

1 Triton Square and St Anne's

Condition 5 - External Works Maintenance Plan

1.0 Introduction

The 1 Triton Square and St Anne's planning permission 2016/6069/P dated 21/11/17 (as amended) includes a living wall, trees and areas of new hard and soft landscaping. In support of the details submitted for Planning Condition 5a, b, c, the following maintenance plan sets out how the living wall, trees and soft landscaping will be managed once delivered on site. This plan is provided following the comments received from the LBC tree officer on 22nd October 2019.

2.0 External Works Maintenance - Responsible Parties

Maintenance requirements will form part of the Employer's Requirements under the external works contract, encompassing all planting, trees and the living wall. These requirements will place a contractual obligation upon the contractor to maintain the external works for the following durations upon practical completion of the works:

- Planting - 12 months
- Trees - 36 months
- Living wall - 12 months

Upon the expiry of the above maintenance periods by the contractor, responsibility for the maintenance of the planting, trees and the living wall will transfer to the Regent's Place campus management team who currently maintain the existing trees and soft landscaping at Regent's Place.

3.0 Planting & Trees - Maintenance Plan

Maintenance works to the planting and trees will broadly follow the schedule in Figure 1.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Re-firming of soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Removal of litter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pest & disease control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Plant support	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General pruning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Slow release fertiliser			✓									
Weed control - cultivation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tree pruning	✓	✓	✓									
Removal of fallen leaves										✓	✓	✓

Figure 1 - Planting & Tree Maintenance Schedule

Control of Pests & Diseases

- Inspection: Monthly, all planted areas including trees for any signs of pest or disease infection.
- Resolution: Apply a suitable approved pesticide or other remedy in accordance with good horticultural practice.
- Location: Whole site.

Watering

- Supply: Potable mains water via irrigation system to all planters and tree pits.
- Quantity: Wet to 'Field Capacity'.
- Compacted soil: Loosen or scoop out to direct water to root zone.
- Frequency: As necessary for the continued thriving of all planting and trees.

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Establishment of New Planting

- Duration: 1 year.
- Weed control:
 - Method: Keep planting beds clear of weeds by hoeing and screefing.
 - Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.

Establishment of New Planting - Fertilizer

- Time of year: March or April.
- Type: Slow release.
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
- Application rate: As manufacturer's recommendations.

Refirming of Trees and Shrubs

- Timing: After strong winds, frost heave and other disturbances.
- Refirming: Tread around the base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement: Break up by fork, avoiding damage to roots. Backfill with topsoil and refirm.

Tree Grilles

- Operations: Clear grilles, remove weeds, adjust levels as necessary and lightly compact. Refill centre and lightly compact to correct level.
- Material for making up levels and refilling: As existing specification.

Nesting Wild Birds

- Survey: Before starting hedge or tree work during the period of February to August (inclusive), carry out a survey by a qualified ecologist and follow recommendations within the report.

Pruning Generally

- Pruning: In accordance with good horticultural and arboricultural practice.
 - Removing branches: Do not damage or tear the stem or bark.
 - 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 bud, 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.
- Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well-balanced natural appearance.
- Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
- Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

Pruning of Excessive Overhang

- Timing: Annually.
- Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.

Pruning of Excessive Height

- Timing: Annually.
- Operations: Remove excessive height as instructed.

Pruning Trees and Shrubs

- Standard: To BS 7370-4.
- Special requirements: Growth retardants not permitted.

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Formative Pruning of Young Trees

- Standard: Type and timing of pruning operations to suit the plant species.
- Time of year: Do not prune during the late winter/ early spring sap flow period.
- Young trees up to 4 m high:
 - Crown prune by removing dead branches and reducing selected side branches by one third to preserve a well-balanced head and ensure the development of a single strong leader.
 - Remove duplicated branches and potentially weak or tight forks. In each case cut back to live wood.
- Whips or feathered trees: Do not prune.
- Operatives: Approved specialist contractor.

