

REFERENCE
PL1784

PROJECT

MEDIEVAL QUARTER & THE GLADE OF LIGHT MEMORIAL

DOCUMENT

LANDSCAPE MANAGEMENT AND MAINTENANCE PLAN

CLIENT

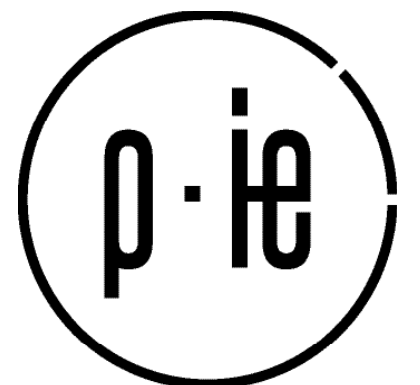
MANCHESTER CITY COUNCIL

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1.1 Introduction

1.1.1 MANCHESTER MEDIEVAL QUARTER

Manchester Medieval quarter is a large scale public realm improvement scheme to the north of Manchester City Centre. The site occupies what was formerly Victoria Street and creates a new linear park alongside the River Irwell. At the centre of the park is the 'Glade of Light' memorial to the victims of the Manchester Arena Attack.

The development is split into three phases, 1A, 1B & 1C. This document is relevant to Phase 1A only and should be reviewed and updated systematically upon completion of Phases 1B & 1C to respond to the future design and to take account of any ongoing lessons learnt through the management and maintenance of the Phase 1A area.

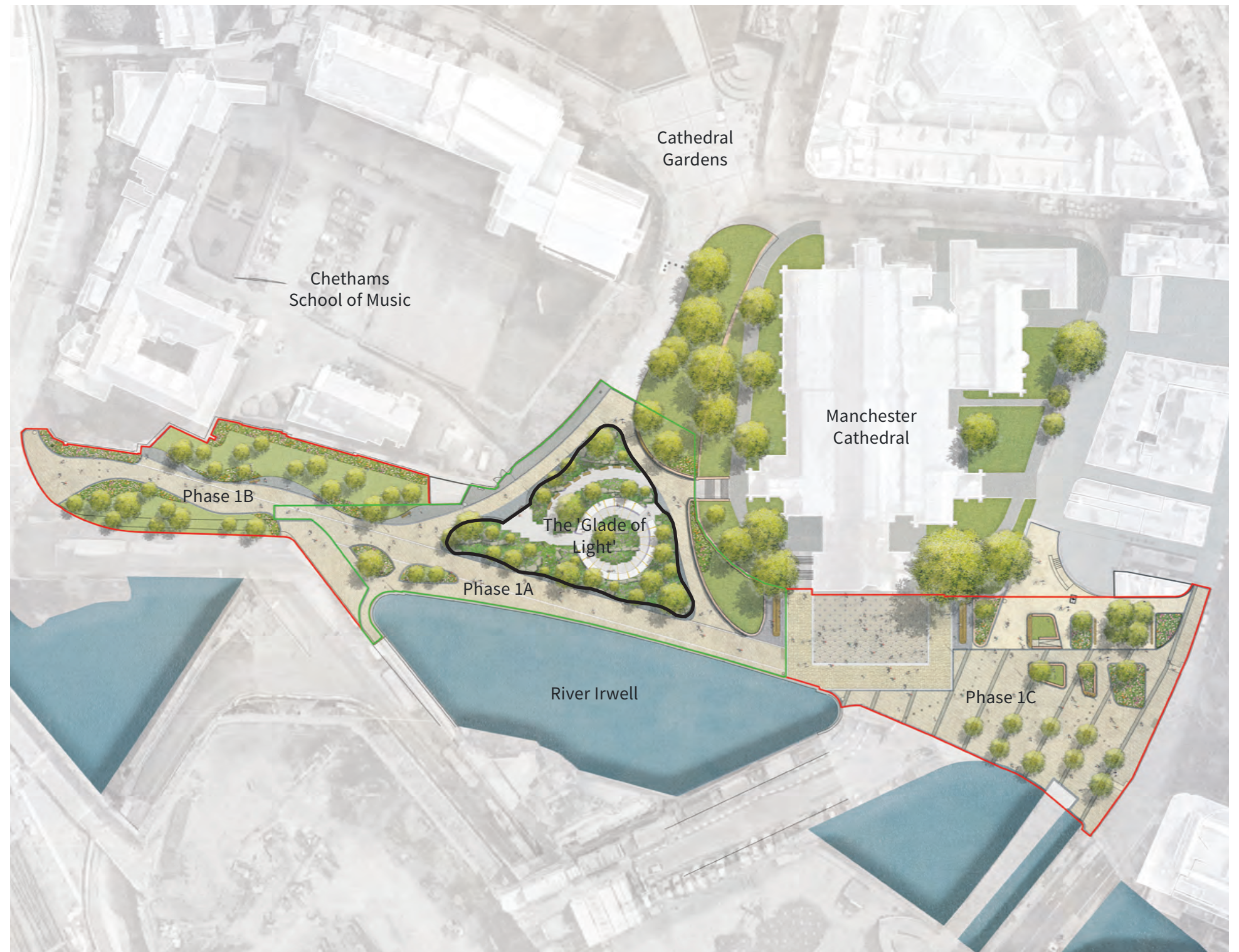
A separate detailed chapter is provided below for The 'Glade of Light' detailing the management and maintenance of this part of the park.

