Begbroke Science Park

LP2264

Landscape and Ecology Management Plan

Document Number: LP2264/LA/RP/001

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Contents

1. Introduction

1.1 Purpose Of The Document

Fira has been instructed by Oxford University Development Ltd (OUD) to prepare a Landscape and Ecology Management Plan (LEMP) in respect of a Reserved Matter Submission (appearance, layout, scale and landscaping) pursuant to the approval of Outline Planning Permission (OPP) ref. 18/00803/OUT, comprising one academic building and one commercial research building, totalling 12,500m2 floorspace of B1a/b/c and ancillary D1 floor space . This LEMP solely relates to the Reserved Matters Submission and Condition 4 of the OPP.

OUD is also proposing to submit a separate full planning application for a new car park and service building which falls outside of the red line for the OPP which in part will provide parking for the aforementioned floorspace. Any proposed landscaping associated with the new car park and service building will be dealt with under the full planning application.

The Plan sets out management responsibilities, management and maintenance objectives, and specific management prescriptions for landscape components during the establishment period. Beyond the five year establishment period, this Plan will serve as a guide that can be updated for the future maintenance and management of the site in the long term.

The overarching aim is to provide a framework that will facilitate the continued successful management of the site and ensure that landscape and ecological elements can be maintained and developed to contribute to the quality of the area and realise the original concept and design intention. Once implemented, this plan will help to maximise the overall quality and appearance of the development, its amenity and ecological value, and the users' enjoyment of it. This LEMP was developed following an ecological survey and recommendations by BSG ecological consultants. The document has been issued to the ecological consultant for comment and review prior to formal submission.

1.2 Structure of the Document

Following the introduction, the plan includes:

- **Section 2** provides an overview of the general responsibilities and objectives associated with green spaces, including maintenance operations and ongoing management. It also provides more specific management objectives under the headings of amenity, ecology and hydrology. Finally, it describes how the plan should be reviewed, monitored and updated, including legal considerations that will need to be taken into account.

- **Section 3** provides a more detailed breakdown of management prescriptions for each soft landscape typology and ecological element / area. For each typology, element or area, management objectives describe the original design intent, including the anticipated appearance once successfully established. Instructions for maintenance requirements during the first 5 years are provided along with recommendations for ongoing long term maintenance. Targets are given for achieving successful establishment, with details of how the establishment should be monitored. Guidance is also provided for actions to be taken to remedy instances of establishment targets not being met.

- **Section 4** describes the management prescriptions for each hard landscape typology or element. As with Section 3, the first 5 years' maintenance requirements are given along with recommendations for ongoing long term management and monitoring. However, due to the differing nature of hard landscape elements, details of management objectives and establishment targets are not included.

1.3 Associated Documents

This LEMP has been developed as part of a suite of information and should be read in conjunction with the following submitted drawings and documents:

- *LEMP Supporting Diagram LP2264 FIR 00 ZZ DRL 0008*
- *Landscape Masterplan LP2264 FIR 00 ZZ DRL 0001 Landscape Masterplan*
- *Landscape strategy supporting the reserved matters submission*
- Begbroke Zones B and C: Construction Ecological Management Plan (CEMP) (included in Appendix 3)

2. Landscape and Ecology Management

2.1 Management Responsibilities

The maintenance operations outlined in this plan will run for a minimum of 5 years commencing on the date of certification of Practical Completion. For the first 12 months after certification of Practical Completion, maintenance will be undertaken by the Landscape Contractor responsible for the implementation of these works. After certification of Final Completion, maintenance for the following 4 years will be undertaken by the appointed Landscape Contractor or the appointed Management Company.

This maintenance period will run concurrently with the Defects Liability Period. During this time the Landscape Contractor responsible for implementing the works will be liable for any defects in accordance with the landscape specification.

The defects liability periods will be 24 months for all landscape elements.

Following practical completion, it is anticipated that each area will be maintained for 1 years maintenance by the installation contractor, after which maintenance should be transferred to the estates management team. It is recommended that the estates management team should manage all ongoing long term maintenance operations associated with these works following the establishment maintenance period.

2.2 Relevant Standards

The following list includes a number of key standards to be adhered to when undertaking maintenance operations, however this is not exhaustive.

- BS 2998: Tree Work - Recommendations.
- BS 5837: Trees in relation to design, demolition and construction.
- BS 7370-1: Grounds maintenance. Recommendations for establishing and managing grounds.
- BS 7370-2: Grounds maintenance. Recommendations for the maintenance of hard areas.
- BS 7370-3: Grounds maintenance. Recommendations for maintenance of turf (other than sports turf).
- BS 7370-4: Grounds maintenance. Recommendations for maintenance of soft landscape.
- BS 7370-5: Grounds maintenance. Recommendations for the maintenance of water areas.
- BS 8516: Recommendations for tree safety inspection.
- BS 8545: Trees from nursery to independence in the landscape.