Pruning Ornamental Shrubs

- General: Prune to encourage healthy and bushy growth and desirable ornamental features e.g. flowers, fruit, autumn colour, stem colour.
- Suckers: Remove by cutting back level with the source stem or root.

Pruning Flowering Species of Shrubs

- Time of year:
 - Winter flowering shrubs: Spring.
 - Shrubs flowering between March and July: Immediately after the flowering period.
 - Shrubs flowering between July and October: Back to old wood in winter.

Removal of Dead Plant Material

- Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.

Dead and Diseased Plants

- Removal: Within 1 week of notification.
- Replacement: In the next suitable planting season.

Reinstatement of Shrub/Herbaceous Areas

- Dead and damaged plants: Remove.
- Mulch/ matting materials:
 - Carefully move to one side and dig over the soil, leaving it fit for replanting.
 - Do not disturb roots of adjacent plants.
- Replacement plants:
 - Use pits and plants: To original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
- Dressing: Slow release fertilizer:
 - Application rate: As manufacturer's recommendations.

Thinning by Removal of Surplus Plants

- Plants to be thinned: Shrub beds.
- Standard: BS 7370-4.
- Timing: At end of growing season unless irrigated in which case when required.
- Roots:
 - Disturbance to adjacent plants: Minimise.
 - Soil: Refill holes with topsoil to leave an even graded surface.
 - Mulch: Maintain mulch as original specification.
 - Adjacent plants: Make good any minor damage immediately.
- Plants for retention: Select plants with a strong healthy habit.
- Mature planting density: As per planting schedules.
- If required use plants to fill and gaps on other parts of the bed or mix.

Weed Control Generally

- Weed tolerance: Weed to clear ground every 2 weeks.
- Adjacent plants, trees and grass: Do not damage.

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Hand Weeding

- General: Remove weeds entirely, including roots.
- Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
- Completion: Rake area to a neat, clean condition.
- Mulch: Reinstall to original depth.

Soil Aeration

- Compacted soil surfaces:
- Prick up: To aerate the soil of root areas and break surface crust.
- Size of lumps: Reduce to crumb and level off.
- Damage: Do not damage plants and their roots.

Soil Level Adjustment

- Level of soil/mulch at edges of beds: Reduce to 50 mm below adjacent grass or hard surface.
- Arisings (if any): Spread evenly over the bed.

Maintenance of Loose Mulch

- Thickness (minimum): 50 mm.
- Top up: Twice per year or as required.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by hand weeding.

Fertilizing Established Trees and Shrubs

- Time of year: As required.
- Application: Spread evenly.
- Rate: As manufacturer's recommendations.

Snow Removal from Shrubs and Trees

- Standard: To BS 7370-4.
- Plants subject to snow removal: All evergreens.
- Timing: When instructed.

Tree Work Generally

- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
- Removing branches: 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 Tree 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.

Prevention of Disease Transmission

- Standard: To BS 3998.

Cleaning Out and Deadwooding

- Remove:
 - Dead, dying, or diseased wood, broken branches and stubs.
 - Fungal growths and fruiting bodies.
 - Rubbish, windblown or accumulated in branch forks.
 - Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
 - Climbing plants remove if not part of original scheme.

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Cutting and Pruning Generally

- Tools: Appropriate, well maintained and sharp.
- Final pruning cuts:
 - Chainsaws: Do not use on branches of less than 50 mm diameter.
 - Hand saws: Form a smooth cut surface.
 - Anvil type secateurs: Do not use.
- Removing branches: Do not damage or tear the stem.
- Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.
- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
- Large branches: Remove only with prior approval.
 - Remove in small sections and lower to ground with ropes and slings.
- Dead branches and stubs: When removing, do not cut into live wood.
- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

Crown Reduction/Shaping

- General: Cut back selectively to lateral or sub lateral buds or branches to retain flowing branch lines without leaving stumps.
- Operations: Remove and shape as instructed.

Crown Lifting

- Clearances: Remove branch systems to give clearance.
- Height: As instructed.
- Removing branches: Remove whole branches back to the stem, or cut lower portions of branches back to lateral or sub lateral buds or branches. Do not leave stumps.