This document will be adopted, controlled and enforced by Manchester City Council who are committed to excellence in maintaining the area. The following maintenance schedules should be read in conjunction with the landscape design proposals and wider masterplan objectives.

The Manual must be a living document and be constantly reviewed and updated. The maintenance manual addresses specific maintenance of both hard and softworks to assure that the public realm maintains a high quality appearance and setting for The Glade of Light Memorial.

The external works contractor will be responsible for the management of all:

Hardworks and furniture elements for 12 months and Soft elements including tree planting for 24 months after which it will be passed onto Manchester City Council.





1.1 Aims & Objectives

MAINTENANCE AIMS GENERALLY

- The document provides a framework to ensure the following key aims are met:
- The creation of a high quality park environment that creates a fitting setting for the Glade of Light memorial and Manchester Cathedral.
 - A safe, welcoming and accessible environment for the enjoyment of the general public.
 - A sustainable park that creates a high quality destination space for years to come.

SOFTWARES MANAGEMENT OBJECTIVES

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

Proposed individual trees:

- To ensure satisfactory establishment and continuing health.
- To maintain the plants in a healthy condition and develop the site tree structure.
- To ensure the successful establishment and continuity of the overall design concept.
- To establish a valued and appropriate amenity.

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 which 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.

HARDWORKS MANAGEMENT OBJECTIVES

- 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

1.2 Maintenance Overview

This section of the document covers the specific maintenance operations for the items listed below for the wider public realm elements of the Medieval q uarter scheme:

Soft orks:

- Maintenance of tree planting
- Maintenance of amenity planting including rain gardens
- Maintenance of amenity grass areas

Hardworks:

- Specification and Requirements for work by Public Utilities and general surface reinstatement
- Procedures for non-attributable damage reinstatement
- Specification and sources of materials for repair/reinstatement (NBS Spec Public Realm)

Street Furniture:

- Procedures for the maintenance of Street Furniture including bollards & litter bins

HEALTH AND SAFETY

Some of the cleaning methods described involve the use of chemicals, which may be damaging or dangerous if not used in the correct manner.

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

MAINTENANCE OPERATION – TREE WORK GENERALLY

Identification: Before starting work agree which trees are to be removed or pruned

Protection: avoid damage to neighbouring trees, plants and buildings

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

Appearance: Leave trees with a well balanced natural appearance

Chain saw work: Operatives must hold a Certificate of Competence

Tree work: To be carried out by an approved member of the Arboricultural Association

Additional work

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.