2.3 Key Management Objectives

Whilst the creation of optimum planting conditions combined with high standards of implementation are essential to give properly specified plant material the best start in life, the establishment and future success of the landscape will be dictated by the quality and frequency of the subsequent maintenance and management it receives. The following key objectives for maintenance and management set out the approach to maintenance operations throughout the site and have been informed by best practice guidance to ensure a robust regime will be adopted both during the establishment period, and afterwards. Objectives specific to different landscape features have been detailed in sections 3 & 4

Key objectives for maintenance and management include:

- To facilitate an efficient and sustainable landscape management and maintenance regime throughout the lifetime of the development, that avoids intensive long term maintenance requirements;
- To balance the objectives of ecology, hydrology, recreation and amenity functions;
- To provide a high quality external environment for all site users;
- To ensure that the landscape develops in a manner commensurate with the original design intentions;
- To accommodate appropriate public use of the site, by promoting a management regime which is appropriate to the site's role;
- To ensure the successful establishment and continued growth through to maturity of the trees and other planting identified on the Planting Plan drawings;
- To secure a long term future for the new trees and grasslands with particular emphasis upon achieving visual amenity and, where native and wildlife friendly planting is proposed, the enhancement of its ecological potential;
- To manage the landscape in a manner which ensures the safety of site users, such as maintaining visibility splays, maintaining good surveillance, removal of dead, dying or diseased trees and plants;
- To be flexible and adaptable to changing needs of the landscape through its establishment and long term management; and
- To ensure suitable habitat and connective corridors (either continuous or 'stepping-stones') across the site to allow natural dispersal and exchange of wildlife, both flora and fauna.

2.4 Amenity Management Objectives

The following amenity management objectives have been informed by best practice guidance to ensure a robust regime during the establishment period and beyond:

- Existing trees to be managed to ensure the safety of all site users. The trees should be maintained to promote healthy growth, good form and continued longevity to continue to contribute to the amenity value of the site;
- To ensure all new tree and woodland planting is given the necessary care required in order to establish successfully, promote healthy growth and form, through to independence and maturity in the landscape;
- New hedgerows and native shrub planting shall receive the appropriate maintenance to achieve good establishment and that a dense and bushy form will be created and maintained to maximise amenity and ecological value;
- All ornamental and amenity planting to be established to provide a dense cover to minimise weeds and maintain a neat appearance. Species should be managed to ensure continued successful flowering each year, providing year round interest and amenity value;
- Maintain the amenity grass areas and planted areas in a manner which ensures the establishment of healthy and vigorous plants and a close textured, weed-free sward, which creates a tidy appearance. Keep all shrub beds and tree planting areas weeded and cleared of litter;
- Establish a regular pattern of maintenance operations throughout the season and according to best practice and including ecological considerations;
- Ensure all areas are regularly fertilised with appropriate fertilisers. Wildflower grassland areas are not to be fertilised;
- Water if required to provide optimum conditions for early establishment of all planting and seeding. Following the establishment phase, water during prolonged dry periods, particularly in spring, with water focused onto roots of trees and shrubs, particularly semi-mature specimens;
- Allow for additional maintenance in any periods of unusually prolific grass and weed growth;
- Ensure that the height of amenity grass areas shall not exceed 35mm except in prolonged periods of dry weather, when the mown height should be raised to 50mm;
- Correct any defects which become apparent during the earliest appropriate weather conditions / planting season;
- Check all tree ties, stakes and other accessories, and remove when appropriate (typically after 3-5 years).
- Ensure all hard surfaces and footways are swept and kept weed and litter free;

- The Maintenance Contractor shall employ skilled supervisors and operatives who deliver a high-quality level of workmanship;
- Where necessary, employ specialists, such as arboriculturists, where specialist workmanship and knowledge are required.
- Special attention should be given to the maintenance of all newly planted schemes during the first few years which is typically the most sensitive phase. Particular focus should be placed on watering, formative tree pruning etc. during this period; and
- In the event of any issue that may affect the design or a change in the overall design intent, the Maintenance Contractor should seek instruction from the Project Landscape Architect prior to starting any work on site.

2.5 Ecological Management Objectives

The following ecological management objectives are based on the ecological value of the site and the recommendations of the Ecology Report (BSG Ecology, 2018):

- To ensure that the development delivers a net gain in biodiversity through good establishment and continued appropriate of newly created habitats.
- To ensure that this biodiversity gain is maintained through appropriate management of these habitats.
- To ensure that the wildflower grassland is appropriately mown and not subject to any applications for fertilizer, herbicide or pesticide.
- To ensure that the amenity planting includes plant species that are native, pollinator friendly, and species that provide fruit and seed resources for wildlife.
- To ensure that any retained and new hedgerow are managed to maximize their wildlife value.
- To ensure that ongoing vegetation management will not adversely affect nesting birds.
- To ensure that the wildlife infrastructure (e.g., reptile and amphibian banks and invertebrate banks, and bat and bird boxes) are appropriately managed and maintained to allow their continued use by wildlife.