Crown Thinning

- Removing branches: Remove inward growing, crossing, rubbing, dead and damaged branches.
- Thinning: Selectively remove secondary and small live branch growth evenly throughout the crown.
- Quantity: As instructed.
- Cutting: Make no cuts of more than 50 mm diameter.
- Branches: Cut back to lateral or sub lateral buds or branches without leaving stumps.
- Appearance: Leave a uniform and well balanced structure of branches and foliage.

Cutting Tree Roots

- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
 - The branch spread of the tree.
 - An area with a radius of half the tree's height, measured from the trunk.
- Outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.
- Cutting:
 - Cutting: Make clean smooth cuts with a hand saw.
 - Wounds: Minimize. Avoid ragged edges.
 - Finishing: Pare cut surfaces smooth with a sharp knife.
- Backfilling:
 - Protection: Cover cut roots with clean sharp
 - Material: Backfill with original topsoil.

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Removing Trees and Shrubs

- Standards: To BS 3998 and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.
- Tree stumps:
 - Treatment: Remove mechanically to a minimum depth of 300 mm below ground level.
 - Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
 - Material: Use as-dug material and/ or imported soil as required.
 - Finishing: Consolidate and grade to marry in with surrounding ground level.

Bark Damage

- Wounds:
 - Do not attempt to stop sap bleeding.
 - Bark: Remove ragged edges using a sharp knife.
 - Wood: Remove splintered wood from deep wounds.
 - Size: Keep wounds as small as possible.

Cavities in Trees

- Investigation: Remove rubbish and rotten wood. Probe the cavity to find the extent of any decay, and give notice.
- Water filled cavities: Do not drain.
- Sound wood inside cavities: Do not remove.
- Cavity openings: Do not cover.

4.0 Living Wall - Maintenance Plan

Schedule of Inspections

- 1 to 2 inspection visits per calendar month.
- 3 to 4 horticultural visits per year.
- The daily monitoring of the system via the web based irrigation controller.

Inspection Visit Actions

- Visually inspect the wall.
- Check moisture levels in the wall & adjust the irrigation as necessary.
- Check for pest & disease.
- Check the wellbeing of the plants.
- Check for correct operation of the irrigation.
- Clean area below wall.
- Carry out remedial work to the wall as found to be necessary.

Horticultural Visit Actions

- Check moisture levels in the wall & adjust irrigation as necessary.
- Remove weeds.
- Prune in accordance with seasonal requirements.
- Dead head as necessary.
- Treat for pest & disease.
- Apply feed & nutrients as necessary.
- Check & service the irrigation plant equipment.
- Clean area below wall.
- Check run off outlets for blockages.
- Replant any plants that have failed.

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Pump & Irrigation/Dosing System

- It will be the responsibility of the contractor (first 12 months post-PC, Regent's Place Management team thereafter) to ensure that the pump and irrigation system is inspected and (where required) serviced at prescribed regular intervals as necessary.
- It will be the responsibility of the contractor (first 12 months post-PC, Regent's Place Management team thereafter) to ensure that the dosing of the required nutrients is carried out at suitable intervals.
- It will be the responsibility of the Regent's Place Management team to ensure that an uninterrupted & suitable water & power supply is maintained at all times.
- The maintenance requirements for the irrigation system include the items listed below:
 - Cleaning or replacement of the in line filter.
 - Cleaning or replacement of the solenoid filters.
 - Replenishment of nutrient.
 - Checking for leaks.
 - Flushing of drip lines if necessary.
 - The distribution pipe work and fittings should only require maintenance if damaged is sustained.

Quality Control

- Sufficient resources will be allocated to allow the Living Wall to be maintained to an acceptable standard.
- The criteria that determine the acceptable standard that must be maintained will be agreed between the contractor and British Land.
- A review procedure will be established to monitor quality control issues.

Access

- British Land will provide unobstructed access to allow all scheduled & instructed maintenance & servicing works to be carried out.
- A procedure for ensuring that access to enable emergency maintenance & servicing work is always available, will be established between the contractor and British Land.