below 150mm.
- Prior to mowing wildflower grassland, walking through area to disturb any creatures and encourage them temporarily to move elsewhere. Refrain from flattening grass as this makes it difficult to cut.
- Working slowly with machinery allows time for animals to escape.
- Work in a way that offers an escape route i.e. from middle outwards.

AREA 3 - WOODLAND EDGE

Current:	Aims:	Key Actions:	Target Species:
- Located within St. Catherine's Wood, an existing clearing in the trees has been extended in the masterplan proposals to create a generous woodland glade with a rich woodland edge habitat. - The existing clearing is currently dominated by young pioneer species such as birch with a nettle dominated ground layer, and has created a dense scrub habitat.	- Maximise wildlife benefit in the woodland edge by creating a graded profile with mixed habitats, creating a transition from the woodland character into the glade. - Create a bright, rich open space that contributes to the health and well being visitors through low level recreational opportunities. - Manage woodland in accordance with best practice to protect, sustain and improve the environmental quality. - Ensure species chosen are resilient to climate change and plant diseases.	- Combine primary planting with natural colonisation to enrich species composition and speed up the development of woodland structure. - Removal of dominant pioneer species such as birch - Selective rotational coppicing of suitable species such as Common Hazel to encourage a light, open habit. - Introduce native tree species woodland to increase species diversity, including species bearing berries and nectar. - Establish a graded height profile including; - Zone 1: low growing grass areas to footpath edges - Zone 2: Herbaceous zone with shrubs and occasional trees - Shrub zone grading up to the woodland character area - On ground habitat creation such as log piles and fallen leaf litter are appropriate within this area and will provide areas for hibernation & cover for invertebrates & mammals. - Monitor the woodland management regime every 5 years with an annual review to identify public health and safety concerns.	Hedgehog - typically forage on woodland edges as they support a diversity of invertebrates such as caterpillars, beetles and earthworms. Black Redstart - a Schedule 1 species, adapted to live in urban areas. It prefers 'rocky' habitat offered in towns, docklands and industrial areas, however the masterplan must be managed to offer foraging opportunities to support local populations of the Black Redstart, in addition to song post locations.

	Task	Year	Season	Frequency
1	Grass edges to path to be cut back to maintain clear & safe routes.	On-going from Year 1	September	1
2	Cutting back of herbaceous/field layer to promote healthy growth. Leave any cut material in place to create cover. To be cut back in the first year after sowing/planting to keep weeds under control. Following this, cut back every 3-5 years. Best done on a rotational basis so that no more than half the area is cut in any one year, leaving parts undisturbed as refuge for wildlife.	On-going from Year 1	November to February	1 year after sowing/planting then; 1x every 3-5 years
	Cutting back of woodland shrub species within herbaceous zone to promote healthy growth. Leave any cut material in place to create cover.	On-going from Year 1	November to February	1x every 5 years
	Rotational coppicing of species within shrub zone. Coupes to be coppiced in rotation with one coupe being coppiced every other year. This method should not remove more than 25% of the habitat in a year to reduce disturbance.	1	November to February	1x every 10 years
4	Continued removal of invasive species as per Schedule to be agreed with specialist	1-5	September-February	1

New Native Tree Planting

	Review of newly planted tree species and tagging of trees that have failed to survive or are failing.	1-5	August-September	As required
	Replace any dead or dying trees that failed to establish with equivalent or equal and approved species.	1-5	November-March	As required
	Check stakes and ties on newly planted trees for looseness, breaks or decay and adjust, re-fix or replace defective items.	1-5	As required	Each maintenance visit
	Remove all stakes and ties.	5	Autumn	As required
	Trees are to be maintained upright and adjustments made during strong winds. Ensure trees remain firmly bedded after disturbance and re-firm if necessary.	1-5	As required	Each maintenance visit
	New trees to be inspected by a suitably experienced arborist. Monitoring to inform action required to aid establishment, including watering and application of mulch and/or fertilisers.	1-5	May-September	1
	Water as necessary to ensure establishment and continuing health. 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.	1-3	As required	As required

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707669/ewgs-on011-ride-mangt.pdf