2.6 Hydrological Management Objectives

The following management objectives have been informed by best practice guidance to ensure the successful functioning of hydrological features on the site:

- Maintain the conveyance, storage and filtering functions of all SuDS features and water courses / bodies;
- Manage open and sustainable drainage features for their contribution and enhancement to the amenity and habitat value of the landscape, preserving areas of open water and aquatic habitats to provide amenity value, recreation and ecological benefit;
- Ensure water remains oxygenated and that water quality is maintained or improved;
- Ensure the flow of surface water to inlets / outlets, and off-site, is maintained to engineers' specification;
- Ensure the edges of hydrological features are maintained in perpetuity, protecting against the effects of erosion;
- Maintain clear hydrological systems through the removal of silt and debris;
- Control of invasive species of flora and fauna which are damaging to the ecosystem; and
- Prevent pollution of ground water and leaching of hazardous or ecologically detrimental substances into watercourses.

2.7 Management Review, Monitoring and Updates

Landscape and ecological features will, in some cases, take a long time to fully develop and provide the intended appearance and ecological habitats. Over this time period, the management of the site will be likely to involve many different individuals and organisations, with the consequence that the management sometimes departs from the key objectives and vision originally intended. Therefore, to ensure that all involved in the management of the site are working towards achieving its landscape and ecology management objectives, it is essential that the maintenance and management plan is reviewed regularly. This ensures that the key objectives and design intent for the site is understood by all involved in site management, and the long term management objectives can be met.

It is intended that this Management Plan should form the basis of a long term management plan for the site. Therefore, the plan should be updated as required to respond to site specific issues that arise in day to day management, and to remedy any management and maintenance practices which have failed to achieve the desired outcome. This monitoring, review and update process will facilitate the success of long term management in accomplishing the design aspiration, and it is intended that the management plan will become a reference manual for the long term maintenance and management of all landscape and ecology features across the site.

Monitoring the success of establishment needs to take place on a regular basis ranging from month to month to year to year, in order that management practices can be tailored appropriately and to ensure establishment and long term success can be achieved. Monitoring will take place to assess the success of particular areas or items against targets that are set out with Section 3 of this document. These targets give time frames for when successful establishment should be achieved. If targets are not being met, additional measures may be needed to remedy the situation through the adaptation of management practices. Section 3 also provides some guidance detailing potential remediation solutions that could be explored, however the list is not considered exhaustive as it is not possible to foresee all situations or issues that may arise through the duration of the establishment period and beyond. It is therefore critical that issues are discussed with all involved in the maintenance and management process (e.g. Developer, Contractor, Management Company and Landscape, Arboricultural & Ecological consultants) and any methods adopted on site as remedy should be recorded within an updated management plan as future reference for the duration of the development.

Alongside updates to respond to monitoring of targets, the plan should be reviewed on an annual basis to make sure any maintenance and management changes identified have been recorded. Beyond this a review should take place every 3 years as a minimum to ensure any updates to current good practice guidance can be captured and incorporated within this management plan in order for it to remain relevant, appropriate and sustainable in the long term.

2.8 Legal Considerations

The following considerations set out the regulatory framework relating to ecology on the site, note that the separate CEMP document covers ecological protection measures to be adopted during the site clearance and construction phases:

Badgers
Badgers and their setts are protected under the following legislation:

- Protection of Badgers Act 1992.
- Wild Mammals (Protection Act) 1996.
- Wildlife and Countryside Act 1981 (as amended) (Schedule 6) (strengthened through the Countryside and Rights of Way Act 2000)

This suite of legislation protects badgers from cruel ill-treatment; willful killing, injuring and taking; disturbance whilst occupying setts and intentional infliction of unnecessary suffering. Their setts are also protected. A licence from Natural England is required to disturb or close badger setts

Bats
Bats are protected under European (Conservation of Habitats and Species Regulations 2017 as amended) and UK (Wildlife and Countryside Act 1981 (as amended) wildlife legislation. Some species are also Priority Species (Natural Environment and Rural Communities Act (2006) – Section 40, listed in accordance with Section 41). A licence from Natural England is required to disturb or destroy a bat roost site.

Great Crested Newts
This species and its breeding sites and resting places are protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and it is protected under the Wildlife and Countryside Act 1981 (as amended). A licence is required for works that could affect this species or its breeding sites or resting places. It is also a Priority Species (as designated under the Natural Environment and Rural Communities Act (2006). Given the potential presence of this species at the site, works will be covered by an appropriate Natural England licence, for example through registration of the scheme under Naturespace's district level licence.

Nesting Birds
All birds are protected from harm while building a nest or using a nest. The nesting season is typically taken to be March to August inclusive, however, some species will nest all year round, such as barn owl and pigeon. Some species are afforded additional protection and penalties are more severe. Management will be carried out outside of the main bird breeding season (March to September) where feasible. Where works to habitat that could support nesting birds are required within this time frame, a qualified ecologist will carry out a check to ensure no nesting birds are present or would be disturbed by works. Where necessary, appropriately sized buffer zones of no disturbance will be set up to protect nests. Within these areas, no works will be carried out until a qualified ecologist has confirmed that the nests are no longer active.

