

Great Ormond Street Children's Cancer Centre (GOSHCCC)

Landscape Management and Maintenance Schedule for Soft Landscape & Intensive Green Roofs

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Quality Information

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1. Introduction

The Soft Landscape maintenance and management plan is required to satisfy Planning Permission ref. 2022/2255/P for the Redevelopment of the Great Ormond Street Hospital (GOSH) Frontage Building, received 17th April 2023. It is relevant to:

- Condition 5

*'Prior to commencement of the relevant part of the development full details of hard and soft landscaping and means of enclosure of all un-built, open areas for the roof garden, balconies and ground floor, **including a detailed landscape maintenance and management plan shall be submitted to and approved by the local planning authority in writing.** The relevant part of the works shall not be carried out otherwise than in accordance with the details thus approved.'*

- Condition 21

*'An up to date drainage statement, SuDS pro-forma, **a lifetime maintenance plan** and supporting evidence should be provided including:*

- *The proposed SuDS or drainage measures including storage capacities*
- *The proposed surface water discharge rates or volumes*
- *Information on the health and safety risks related to design*
- *Confirmation of how the predicted temporary flooding at manhole SW03 will not adversely affect any buildings on site through the use of mitigation measures.*
- *Illustration of the routes overland flow will take in events that exceed the 1 in 100-year (plus 40% climate change consideration) return period within the drainage drawing'*

2. Site Description

The design focuses on creating a crucial, innovative, and flexible building that houses wards, a cancer day care centre, new surgical theatres, an intensive care unit, and an imaging centre equipped with the latest technology. The aim is to provide a patient and parent-friendly environment that supports the hospital's mission to deliver the safest, most effective, and efficient care using the latest technology to ensure the best possible outcomes for patients.

The design concept incorporates 'House' and 'Garden' themes, with conscious allusions to home life throughout the building. This approach aims to create a nurturing environment with outdoor spaces at every level for patients, staff and visitors to enjoy.

Each level consists of a children's garden and a staff garden, terraces dedicated to palliative care. The school is located on level 2 providing direct outdoor access for physical rehabilitation and education. The roof garden at level 10 provides a large expansive space catering to multiple needs. The roof terrace is broken into three parts, the secret garden, the glades and the enchanted woodland each with their own characteristics.

Level 2: entrance garden and school terrace

Level 3: waiting room terrace and staff balcony

Level 4: Family balcony and staff balcony

Level 5: Staff balcony

Level 6: Staff balcony, children's balcony and palliative care terrace

Level 7: Staff balcony, children's balcony

Level 8: Staff balcony, family balcony

Level 9: Plant balcony (for replacement of plant equipment)

Level 10: roof garden

3. Objectives and Guidelines

This report aims to provide guidelines for the management and maintenance of the proposed soft landscape at Great Ormond Street Hospital.

Proper maintenance and management of the soft landscape will significantly impact the survival and ability for planting to thrive. Therefore, it is recommended that a known and reliable garden maintenance team be appointed to maintain all relevant elements.

The landscape maintenance and management plan aim to:

- Set out the principles of the required regime to ensure the successful establishment of the proposed planting scheme
- Set out the principles for the long-term soft landscape maintenance regime to ensure the thriving and longevity of the proposed scheme.

All planting material are maintained at a consistently high standard. It is recommended that the Great Ormond Street Hospital Trust (GOSHT) implement a regular system of visual inspection to ensure that there are no signs of drought or leaning in respect to trees (indicative of potential problems with the rootball) and to ensure that any replacements or remedial works are to a high standard.

The maintenance objectives are as follows:

- ensure establishment and healthy growth;
- retain the amenity value, visual attractiveness and landscape composition of the planting;
- ensure sustainable approach and ecological value;
- keep free of weeds and invasive species;
- control diseases and the spreading of disease;
- ensure that the water retention performance of the intensive green roofs are maintained throughout the system's lifespan.

It is proposed that this is achieved this through the activities described in the below subchapters 3.1 and 3.2.

3.1 Trees and Shrubs planting areas

Element	Description / Type of Defect	Maintenance Regime / Trigger for Repair	Frequency / Response time to make safe or repair	Responsibility
Trees	General	Inspect all aspects of tree installation, including surround, moisture content in rootballs, irrigation system (reservoir) underground guys and aeration tube caps. Maintain in accordance with BS 7370-4	Min 1 No. of visits per week throughout the year, to ensure healthy thriving trees. The frequency is to be reviewed in consideration of the final plant selection with both Suppliers and the Planting Contractor.	GOSHT
	Pesticides	Keep trees free from pests and diseases. The use of pesticides will need to be approved by GOSHT prior to use.		
	Watering	<p>An automatic irrigation system will be implemented within the planting areas including trees.</p> <p>It is recommended that the following visual inspection of the trees and if deemed required, the specific requirements of each tree species are met by adjusting the amount of water that they are receiving.</p> <p>[For indicative guidelines, refer to 'Guide to watering' in Appendix B].</p> <p>The range identified is a guide and quantities supplied will be determined by monthly / weekly variations in temperature, rainfall and other environmental conditions.</p>	The Tree Supplier and Planting Contractor to specify timing and quantity required to ensure establishment, survival and healthy thriving trees.	GOSHT
	Feeding and fertilising	A nutrient tank is to be installed and administered from the roof top to supply fertilizer via automatic irrigation system to all planting.	As required to ensure healthy and thriving trees.	GOSHT