1.3 Maintenance of Trees

Maintenance Operation Number	Description	Year (s)	Season	Frequency (per year)
	TREE PLANTING			
1.3.1	Maintenance during defects liability period or 5 years after planting whichever is the greater To establish new trees, maintain a 1m diameter weed free area around each trunk	1 – 5	Spring and summer	x2
1.3.2	Underground tree wire guys: Inspection / maintenance times: quarterly and after strong winds Operations: Replace or re-secure loose or missing guy wires Adjust to suit stem growth and to provide correct and uniform tension	1 – 5	Year round	x4
1.3.3	Apply granular fertiliser according to manufacturer’s recommendations	1 – 5	Spring - Autumn	Bi-annual
1.3.4	Ensure trees remain firmly bedded after disturbance and re-firm as necessary	1 – 5		As required
1.3.5	Control all pests and diseases as necessary	1 – 5		As required
1.3.5	Prune in accordance with good horticultural practice, thin, trim and shape as appropriate. Eg. Removing branches: Do not damage or tear the stem. Wounds: Keep as small as possible and cut cleanly back to sound wood. Cutting: Make cuts above and sloping away from an outward facing healthy, angled so that water will not collect on cut area. Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide. Tools: Use clean sharp secateurs, handsaws or other approved tools. Disease of infection: Give notice if detected. Growth retardants, fungicide or pruning sealant: Do not use unless instructed	1 – 5	Autumn - early Winter	x1
1.3.6	Water as necessary to ensure healthy growth during establishment	1 - 3	Spring, Summer & Autumn	As required
1.3.7	Replace dead or damaged trees to original specification. Remove within 1 month and replace within the next available planting season	1 - 5	Winter	As required
1.3.8	Top up mulch planting to original specification	1 - 5	Spring	x1
1.3.9	Autumn leaf removal Collect accumulations of drifted leaves from the vicinity and from paved lawn area Arisings: Remove	1 - 5	Autumn	As required

1.4 Maintenance of Amenity Planting

MAINTENANCE OPERATION – AMENITY PLANTING & RAIN GARDENS

- Duration: Ongoing
- Weed control: Keep planting beds clear of weeds by hand weeding.
- Watering: As necessary to ensure establishment of planting
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.

Maintenance Operation Number	Description	Year (s)	Season/Month	Frequency (per year)
	AMENITY PLANTING & RAIN GARDENS			
	Maintenance during defects liability period or 5 years after planting whichever is the greater			
1.4.1	Maintain weed free area to the surface of all planting areas	1 – 5	March - October	x8
1.4.2	Fertiliser application	1 – 5	Spring	x1
1.4.3	Re-firm all shrubs as necessary	1 – 5	Spring - Autumn	x8
1.4.4	Prune woody species as necessary to encourage healthy growth	1 – 5	Spring - Autumn	x2
1.4.5	Control all pests and diseases	1 – 5	As required	As required
1.4.6	Remove all dead or damaged material	1 – 5	March - October	x8
1.4.7	Water as necessary to ensure establishment and healthy growth	1 -2	Spring, Summer, Autumn	As required
1.4.8	Replace dead or damaged material to original specification	1 - 5	Autumn	x1
1.4.9	Top up mulch planting to original specification	1	Spring	x1
1.4.10	Litter removal from planted areas	1-5	Year round	x12
	BULB PLANTING			
	Allium species			
1.4.11	Removal of dead/yellowing foliage	1-5	Autumn	x1
1.4.12	Removal of seed heads	1-5	Spring	x1
	Camassia species			
1.4.13	Removal of dead/yellowing foliage	1-5	Autumn	x1
1.4.14	Removal of seed heads	1-5	Autumn	x1

1.5 Maintenance of Amenity Grass

MAINTENANCE OPERATION – AMENITY GRASS

Grassed Areas - Generally

- General: Maintain turf in a manner appropriate to the intended use
 - Grass height: 40-75mm
 - Soil and grass condition:
 - Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt
 - Waterlogging and compaction: Prevent.
 - Damage: Repair trampling, abrasion or scalping caused by mowing
- Ornamental turf and lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills:
 - Edges: Neat and well defined, in clean straight lines
 - Litter and fallen leaves: Remove regularly to maintain a neat appearance
 - Before mowing: Remove litter, rubbish and debris
 - Finish: Neat and even, without surface rutting, compaction or damage to grass
 - Adjoining hard areas: Sweep clear and remove arisings
 - Bulbs in lawn areas: allow to die back before mowing off in sprin /early summer