Reptiles
The reptile species occurring on Site (grass snake and common lizard) and are protected under the Wildlife and Countryside Act 1981 (as amended) (Section 9 (1)) against intentional killing and injury. Where it is predictable that reptiles could be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring. The following precautionary measures should therefore be employed in the management of wildflower grassland and vegetation on and around the attenuation pond at the Begbroke site: this vegetation is to only be cut during conditions when reptiles are active and able to move away from machinery (air temperatures above 9 °C). Cut from the centre outwards to encourage movement of reptiles into adjacent suitable habitat and avoid trapping reptiles in the path of machinery.

Japanese Knotweed and other Notifiable Weeds
Japanese knotweed is classed as a controlled plant under the Wildlife and Countryside Act 1981 section 114 (2) (WCA 1981). It is not illegal to have Japanese knotweed on a property, but it is against the law to cause or allow the plant to spread in the wild. A

landowner will not be seen to be breaking the law until Japanese knotweed from his land spreads into another's property or onto public land. As this plant is such a fast grower, it is usually only a matter of time before this happens. It is, however, a legal requirement to prevent Japanese knotweed spreading off site, into the wild, or onto neighbouring land. If it is discovered, treatment to eradicate Japanese Knotweed or other notifiable weeds should be sought from a specialist contractor immediately.

3. Management Prescriptions - Soft Landscape and Ecology Features

The following section sets out management prescriptions specific to soft landscape treatments and features included within the site. Under the headings listed below, each sub section describes the specific management objectives, establishment maintenance, and targets and monitoring relevant to that landscape component.

3.1 Existing Trees and Vegetation Retained

Management Objectives

Individual Trees
There are very few existing individual trees to be retained and these are mostly species rather than clonal cultivars, so canopies are likely to be more open, varied and asymmetrical. Clear stems do not need to be maintained unless the trees location requires this, such as next to footpaths, play areas etc. Where space allows, species with a natural tendency to droop their branches down to the ground should be allowed to do this.

Woodland Trees/Tree Groups
Trees will naturally differ in form and height compared to trees grown in an open environment without close competition from neighbouring trees. It is expected that in the long term trees will be taller, having higher, smaller and more upright canopies. There is no requirement to maintain or create clear stems unless it is a specific area of woodland or is identified for amenity use such as public walking.

Maintenance

To ensure survival and optimal development, these will be subject to the following maintenance:

- Existing mature trees retained should be risk assessed annually by qualified arboriculturists using industry approved methods.
- Where risks are identified, remedial actions must be taken to eliminate or reduce any risk to an acceptable level.
- Maintenance of a weed free area around the base of each tree outside of woodland areas. Trees within grassland or planting should have all weeds around the trunk removed by hand or application of herbicide.
- Watering if required.
- Removal of any items that have been attached to trees, such as posters, signage, cable ties or bike locks/chain etc.
- Inspect trees for dead, dying or diseased wood. Prune back to living wood, good growing points or main branches, do not leave any snags, cut back to branch collars avoiding any flush cutting. Avoid making any large spring cuts which could cause excessive bleeding.
- Remove suckers /epicormic growth.
- Prune if necessary, to achieve natural shape, healthy growth, remove crossing or rubbing branches, correct any potential weak attachments or narrow V crotches and to favour a strong single leader.
- Crown lift if needed to maintain clearance of circulation routes and visibility splays.
- Any deadwood should be used to create small log piles to provide habitat in areas inaccessible or out of view of the public.
- Inspect trees for signs of pest and disease, in cases of serious attack employ appropriate control measures.

Targets, Monitoring and Remediation

- **Target**: Trees continue to thrive, and maintain an attractive appearance/habitat.
- **Monitoring**: Monitor trees in quarterly intervals. Check for healthy growth and form, review dieback and disease.
- **Remediation**: If any issues are identified, action should be taken to remedy the issues before tree failure. Review soil fertility, ensure adequate watering is provided if required, carry out restorative pruning to encourage growth.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Long Term Maintenance Operations													
Health and safety check of existing trees and vegetation by a competent arboriculturalist	1 x Annually or as required according to condition/location		1										
Weed control and removal	4 x Annually				1		1		1		1		
Removal of litter from vegetation (Long term frequency to be reviewed and reduced as required)	4 x Annually	1			1			1			1		
Pruning works (general)	Annually												
Removal of items attached to trees	As required	All Year											
Inspect trees for pest and disease	2 x Annually	1					1						
Check for nesting bird presence prior to any tree works that could affect them	As required												

Long Term Management (year 6 onwards)

Following the establishment maintenance period, it is recommended that the appointed estates management team and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule above and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

3.2 Tree Planting

Management Objectives

Specimen Trees
Trees will be larger growing species, planted as single specimens or as pairs in key locations, such as entrance gateways and within prominent public spaces. The location of landmark and large feature trees will provide them with sufficient space to grow to their full potential without significant future intervention. Maintenance will most likely be limited to light, formative pruning to maintain an attractive canopy shape. Individual specimens will display more natural variation in form whilst trees planted in pairs may require additional pruning to maintain visually balanced canopies. Where clear stems have been specified, these will be maintained at a minimum of 2.4m and no low branches should be allowed to over hang the carriageway, footpaths or interfere with visibility splays. Clear stems do not need to be maintained unless supplied as such or the trees location requires this, such as next to footpaths etc.