<https://wildseed.co.uk/page/management-of-woodlands-and-hedgerows>

AREA 4 - DESIGNED LANDSCAPE & ACCESS AREAS

Current:	Aims:	Key Actions:	Target Species:
- There are a large number of new development plots associated with the masterplan, which will redevelop the area into a new community and change the character of the site. - A series of roads, paths and public realm will provide the setting to the existing and proposed buildings. - The former area of railway sidings and transport industry will be transformed into the Red Bank Plateau and associated Terraces, a new destination space in the masterplan.	- To successfully integrate the development into the site, providing a high quality, sustainable, durable and safe external environment for residents 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 provides 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.	- Introduce new native trees to replace those lost due to the redevelopment of the site. - Providing a variety of native shrub and herbaceous planting around the key amenity areas to stimulate senses, encourage exploration and establish a high quality landscape setting. - Ensure shrub and herbaceous species have the appropriate maintenence regime in place to ensure continued health and that high quality areas are being achieved. - Monitor the management regime every 5 years with an annual review to identify public health and safety concerns.	Black Redstart - a Schedule 1 species, adapted to live in urban areas. It prefers 'rocky' habitat offered in towns, docklands and industrial areas, however the masterplan must be managed to offer foraging opportunities to support local populations of the Black Redstart, in addition to song post locations.



Task	Year	Season	Frequency
Ornamental Planting			
Maintain weed free area to the surface of all planting areas	1-5	March-October	x8
Fertiliser application	1-5	Spring	x1
Re-firm all shrubs as necessary	1-5	Spring-Autumn	x8
Prune woody species as necessary to encourage healthy growth	1-5	Spring-Autumn	x2
Prune early flowering shrubs after flowering	1-5	Early Summer	1
Prune late flowering shrubs before new growth	1-5	Early Spring	1
Prune evergreen shrubs	1-5	Mid Spring	x1
Cut back perennials in the spring once the risk as frost has passed as foliage cover protects the growing crown during winter.	1-5	Spring	x1
Control all pests and diseases	1	As required	As required
Remove all dead or damaged material	1-5	March-October	x8
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
Replace dead or damaged material to original specification	1-5	Autumn	x1
Top up mulch planting to original specification at the start of each year after the cutting back of tender perennials.	1-5	Spring	x1
Divide large groups of perennials every 3 years	1	Spring	x1
Litter removal from planted areas	1-5	Year Around	As required
Bulb Planting			
Allow foliage to die back naturally once flowering has ended. Do not remove foliage when green.	1-5	Note	Note
Do not mow grassed areas containing bulbs until foliage has browned	1-5	Note	Note

Task	Year	Season	Frequency
Tree Planting			
To establish new planting, maintain a 1m diameter weed free area around all trees within grass. Trees within		Spring-Autumn	1
Replace or re-secure loose or missing underground guy wires	1-5	Throughout the year	Quarterly and after strong winds
Apply granular fertiliser according to manufacturer's recommendations	1-5	Spring-autumn	Bi-annually
Control all pests and diseases as necessary	1-5	As required	As required
Review of newly planted tree species and tagging of trees that have failed to survive or are failing.	1-5	August-September	As required
Prune in accordance with good horticultural practice, thin, trim and shape as appropriate. E.g.. 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.	1-5	August-September	As required
Replace any dead or dying trees that failed to establish with equivalent or equal and approved species. Remove within 1 month or as soon as possible and replace within the next available planting season	1-5	November-March	As required
Check stakes and ties on newly planted trees for looseness, breaks or decay and adjust, re-fix or replace defective items.	1-5	As required	Each maintenance visit
Remove all stakes and ties.	5	Autumn	As required
Trees are to be maintained upright and adjustments made during strong winds. Ensure trees remain firmly bedded after disturbance and re-firm if necessary.	1-5	As required	Each maintenance visit
New trees to be inspected by a suitably experienced arborist. Monitoring to inform action required to aid establishment, including watering and application of mulch and/or fertilisers.	1-5	May-September	1
Water as necessary to ensure establishment and continuing health. 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.	1-3	As required	As required
Autumn leaf removal - collect accumulations of drifted leaves from the vicinity and from paved and lawn areas. Remove arisings off site.	1-5	Autumn	As required

AREA 5 - AQUATIC MARGINAL

Current:

- The current riverine habitat is of poor quality as the river is channelised and bound by walls which restricts its biodiversity potential. There are, however, some rare species present further up river Irk valley which should be provided for and considered in proposals for this stretch of the river.
- Invasive species, particularly Japanese Knotweed and Indian Balsam are locally dominant along the river and are out-competing other valuable species.
- The masterplan includes de-engineering large parts of the existing river wall, and creating a diverse rivers edge that will support a range of wildlife.