Maintenance Operation Number	Description	Year (s)	Season/Month	Frequency (per year)
	AMENITY GRASS MAINTENANCE			
	Maintenance during defects liability period or 5 yeas after sowing / laying whichever is the greater			
1.5.1	Water as necessary to ensure establishment and healthy growth	1-2	Spring, Summer, Autumn	As required
1.5.2	Cutting - maintain grass between 40-75mm using suitable machinery and remove arisings.	1 – 5	Spring, Summer, Autumn	x9
1.5.3	Maintain levels and replacement of any settled areas	1 – 5	May – October	As required
1.5.4	Edge all lawned areas	1 – 5	May – October	x3
1.5.5	Spring fertilizer application – slow release 60g/m2	1 – 5	Spring	x1
1.5.6	Autumn fertilizer application - slow release 60g/m2	1 - 5	Autumn	x1
1.5.7	Apply herbicide as necessary to keep sward substantially (95%) free of broad leaved weeds	1 - 5	May - October	As required
	Reinstatement of Damaged Lawns	1 - 5	May - October	As required
1.5.8	Damaged turf: Remove to a depth of 40mm. Preparation: Cultivate substrate to a fine tilth. Reinstatement: Re-turfing: q uality and appearance to match existing. Protection and watering: Provide as necessary to promote successful germination and/ or establishment.	1-5	Spring	As required

1.6 Hard Landscape General

MAINTENANCE OPERATION – HARDWORKS

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 300 across the diagonal (i.e. not parallel to joints)

- Certain high-pressure jetting machines have been known to mark / damage the surface of certain types of paving material. It is therefore prudent to carry out a small test area before commencing on a larger area

- The area should be inspected after cleaning to ensure that joints are full

General Dirt and Detritus

To remove general dirt and detritus regular brushing is recommended. If detritus reduces the intensity of the colour of the material then this can be reestablished 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 channeled 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 chiseling 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 onsite 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.

Drainage Channel Gratings

The locking system for the channel grating should be inspected and checked for tightness.

To remove the gratings, insert the Grating Locking Tool hook under the grating bar and pull grating up sharply to snap grating free. Avoid lifting the grating from one end, which can distort the grating.

Security locks should be fitted to gratings where possible to prevent unauthorised removal.

Contact the supplier - ACO for further advice. Contact: +44 (0) 1462 816666.

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.

1.7 Hard Landscape

The table below provides treatments for general problems that may be encountered in areas of hard landscape:

Defect	Problem	Treatments	
		Temporary	Long-term
Debonding of jointing material	Initiation of failure mechanism	Monitor / investigate	Check paving & buildup 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

The table below provides specific maintenance operations for the general maintenance of hard landscape areas:

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

1.8 Street Furniture General

STREET FURNITURE

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.

Maintenance Operation Number	Description	Year (s)	Season/Month	Frequency (per year)
1.8.1 1.8.2	Benches / Seating Supplier: Logic Street furniture Contact: +01642 373400 /hello@logic-bespoke.com Graffiti removal Cleaning of gaps between timber slats to keep free from litter and other detritus	Ongoing Ongoing	As required Year round	as required x6
1.8.3 1.8.4	Cleaning of stone end caps. Wash down with soap or mild detergent and warm water followed by a clear water rinse. Cleaning of steel legs and supporting structure. Wash down with soap or mild detergent and warm water followed by a clear water rinse.	Ongoing Ongoing	Year round Spring	x6 x1
1.8.5 1.8.6	Litter Bins Supplier: Wybone Contact: +44 (0)1226 352333 / kerrylaw@wybone.co.uk Cleaning of steelwork. Wash down with soap or mild detergent and warm water followed by a clear water rinse. Maintenance of hinges. Door hinges to be oiled regularly being careful not to leave oil satins on surrounding paving.	Ongoing Ongoing	Year round Year round	x4 x4
1.8.7 1.8.8	Bollards Supplier: Marshalls (Bee Bollards) Contact: 0370 600 2425 / StreetFurniture@marshalls.co.uk Supplier: ATG (all other bollards) Contact: +44 (0)345 350 3799 (Option 2) / service@atgaccess.com Cleaning bollards. Wash down with soap or mild detergent and warm water followed by a clear water rinse. 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 Ongoing	Year round Year round	x4 x4
	Street Lighting Supplier: Selux Contact: +44 (0) 19 26 83 34 55 / enquire@selux.co.uk Contact supplier for details			



The Glade of Light

Maintenance Schedule

Contents:

- Soft Landscape Maintenance
- Hard Landscape Maintenance
- Street Furniture

Introduction

This Landscape management plan has been written to support the works for the Glade of Light, and to ensure the future success of the landscape implementation works.