Avenue Trees
Trees will be of a regular form, exhibiting a bushy and dense canopy. All trees should have a fairly uniform appearance, being similar in size and shape to adjacent trees of the same species or cultivar. All trees, with the exception of multi-stems, should have a minimum clear of stem of 2.4m. Clear stems should be maintained at this minimum; greater clearance might be required should a need be identified on site, such as where the lower canopy gets naturally clipped by large vehicles on the carriageway side. In such instances the footpath side of the canopy should also be raised to match, ensuring a balanced form. No low branches should be allowed to over hang the carriageway, footpaths or interfere with visibility splays.

Parkland Trees
Trees will be larger growing specimens, having a natural shape and form. Trees will mostly be species rather than clonal cultivars, so canopies will likely be more open, varied and asymmetrical. Form of the same species growing adjacent to each other will most likely naturally vary in shape and size.

Establishment Maintenance (first 5 years after planting)

To ensure survival and optimal development these trees will be subject to intensive establishment maintenance.

- Trees adjacent to footpaths or cycleways are to have no branches that could impede the movement of cyclists or pedestrians.
- Trees in grass should have a circular area of bark mulch and be maintained weed free and topped up regularly to keep a 75mm layer. Trees within planting should have all weeds around the trunk removed by hand or application of herbicide.
- Watering to ensure moisture levels are maintained appropriate for optimum growth.
- Inspect and ensure tree pit drainage is working; tree pits should never be waterlogged at any time of year. Ensure positive systems are not blocked. Where soakaway drainage is provided to base of pits, the level of water should be checked via the inspection pipe at each maintenance visit. Any pits subject to sitting water will require pumping out via the inspection pipe.
- Application of a slow release fertiliser in spring around the base of all trees to ensure soil fertility is maintained.
- The removal of any vandalised, unhealthy, or dead specimens as soon as possible and replacement with trees of the same size to those adjacent where practicable, during the next available planting season.
- Inspection, adjustment and maintenance of anchors, stakes and ties. Stakes and ties to be removed when instructed and when the tree(s) has established successfully.
- Removal of any items that have been attached to trees, such as posters, signage, cable ties or bike locks/chain etc
- Re-firming of trees after strong winds, frost heave or other disturbances.
- Inspect trees for dead, dying or diseased wood. Prune back to living wood, good growing points or main branches, do not leave snags, cut back to branch collars avoiding any flush cutting. Avoid making spring cuts which could cause bleeding.
- Remove suckers /epicormic growth.
- Formatively prune if necessary to achieve natural shape, healthy growth, remove crossing or rubbing branches, correct any potential weak attachments or narrow V crotches and to favor a strong single leader.
- Crown lift if needed to maintain clearance of circulation routes and visibility splays.
- Any deadwood should be used to create small log piles to provide habitat in areas inaccessible or out of view of the public.
- Inspect trees for signs of pest and disease, in cases of serious attack employ appropriate control measures.
- Topping up mulch at the end of the defects liability period to achieve a 75mm layer.

Targets, Monitoring and Remediation

- **Target**: Tree pit drainage is functioning correctly, and no pits are waterlogged.
- **Monitoring**: Monitor pits at monthly intervals. If waterlogging is found remediation action should be taken immediately.
- **Remediation**: For positively drained trees, the system should be cleared of blockages. For trees with soakaway drainage, water should be pumped out of pits via the inspection pipe. For other trees check for signs of soil compaction, if found de-compaction methods should be employed such as air injection etc. All remediation to be agreed with the Contract administrator.

- **Target**: Trees have established and are largely independent in the landscape by 5 years after planting.
- **Monitoring**: Monitor trees in quarterly intervals. Check for healthy growth and form, review dieback and disease.
- **Remediation**: if any issues are identified action should be taken to remedy any issues before tree failure. Review soil fertility, ensure adequate watering is provided, ensure drainage is working and carry out restorative pruning to encourage growth.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (years 0-5 only)													
Re-firming of trees	As required	All Year											
Replace damaged / vandalised / unhealthy stock	Annually												
Apply slow release fertiliser to base of tree	Annually			1									
Inspect tree pit drainage	Monthly	1	1	1	1	1	1	1	1	1	1	1	1
Watering of area to ensure moisture levels are appropriate	As required												
Top up mulch	1 x Annually			1									
Establishment & Long Term Maintenance Operations													
Weed control and removal (Long term frequency to be reviewed and reduced as required)	4 x Annually				1		1		1		1		
Pruning (general)	As required												
Inspect trees for pest and disease	2x Annually	1						1					
Check for nesting bird presence prior to any necessary remedial action.	As required												
Removal of items attached to trees	As required	All Year											

Long Term Management (year 6 onwards)

Following the establishment maintenance period, it is recommended that the estates management team and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives3.3 Ornamental Single Species Hedges

Management Objectives

To create a single species hedge providing definition and / or screening to amenity spaces and housing from undesirable views, and aid species permeability through the development. Hedges will be free from any gaps and be maintained at a height suitable to the specific location (typically over 800mm). The management of the hedge for the 'Weed Garden' will be maintained as directed by the Artist/Designer.