Aims:

- Enhancement of existing river to create high quality ecological habitat
- Softening of riverbanks where possible to provide **species rich** vegetated embankments with **visually attractive** aquatic vegetation.
- **De-engineering the river** banks to create opportunities for **burrow creation** and to provide **food and shelter** to wildlife such as amphibians and water voles
- Ensure the **long term management** of the water body.
- 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.

Key Actions:

- Removal of invasive species
- Introduction of native aquatic vegetation - a mixture of fully submerged species and species to the waters edge.
- Controlling river water speeds using methods such as coir rolls and creating 'D's to locally narrow the river channel.
- Continue to monitor and maintain the waterbodies for in/out flows and clearance of bank sides to ensure healthy waters.
- Where possible plants will be sourced from local waterbodies, to ensure local provenance.

Target Species:

- **Willow Tit** - will occupy habitat which is generally damp and can support thickets of dense scrub. Managing rotting deadwood is a critical element of breeding willow tit habitat, as they require this to excavate their nests, typically birch and willow.
- **Dipper** - are suspected as breeding in close proximity to the site. Nesting opportunities may be present on site, as birds readily take to cracks in man-made features such as bridges, weirs and culverts. Feeding on underwater invertebrates, managing the high quality of the river water is essential.
- **Kingfisher** - Nesting may not be suitable in this location due to potential human disturbance, however the river can be managed to provide foraging opportunities. Management of river flow to create some areas of slow-moving, shallow water and ensuring the river is clean enough to support abundance of small fish may support the Kingfisher. Maintaining trees along the riverbank to allow branches to overhanging shallows make essential fishing perches.
- **Wolverine** - Maintaining slow water speeds in areas, and well vegetated river banks may provide opportunities for burrow creation. Vegetation diversity must be maintained to provide feeding opportunities such as rushes, grasses, sedges and horsetail.
- **Leisler, Noctule & Pipastrelle bats**- the river is currently used for foraging. Maintaining a naturalised channel will increase in-stream invertebrates will provide an enhanced food source for bats.

Task	Year	Season	Frequency
Annual inspection of water body	1-5	Winter	1
Thinning/clearance of vegetation	1-5	September-February	1
Alternate banks of the watercourse should be trimmed each year to remove obstructive vegetation	1-5	September-February	1
Hand-held machinery to be used so as to ensure no damage to soil and vegetation	1-5	September-February	1
Vegetation clearance will be required where cover by taller species, such as rushes and sedges, exceeds 30%, or when the ratio of vegetation to open water is greater than 50%	1-5	September-February	1
Cuttings from any clearance work should be removed from the channel to avoid it causing blockages downstream	1-5	September-February	1
Weeds and emergent plant species to be removed so they cover no more than 50% of the water area	1-5	September-February	1
Review planting and infill any areas that have failed to establish with plug planting. Species to be chosen from approved planting schedule.	1-5	September-February	1
Control all pests and diseases	1-5	March-April	As required

AREA 6 - NATIVE HEDGEROW MIX

Current:

- The native hedgerow is proposed to the boundary of the site adjacent to the existing woodland. The existing boundary is demarcated by a wall, however introduction of a native hedgerow mix will have important wildlife and visual amenity benefits.

Aims:

- Improve **biodiversity** by maintaining a range of different types and sizes of hedgerow, in order to support a wide variety of wildlife.
- Improve the **visual amenity** of the site and enhance existing boundaries
- Strengthen **wildlife corridors** and connections to the existing woodland
- 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:

- Plant new native hedgerows and tree planting to the eastern site boundary, adjoining the area of existing woodland
- Maintain a rich vegetation structure - a range of broad woody species at the bottom with some emerging larger species. Allow rambling and climbing varieties to intersperse. Maintain a thick herbaceous vegetation layer at the foot of the hedge.
- Any works to trees or hedgerows to be carried out in October- February to avoid bird nesting season.
- Ensure an appropriate maintenance regime is in place to ensure continued health and that high quality areas are being achieved.
- Monitor the management regime every 5 years with an annual review to identify public health and safety concerns.