Key objectives for maintenance and management include:

- To facilitate an efficient and sustainable landscape management and maintenance regime through the lifetime of the development;
- To ensure that the landscape develops in a manner commensurate with the original design intentions;
- To ensure the successful establishment and continued growth through to maturity of the trees and other planting identified on the landscape Proposals;
- To secure a long-term future for the new trees and shrubs with particular emphasis upon achieving visual amenity; and
- To provide a safe, clean, high quality external environment for all site users.

Revision:

- C3** - Additional soft landscape info added following input from heather growers
- C2** - Additional Hard landscape info added
- C1** - Initial issue

Note: Further detail to follow nearer to project completion, as further feedback is required from material and product suppliers.

Soft Landscape Maintenance

Contents:

- Existing Trees
- New Trees
- Planting Beds

To be read in conjunction with

- 19.516- 200- Soft Landscape
- 19.516- 202- Soft Landscape Schedule

Soft Lands ape Maintenance
Existing ree



Pictured: Existing Pinus nigra maritima

Maintenance to existing trees to recommendations discussed in BS 3998:2010.

Existing trees should be regularly inspected to ensure that trees are maintained in a safe condition so as to not present any risk to passers-by along the western boundary of the site or anywhere else within the bound-aries of the site. Formative pruning should be carried out to ensure site access is not inhibited by tree growth or so that site access does not damage tree limbs. Regular maintenance should also be carried out to prevent Ivy from climbing the stems and into the canopies of the existing trees.

Soft Lands ape Maintenance
New Trees

Maintenance to new trees to recommendations as set out in BS 8545:2014 and BS 3998:2010. To ensure their survival and optimal development, these trees will be subject to intensive establishment maintenance. The following operations will be required to be carried out for the duration of the establishment period and as required for their on-going development. Avoid allowing the browning of more than 10% of tree crowns.

	January	February	March	April	May	June	July	August	September	October	November	December
A weed free area should be maintained around the base of the tree. Do not use strimmers near tree bases as damage to the bark is unacceptable and may result in the loss of trees.												
Trees should be watered as required to maintain moisture levels in the soil around their bases.												
Remove any unhealthy, dead or vandalised specimens as soon as possible and replace with same species of size to match adjacent trees in the next planting season.	All year											
Inspection of new tree’s support system and re-securing anchors as required and following strong winds, frost heave or other events that might cause the tree to loosen in the ground.	All year											
Minimal pruning of trees, if required, for development and maintaining even natural form including removal of suckers and removal of dead, dying or diseased wood.												
Topping up of mulch to ensure 40mm layer around bases of trees is maintained.												

Soft Landscape Maintenance
 Planting Bed

Regular on-going review of the planting areas will ensure they are kept neat and tidy as well as ensuring they develop into the intended final result.

Heathers, herbaceous, ornamental grasses & shrubs:

	January	February	March	April	May	June	July	August	September	October	November	December
Control and removal of weeds General weeding to be undertaken during maintenance visits where required.												
Pruning of dead foliage Pruning of dead growth from perennial plants and ornamental grass growth without causing damage to any new shoots that have emerged (Once per year in Feb or Mar)												
Pruning of Calluna heathers (Not required for Ericas – See Soft landscape schedule) Remove old blooms that are withered and yellow. The old blooms will be at the top and edges of the plants and are attached to green stems. Do not cut into the woody area of the heathers or it will not grow back. Only make your cuts into the green stems of your plant. Young heathers should have their sides cut as well as their tops. As they age and grow together groupings of heathers can be pruned as if it were a single plant with shears or strimmers (Once per year in Early spring or late Autumn)												
Replace dead planting Remove and replace any dead, vandalised or unhealthy specimens as soon as possible, preferably between late autumn and early spring.												
Watering of plants to ensure moisture content in soil is maintained at required level for optimal growth.												
Removal of litter from planting beds												
Fertilizing - Millais Nurseries Ericaceous Slow-Release Fertilizer to be broadcast over the ground at 50g/m2 in March. *Re-application in the Summer if heather foliage begins to show signs of yellowing.								*				
Topping up mulch to ensure 40mm layer is maintained.												

Bulbs:

Cutting back dead foliage

Remove yellowed and straw like foliage of larger bulbs (Alliums). Dead stem to be removed and bulb to be left in soil for next year’s display.

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Hard Landscape Maintenance

Contents:
Halo Marble & Bronze
Yorkstone (Sandstone) Paving
Health and Safety

To be read in conjunction with
19.516- 100- General Arrangement

For further information, please refer to relevant O&M Manuals/ datasheets as stated in each section.