Establishment Maintenance (first 5 years after planting)

- Control and removal of weeds by hand weeding or application of herbicide.
- Application of a slow release fertiliser in spring.
- Regular trimming in the first three years to maintain a neat appearance, encourage bushy growth down to ground level and maintain hedge at desired height of at least 800mm. In some locations, hedging may require additional height to sufficiently perform its screening function.
- Formal hedges to be cut annually square to form a flat top at the desired height.
- Remove any failed, vandalised, unhealthy or dead specimens as soon as possible and provide replacements of the same size to those adjacent, where practicable during the next available planting season.
- Watering of plants to ensure moisture levels are maintained appropriate for optimum growth.
- Removal of litter to maintain site in a tidy condition.
- Top up mulch annually to achieve a 75mm layer.
- Inspect and restock areas where hedges have become thin. Species and stock size to match the original specification.

Targets, Monitoring and Remediation

- **Target**: Hedges should be reasonably established by year three to allow long term management to begin. Bushy growth should be evident down to ground level and hedgerows should be mostly free from any large gaps.
- **Monitoring**: Monitor hedges progress twice annually. Check for healthy growth, density of cover, failed plants, dieback and disease. Damage from the public via high attrition areas and desire lines should be noted.
- **Remediation**: If any issues are identified action should be taken to remedy as soon as possible. Review soil fertility, check for soil compaction and employ soil de-compaction methods, ensure adequate watering is provided, carry out restocking to plug gaps and where needed and provide temporary fencing to protect high attrition areas until fully established.
- **Target**: Beyond three years after planting, long term maintenance should have begun as described above. Hedges should now begin to flower and fruit successfully each year (dependent upon species).
- **Monitoring**: Monitor hedges annually inspecting for strong, healthy growth and that successful flowering and fruiting is being achieved (dependent upon species).
- **Remediation**: If any problems are identified through the monitoring process, such as weak growth or if a lack of flowering and fruiting is recognised, action should be take to address the issue. A review of the cutting cycle should be carried out and amended accordingly to remedy the situation. An inspection of the hedges should be carried out to ensure additional species have not established to create competition with the favoured species. Remove inappropriate specimens and consider introducing additional stock of the specified species.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (years 0-5 only)													
Apply slow release fertiliser	Annually			1									
Top up mulch	1 x Annually			1									
Replace damaged / vandalised / unhealthy stock	Annually												
Establishment & Long Term Maintenance Operations													
Weed control and removal (Long term frequency to be reviewed and reduced as required)	4 x Annually				1		1		1		1		
Removal of litter (Long term frequency to be reviewed and reduced as required)	4 x Annually	1			1			1			1		
Watering of areas to ensure moisture levels are appropriate	As required												
Trimming and cutting	Annually												
Check for hedgehogs prior to cutting	As required												
Check for nesting bird presence prior to any works that could affect them	As required												

Long Term (year 6 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

3.4 Ornamental Planting (Shrubs, Grasses and Herbaceous)

Management Objectives

Planting will provide year round interest by use of colour and structure as well as seasonal interest by use of flowering plants and grasses. Dead herbaceous plant and grass foliage can be left standing over winter to provide structural interest as well as providing seed foraging for birds. Plants will provide a dense ground cover that will minimise weeds, be tough and resilient contributing to the green infrastructure. Planting will provide nectar, pollen and fruit/berries that will serve a range of species throughout the year, notably invertebrates (including bees and birds).

Establishment Maintenance (first 5 years after planting)

- Control and removal of weeds by hand weeding and /or application of herbicide.
- Application of a slow release fertiliser.
- Pruning of shrubs for floral, foliage and stem colour effect and to remove weak, dead and diseased branches.
- Pruning of species to ensure correct bushy, dense and compact form, to promote flowering/berry production/retention (where appropriate).
- Remove dead growth and trim herbaceous perennial and ornamental grass plants, avoiding damage to any new shoots that have emerged.
- Pruning works to be staggered to avoid removing all fruit, nut or berry production to leave a good foraging resource over the winter months.
- Stake and support plants as necessary to ensure healthy growth
- Split and thin perennials as required. Use plants to infill gaps.
- The removal of any failed, vandalised, unhealthy or dead specimens as soon as possible and provide replacements of the same size to those adjacent, where practicable during the next available planting season.
- Watering of plants to ensure moisture levels are maintained appropriate for optimum growth.
- Removal of litter from all planting beds to maintain site in a tidy condition.
- Top up mulch annually to achieve a 75mm layer.
- Review of the percentage of native and wildlife friendly plant species present in the beds.