Target Species:

- Hedgehog** - maintaining a thick herbaceous vegetation layer at the foot of the hedgerow will support a diversity of invertebrates such as caterpillars, beetles and earthworms, which provide foraging opportunities for hedgehogs.
- Dunnoch** - management of hedgerows can provide shelter, nesting and foraging opportunities for the dunnoch as they are known to nest in dense bushes. Their diet consists predominantly of seeds, although they also eat insects. Hedgerows create, providing berries, nuts and an assortment of invertebrates.
- Leisler, Noctule & Pipastrelle bats**- can be used as 'commuter routes' for foraging and roosting bats if managed to support a diversity of invertebrates.
- Black Redstart** - a Schedule 1 species, adapted to live in urban areas. It prefers 'rocky' habitat offered in towns, docklands and industrial areas, however the hedgerow could provide valuable foraging opportunities and song post locations.

Task	Year	Season	Frequency
Monitor hedgerows to identify any gaps, or mature or dying trees	1-5	Spring	1
Maintain a one metre wide species rich grass edge adjacent to the hedgerow	1-5	Spring	1
Suppress weeds and control all pests and diseases as necessary	1-5	Spring	1
Retain old, dying and dead trees where these are not a hazard, as they support important insect communities and may be used by hole-nesting birds	1-5	Spring	1
Trim hedgerow on rotation, rather than annually, to ensure that thick nesting cover is available somewhere in the hedgerow every year, and to boost the berry crop that generally develops on second-year growth. Maintain to a height of 1.5-2m	1-5	Winter (Ideally January)	2-3 year rotation
Planting up gaps can be done in conjunction with coppicing existing plants if these lack a thick base	1-5	November-March	As required
Copping of dominant species may be required to maintain a diverse species mix.	1-5	November-March	As required

New Tree Planting

New tree planting where required to fill in gaps, and replace mature/dying trees. Species should be chosen from the planting schedule. Use plastic tubes, spirals to protect young plants from grazing. These should be checked and removed when required.			
Review of newly planted tree species and tagging of trees that have failed to survive or are failing.	1-5	August-September	As required
Replace any dead or dying trees that failed to establish with equivalent or equal and approved species.	1-5	November-March	As required
Check stakes and ties on newly planted trees for looseness, breaks or decay and adjust, re-fix or replace defective items.	1-5	As required	Each maintenance visit
Remove all stakes and ties.	5	Autumn	As required
Trees are to be maintained upright and adjustments made during strong winds. Ensure trees remain firmly bedded after disturbance and re-firm if necessary.	1-5	As required	Each maintenance visit
New trees to be inspected by a suitably experienced arborist. Monitoring to inform action required to aid establishment, including watering and application of mulch and/or fertilisers.	1-5	May-September	1
Water as necessary to ensure establishment and continuing health. 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.	1-3	As required	As required



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 also be sought regarding the maintenance of their products using the contact details supplied.

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.

Street Furniture: Litter Bins

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

Steel Furniture: Bollards & 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 Steel Edging

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.

Timber Play Equipment

Maintenance operations and checks depend on the type of equipment and should be specified by Timberplay. Any equipment with moving parts must be checked at least twice a year, static equipment at least once a year. Intervals for maintenance work and checks generally depend on

- The location
- The usage
- The frequency of use - possible vandalism

Examples of general maintenance include (but not limited to);

- Uncover the foundations once a year in order to check the structural stability: wood for rot, steel for corrosion, anchoring to the ground for stability - condition of concrete foundations.
- Check that all bolts and screws as well as all wood joints are tight, retighten if necessary.

- Check all wooden parts for rot and, if necessary, smooth out splinters and round off sharp edges and cracks. Recommendation: apply paraffin wax to the end grain areas once a year, especially near the ground; please refer to order No. 0.90100, 1 litre.
- Check all metal/fittings such as chains for wear and tear.
- Check rubber elements such as tyres for wear and tear as well as for vandalism; replace if required.

Description	Year (s)	Season/Month	Frequency (per year)
Benches / Seating			
Graffiti removal	Ongoing	As required	s required
Cleaning of gaps between timber slats to keep free from litter and other detritus	Ongoing	Year round	x6
Cleaning of stone end caps. 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
Bollards			
Cleaning bollards. Wash down with soap or mild detergent and warm water followed by a clear water rinse.	Ongoing	Year round	x4
Maintenance of drop 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.	Ongoing	Year round	x4

MANCHESTER

+44 (0)161 928 9281

LONDON

+44 (0)207 253 5678

LIVERPOOL

+44 (0)151 363 1230

STANDISH

+44 (0)145 360 7080

LEEDS

+44 (0)113 824 6413