Hard Landscape Maintenance: Marble

Marble provides a durable, hard wearing surface, but like any other surfacing material, may suffer from staining. Due to the nature of its construction, vegetation may also grow in the joints, or in the material itself in shaded areas which remain damp. Regular maintenance and good cleaning practices will enhance the overall appearance of the material in the long term.



Note: All below information is provided by Hardscape for general maintenance.

Initial Maintenance:
Maintenance requirements are minimal under normal service conditions. If necessary, surfaces may be washed using high pressure hoses. Sealant is to be re-applied as per supplier’s recommendations (see below section on ‘Sealant/Treatment Product information’ and attached datasheet). Make sure the surface is well rinsed and bone dry before applying the appropriate impregnator. Note: Do NOT use high pressure jets or suction cleaners for at least 3 months to allow normal detritus build up.

Cleaning of Marble:
Natural stone is very low maintenance once laid. The pointing is the weakest element and may need to be replaced after a number of years. Brush regularly to remove dust and detritus. There is a tendency for algae, lichens and mosses to colonise stone that is permanently shaded and/or damp. This can be safely removed by a pressure washer.

Sealant/ Treatment Product information

Note: Information extracted from ‘STONELINE81 Data sheet’, please see attached document for further info.

Product- STONELINE 81

Application- Apply the product by brush. The veil of the product that is deposited in the phase of application is easy to remove through brushes or felts. The product dries in a few minutes and the anti-stain effect will be reach after 24 hours after the treatment.

Additional application info- It is not possible to avoid coating the bronze lettering when applying the coat to the marble. Once applied, lightly wipe away any remaining residue off the surface of the bronze to remove any bubbling on the surface. Take care to refrain from removing the coating from surrounding marble.

NOTES:

Application info provided is indicative and based on supplier’s recommendations and initial information from Hardscape.

Hardscape to provide final detailed methodology on the tried and tested process of application.

Hardscape to provide detailed advice on stain-removal techniques.

If required, Hardscape to provide referrals to specialist cleaning companies as appropriate.

Note: Advice and recommendations are subject to the circumstances of specific problems. Removal of stains cannot therefore be guaranteed. Certain cleaning products may be subject to statutory regulations for safe handling and usage (including COSHH and CDM regulations).

Winter Maintenance:

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 affects to the appearance of Marble. Spalling, scalling or pitting is a common problem that often occurs after the application of de-icing salts over 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 stone.

Bronze

Bronze lettering, skatestoppers and capsule lid elements to be allowed to weather naturally. In the event of re-application of sealant/treatment to surrounding marble, see above section on ‘Sealant/ Treatment Product information’ for treatment process and effects on Bronze.

**Hard Landscape Maintenance:
Reclaimed Yorkstone (Sandstone)**

Sandstone, Yorkstone and Caithness paving provides a durable, hard wearing surface, but like any other surfacing material, may suffer from staining. Due to the nature of its construction, vegetation may also grow in the joints, or on the paving itself in shaded areas which remain damp. Regular maintenance and good cleaning practices will enhance the overall appearance of the paving in the long term.

Note: Information provided by Hardscape.



Initial Maintenance:

Maintenance requirements are minimal under normal service conditions. If necessary, surfaces may be washed with brush and water or using high pressure hoses. If the latter, care should be taken not to blast away sand in joints.

Note: Do NOT use high pressure jets or suction cleaners for at least 3 months to allow normal detritus build up (considerably longer for paved areas under cover). Alternatively, joint sealants may be considered.

During fixing, or just afterwards, Yorkstone and Sandstone Flooring is generally more hardy than limestone, marble or granite. Its natural constitution lends itself to easy cleaning with a proprietary solution, so any building dirt or leftover reclamation staining may be removed quite satisfactorily with a proprietary chemical solution, if necessary. If you use it before grouting, make sure the surface is well rinsed and bone dry before applying the appropriate impregnator.

Cleaning of Paving:

Natural stone paving is very low maintenance once laid. The pointing is the weakest element and may need to be replaced after a number of years. Sweep regularly with a stiff brush to remove dust and detritus.