Element	Description / Type of Defect	Maintenance Regime / Trigger for Repair	Frequency / Response time to make safe or repair	Responsibility
	Pruning	Removal of dead, diseased, dying part of trees. Monitor and prune trees to ensure the canopy form is typical of species and that the safe circulation through the outdoor areas are not compromised. Activity to be carried out by a Qualified arboriculturist and in line with BS 3998:2010.	During Winter months and/or required for health and safety reasons.	GOSHT/ Qualified arboriculturist
	Bark Damage	Treat bark damage.	As required	GOSHT/ Qualified arboriculturist
	Replacement of dead, diseased, damaged trees.	Replace with trees matching the original species.	As soon as possible	GOSHT
	Litter removal	Removal of all rubbish from planting and planters during each maintenance visit.	As per wards requirements	GOSHT

Element	Description / Type of Defect	Maintenance Regime / Trigger for Repair	Frequency / Response time to make safe or repair	Responsibility
Shrub and Herbaceous perennial	General observation of condition.	Inspect all aspects of the shrub and herbaceous planting installation, including the moisture content in root balls. Maintain in accordance with BS 7370-4	As required. Min 1 No. of visits per week throughout the year, to ensure healthy thriving plants. The frequency is to be reviewed in consideration of the final plant selection with the Planting Contractor.	GOSHT
	Pruning, cutting back and deadheading	Monitor and prune shrubs to ensure that their typical form is retained, and that the safe circulation through the outdoor areas are not compromised. Dead branches – when removing, do not cut into live wood. Herbaceous deadheading to ensure repetitive flourishing throughout the season and looking tidy. Undertake winter pruning such as rejuvenation pruning and herbaceous cut-backs to ensure plant species flourish through following seasons.	As required. Pruning should be carried out in accordance with BS 7370: Part 7370-4.	
	Disease or diseased plants	Give notice if detected and replace with plants to match original.	As required. As soon as possible.	
	Watering	An automatic irrigation system will be implemented within the planting areas. It is recommended that the following visual inspection of the planted area and if deemed required, the specific requirements of each species/area are met by adjusting the amount of water that these are receiving.	As required to ensure healthy and thriving plants.	

Element	Description / Type of Defect	Maintenance Regime / Trigger for Repair	Frequency / Response time to make safe or repair	Responsibility
	Fertilising	A nutrient tank is to be installed and administered from the roof top to supply fertilizer via automatic irrigation system to all planting.	As required to ensure healthy and thriving plants. Recommended 1/ month from May to September	
	Re-firming	Make good	As required after strong winds, frost heave and other disturbances	
	Gravel mulching	Maintain to minimum depth (as per planter build up detail) across entire module. Adjust and level up the layer of gravel.	As required	
	Weeding	Eliminate all weeds. Weeding to be handpicked. Avoid using chemical herbicides.	As required during every inspection.	

3.2 Intensive Green Roofs

Intensive green roofs are likely to require regular inspection and maintenance. Grassed areas may require mowing weekly or fortnightly, plant beds may require weeding on a weekly or fortnightly basis during the growing season. The most maintenance is generally required during the establishment stage (12 to 15 months), and this should usually be made the responsibility of the Landscape Contractor. Maintenance contractors with specialist training in green roof care should be used, where possible.

The table below provides guidance on the type of operational and maintenance requirements that may be appropriate. The list of actions is not exhaustive, and some actions may not always be required.

All maintenance actions carried out at roof level must be in full compliance with the appropriate health and safety regulations, and particularly those specifically dealing with working at height. Training and guidance information on operating and maintaining the roof should be provided to all property owners and tenants. Safety fastenings will be required for personnel working on the roof.

Access routes to the roof should be designed and maintained to be safe and efficient, and walkways should always be kept clear of obstructions. Secure points for harness attachments should be provided when access near to the roof edges is required.

Specific maintenance needs of the green roof should be monitored and maintenance schedules adjusted to suit requirements.

Maintenance Schedule	Required Action	Typical frequency	Responsibility
Regular inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems, membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms	GOSHT
	Inspect soil substrate for evidence of erosion channels and identify any sediment sourced.	Annually and after severe storms	GOSHT
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms	GOSHT
	Inspect underside of roof for evidence of leakage	Annually and after severe storms	GOSHT

Maintenance Schedule	Required Action	Typical frequency	Responsibility
Regular maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Every 6 months or as required	GOSHT
	During the establishment period (12- 18 months), replace dead plants as required.	Monthly	Manufacturer
	Post establishment, replace dead plants as required (where less 5% of coverage as failed)	Annually in Autumn	GOSHT
	Remove fallen leaves and debris from deciduous plant foliage	Every 6 months or as required	GOSHT
	Mow grasses, prune shrubs and manage other planting (If appropriate) as required-clippings should be removed and not allowed to accumulate	Every 6 months or as required	GOSHT
Remedial works	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required	GOSHT
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required	GOSHT