Targets, Monitoring and Remediation

- **Target**: By year 3 ornamental grass should have spread to provide good swards, herbaceous plants should be well established and providing regular flowering each year and shrubs should be well established specimens or form dense clumps of single species. Make sure that no invasive and garden escape plants are present.
- **Monitoring**: Monitor planting beds quarterly. Inspect beds for strong healthy growth, ensure dense cover is achieved quickly, check that all shrubs have a compact and dense form, have good level of leaf cover, have not become leggy or over woody. Ensure herbaceous flowering species are not being crowded out by shrub or grass species. Review plants for signs of failure to thrive, do plants look healthy, review any signs of pests or disease being present, is soil compacted or waterlogged and check soil fertility. Thin out plants as necessary to create healthy clumps. Invasive plants, garden escapes and weeds etc. will be monitored year round at each scheduled maintenance visit.

- **Remediation**: If any problems are identified through the monitoring process, remedy should be sought before bare patches become overly apparent, specimens /areas of plants fail or herbaceous species disappear through competition. Remediation could include application of fertiliser, de-compacting soil, improving soil drainage, adjusting pruning regimes, proving control for pest and disease, adding additional stock to increase density, reviewing competition from neighbouring plants and considering replacement of species or cultivars. Where any invasive plants, garden escapes etc, are identified appropriate control and removal methods will be employed. Other remediation methods will be dependent on the monitoring survey results, these will likely include replacement or reintroduction of certain species.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (years 0-5 only)													
Apply slow release fertiliser	Annually			1									
Replace damaged / vandalised / unhealthy stock	As required												
Selective pruning of shrubs for optimum growth any encourage flowing, fruiting and stem colour	As required												
Review % of wildlife friendly species still present in beds	1 x Annually				1								
Top up mulch	1 x Annually			1									
Establishment & Long Term Maintenance Operations													
Weed control and removal (Long term frequency to be reviewed and reduced as required)	4 x Annually				1		1		1		1		
Removal of litter from planting beds (Long term frequency to be reviewed and reduced as required)	4 x Annually	1			1			1			1		
Watering of areas to ensure moisture levels are appropriate (Long term watering to be undertaken during drought only)	As required												
Pruning of shrubs	As required												
Pruning, thinning operations and trimming of herbaceous species (e.g. seed heads) reposition surplus plants to infill gaps	As required												
Pruning operations and trimming of ornamental grass species (non evergreen)	As required												
Stake plants as necessary													

Check for nesting birds prior to any management works that could affect them	As required												
Check for hibernating hedgehogs prior to any management works that could affect them	As required												
Check for resting hedgehogs prior to any management works that could affect them	As required												

Long Term Management (year 6 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

3.5 Water Attenuation Features (SUDS)

Management Objectives

The sustainable urban drainage systems(SUDS) in the proposed development include an attenuation basin and rain gardens for temporary water storage. These are to be maintained as landscape features within the proposed development, and on-going maintenance will be required to ensure they continue to function effectively as a site-wide water management strategy. Advice should be sought from a specialist water consultant, and management and maintenance will need to be carried out in accordance with the engineers' design and specification.

Maintenance

The following maintenance will be undertaken:

- Maintain the conveyance, storage and filtering functions;
- Manage drainage features for their contribution and enhancement to the amenity and habitat value of the landscape, preserving aquatic habitats to provide amenity value, and ecological benefit;
- Ensure the flow of surface water to inlets / outlets, and off-site, is maintained to engineers' specification;
- Ensure edges are maintained in perpetuity, protecting against the effects of erosion;
- Maintain clear hydrological systems through the removal of silt and debris;
- Control of invasive species of flora and fauna which are damaging to the ecosystem; and
- Prevent pollution of ground water and leaching of hazardous or ecologically detrimental substances into nearby watercourses.

Targets, Monitoring and Remediation

- **Target**: Rain gardens and attenuation basins continue to function as intended, and maintain an attractive appearance/habitat.
- **Monitoring**: Monitor in quarterly intervals. Check for healthy vegetation and function, review any issues.
- **Remediation**: If any issues are identified, action should be taken to remedy the issues before failure to function. In the event of a pollution report, investigation should take place immediately.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Long Term Maintenance Operations													
Health and safety check of pathways close to swales and basin/pond edges	1 x Annually		1										
Mowing of half of vegetation within attenuation basin once every two years	1 x every two years												
Weed control and removal and check for invasive species. Rain garden vegetation control as per section 3.4 in addition	4 x Annually				1		1		1		1		
Removal of litter from features (Long term frequency to be reviewed and reduced as required)	4 x Annually	1			1			1			1		
Check swales and basins are functioning during periods of high rainfall	2 x Annually												
Removal of silt and debris if required	Annually												
Pollution prevention (response to reports of a pollution event, and checks to identify any potential sources of pollution)	As required	All Year											

3.6 Wetland Grassland

Management Objectives

An area of wetland grassland will be maintained within the attenuation basin. This will support a wide range of grasses and wildflowers and the sward will not be dominated by a few species of competitive grasses. Species will be structurally diverse comprising a variety of grass and herb species that flower providing nectar and pollen resources thought the growing season.