There is a tendency for algae, lichens and mosses to colonise stone paving that is permanently shaded and/or damp. This can be safely removed by a pressure washer. Freshly sawn rough Sandstone, Yorkstone and

Caithness flooring will generally require a little more maintenance than reclaimed Sandstone, Yorkstone and Caithness flags. The surfaces of reclaimed flags will be very smooth due to 100 years or more of wear and maintenance before reclamation. There's a number of proprietary solutions that can be used to clean, seal and maintain the appearance of Yorkstone/Sandstone paving units for which Hardscape can advise on.

Winter Maintenance:

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.

Hard Landscape Maintenance: Health and Safety

Note: The below information is provided by Hardscape

Some of the cleaning methods described above involve the use of chemicals, which may be damaging or dangerous if not used in the correct manner. 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.

Street Furniture Maintenance

Contents:
Glade of Light Plaques
Seating

To be read in conjunction with
19.516- 100- General Arrangement

For further information, please refer to relevant O&M Manuals/ datasheets as stated in each section.

Plaque Maintenance: Glade of Light Plaques

Note: The information provided below is regarding general maintenance for materials. Further info to be provided by Signmakers following approval of quotation and design.

CorTen (Structure):
CorTen derives its name from its properties: COR (corrosion resistant) and TEN (tensile strength). CorTen is a steel alloy with added chromium, copper and nickel, which is comparable to other alloy steels, such as stainless steel in terms of strength. The brown, rusty colour is characteristic and formed by a very dense oxide film that seals the underlying material from oxygen. The air and water-tight patina is formed over a six-month period and prevents the steel from rusting any further. CorTen steel does not require any treatment and is therefore extremely environmentally friendly. It can be applied outdoors without any adverse impact on the environment (which may not be the case when applying zinc or chemical coatings, for example). The coarse-grained patina is graffiti and sticker-resistant, and any repairs or alterations to the CorTen steel structure will become invisible over time due to its natural oxidation.



Bronze insert (highlighted above):
To be allowed to weather naturally.

Powder-coated Aluminium (Plaque Face):
Powder coating can offer a durable and aesthetically pleasing protective layer to the aluminium surface. The powder-coated components should be cleaned annually with water and possibly a mild detergent. Scratches and any other mechanical damage limit the technical and particularly the aesthetic lifespan. An anti-graffiti quality powder coating (polyurethane-based topcoat) will be applied to the surface to improve cleanability. A polyurethane powder coating cannot be repaired in the event of mechanical damage. The overall composition of the coating system determines the quality of the protection and the aesthetic features.

Street Furniture Maintenance: Seating y MMcite

Note: Information extracted from MMCite O&M Manual. Please see attached document, ‘MMCite O&M Manual 2021’ for further information on maintenance and Warranty.

Contractor to refer to attached document ‘MMCite Packing, transportation & handling and storage’ for installation guidance.

Products:

Emau Solo Bench with Armrests (Left- Note: armrest layout varies)

Vera Perch (Right)



Steel for Structural Purposes:

All steel parts are made of weldable steel for structural purposes with guaranteed chemical purity, minimal tensile strength, yield strength and ductility. Steel frames are made of S235JR grade. Base anticorrosion protection is carried out by the application of zinc coating onto the surface or electro-coated if needed. Further, the steel structure is treated using technologically sophisticated method of polyester powder coating in fine matt structure, in RAL colour shade. These coatings ensure excellent use properties due to their chemical adhesion, mechanical flexibility and resistance to weather conditions. Scientific research has proven that the combination of both technologies show synergy for much longer lifespan than only zinc coating or only powder coating applied (Specified Powder coat colour: RAL 7024 Graphite grey).

CONTROL

- Clean the surface with hot water and with soap or mild detergent
- Check the connecting material. In case it has loosen, tight it up.
- Check the surface of steel structure. In case of found damage, repair it.

MAINTENANCE

Corrosion might begin if the surface of steel structure is mechanically damaged. Therefore, it is recommended for the user to check the steel structure every six months. If a mechanical damage or already begun corrosion is found, it is necessary to repair the damage immediately according to manufacturer’s instructions.

REPAIRS

Before maintenance, it is necessary to consider the following points:

- Scope of the damage (In case of more extensive repair, it is recommended to let mmcit  carry out the repair)
- Ambient temperature must be between +5 C- +40 C
- Relative air humidity cannot exceed 80%
- Surface temperature cannot be lower than 3 C above condensation point

Repair procedure of anticorrosion protection:

- Mechanically clean the damaged spot, the surface has to be clean and dry
- Degrease the damaged steel parts with industrial alcohol or gasoline
- Regrind the surface using sandpaper P120
- Apply zinc coating (minimally 96% zinc contain)
- Once dried, gently use the sand paper P280 to smooth the surface
- Apply the powder coating (according to the manufacturer’s instructions)

Note:

The colour shade after a repair can slightly differ from the original one – they will match approx. after 12 months.

The warranty does not apply to defects caused by careless handling, storage, assembly; usage and maintenance. All have to be done according to the manufacturer’s instructions. Please note the powder coating is not abrasion resistant and is not intended for walkable items, such as ART tree grids. Eventual mechanical damage cannot be considered as a matter of claim.

Jatoba Tropical Wood:

Jatoba tropical wood belongs to the most widely used wood imported from South America. It is almost maintenance-free, exceptionally stiff, strong, hard and highly resistant to fungus, molds and termites. Another great advantage is its resistance to vandalism (hardness of cca 130 Nmm-2 =. 2820 lbf, value according to Janek) makes it difficult for cutting or graving). It belongs to the very hard wood (wood with the hardness higher than 80 Nmm-2). Jatoba can exhibit quite a large colour variation of cherish-red-brown shades. The typical characteristics of all tropical wood kinds are gradual graying effect and opening and closing pores due ambient temperature and air moisture. The opening usually appears as small cracks. It concerns repeatable and natural phenomenon, dependent on ambient temperature and air moisture, which does not lower the quality and does not limit the usage. These above mentioned common features cannot be accepted as a claim as they are not considered as defects. In case site furnishings of tropical wood are located in the exterior, 5 mm sagging or twisting per 1m length is allowed.

Note:

In natural tropical wood (without oil treatment), during the first few weeks after installation, a red resin called kopal might leak out. Please note, the timber used on the Glade of Light will be oil treated and therefore the possibility of kopal leakage is limited. In the event of Kopal leakage onto the pavement, it is possible to wash it out, but it has to be done within the shortest possible delay. For cleaning instructions for Yorkstone Paving, see Hard Landscape Maintenance. The Kopal leakage is a natural behaviour of jatoba wood. Since it does not represent quality aspect, it is not a matter of claim.

CONTROL OF JATOBA WOOD

Instructions for control to be carried out on regular basis and common maintenance steps are set in the appendix no. 1 of MMcite O&M Manual 2021.

MAINTENANCE OF JATOBA WOOD

MMcite recommend that you simply allow your furniture to weather naturally this way and maintain the silver patina with regular, gentle cleaning with soft-soap flakes dissolved in warm water (not detergent). Let the wood weather to a natural grey or oil to maintain the rich tones. To preserve the original color of the wooden parts, the oil treatment is necessary. Frequency of treatment with oil depends on location and intensity of usage. Generally, it is recommended to apply the oil once the surface of the wood becomes dull and the rain water is absorbed by wood (instead of staying on the surface). The first maintenance application should be carried out by the end of the first month after installation. Then the treatment should be done minimally once a year (we also recommend the pre and post-seasonal treatment using oil). The choice of oil should be discussed with the manufacturer.

TREATMENT AND REPAIR OF JATOBA AND ACACIA WOOD

In order to keep the surface smooth, carry out the grinding (using P150 sand paper or rough sponge) during the usage. The recommended interval is every 6 months.

Teak oil treatment application:

If it is needed to carry out the surface treatment, the preparation phase is very important. The wood moisture shouldn't exceed 16%, the air temperature shouldn't drop under +5°C and relative air humidity over 70%.

- Clean the surface with water and mild detergent
- Regrind it with sandpaper P150-P220
- Apply 2 layers of teak oil using sponge or cloth (time interval specified by the manufacturer)
- Fasten the connecting material

In case of more extensive repair, it is recommended to let mmcit  carry out the repair

Connecting Material:

Stainless steel A2 grade connecting material is used for the installation of wooden parts to steel structure.

It is needed to check the connection material once each six months. If the connecting material has loosened up, it has to be fastened in order to prevent the damage of the product.

Foundation

If the foundation for anchoring of street furniture is visible, it is needed to visually check the compactness, mechanical damage or cracks in concrete.