Creation of new wet grassland

Areas of new wildflower grassland in the new attenuation basin park will be created from bare ground by suitably experienced staff as follows:

- Areas to be cultivated to a fine seedbed under suitable soil conditions (avoid working on very wet or dry soils).
- Area to be sown to an appropriate wildflower mixture, which is *Emorsgate EM8 Meadow Mixture for Wetlands*.

This seed mix is to be sown in either March or September to October at that rate recommended by the supplier (i.e. 4g/m^2)

Establishment Maintenance (first 5 years after planting)

- Monthly mowing within the first growing season from June onwards, assuming seeding in March, to height of 50-75mm to promote sward establishment.
- Where works are required within the bird breeding season (March to August), a qualified Ecologist will carry out a check to ensure no nesting birds are present or would be disturbed by works. Appropriate buffer zones of no disturbance can be set up to protect nests. Within these areas no cutting can take place. No works to take place in the buffer zone until a qualified Ecologist has confirmed that the nests are no longer active.
- Cutting 1 x or 2 x annually after first growing season to height of 50-75mm. Cut in only in dry periods of weather to avoid compaction of wet soils.
- Key cutting time is late July to end August, with an optional spring cut to be undertaken dependent on establishment and species prevalence, especially to reduce grass dominance. 30% of grassland to be left uncut each year to provide winter habitat. Uncut areas to be located in different areas each year and no areas to be left uncut two years in a row.
- To protect reptiles, only cut grassland during conditions when reptiles are active and able to move away from machinery (air temperatures above 9 °C). Cut from the centre outwards to encourage movement of reptiles into adjacent suitable habitat and avoid trapping reptiles in the path of machinery.
- Any excessive silt deposits should be removed from the surface. Bare patches to be reseeded to prevent erosion and allow effective filtering of run-off.
- Arisings to be left in situ for several days to allow seed to fall, before removing.
- A proportion of arisings to be used to create nesting piles for grass snakes along edges of SuDS features and in damp grassland areas.
- Undesirable weeds species will be removed or managed by spot treatment with herbicide.
- Repair damaged or failed areas by re-seeding in accordance with landscape specification.
- Removal of litter to maintain the site in a tidy condition.
- Review and remove areas of encroaching scrub.

Targets, Monitoring and Remediation

- **Target:** Grassland should be on way to establishment by 24 months after seeding. A good ground covering should be evident, without excessively large bare patches. Grassland will show a mixture of perennial plants and grasses, being free of undesirable weeds and invasive non-natives.
- **Monitoring:** Establishment should be monitored at the end of the growing season. Check for good seed germination rate and healthy establishment growth afterwards. Review the amount of grass and perennial flowering plants in general, ensuring that grass growth is not dominating. Bare or sparse areas should be noted. Review if soil compaction, waterlogging or dry conditions apparent.
- **Remediation:** Action will be required to be taken for areas where establishment is unsatisfactory or has failed. Excessive and aggressive grass growth should be controlled in the first growing season. Remediation could require increased cutting frequency, soil de-compaction, additional drainage, reseeding areas with perennial flower plants only.

- **Target:** Wet grassland will be in 'Moderate' condition, based on Natural England's Biodiversity Metric 3.0 condition assessment sheets[1]
- **Monitoring:** To be carried out every 5 years, starting 3 years after seeding. Survey by conducting a site walk over to assess percentage of species present within grasslands in line with Natural England conditions assessment sheets. Invasive plants and weeds etc. will be monitored year round at scheduled maintenance visits.
- **Remediation:** Where any invasive plants or weeds are identified control and removal methods will be employed. Other remediation methods will be dependent on the monitoring survey results, these are likely to include replacement or reintroduction of certain species through seeding and /or plug planting.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (years 0-5 only)													
Mowing in first growing season	Monthly form June to October												
Repair of damaged & failed areas	As required												
Removal of weeds	As required												
Watering of area to ensure moisture levels are appropriate	As required												
Establishment & Long Term Maintenance Operations													
Main grassland cut: Mow and remove arisings	1x								1				
Optional spring grassland cut: Mow and remove arisings	1x			1									

[1] http://publications.naturalengland.org.uk/file/6101399382523904 [accessed 09/08/21].

Weed control and woody species removal (Long term frequency to be reviewed and reduced as required)	4 x Annually				1		1		1		1		
Removal of litter	At time of each maintenance visit												
Removal of leaves from swales	As required												
Remove excessive silt deposits from surface	Annually											1	
Check for nesting birds prior to any management works	As required												

Long Term (year 6 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

3.7 Wildflower Grassland

Management Objectives

An area of grassland that will support a wide range of grasses and wildflowers, where the grassland sward is not dominated by a few species of competitive grasses. Species will be structurally diverse comprising a variety of grass and herb species that flower providing nectar and pollen resources thought the growing season.

Creation of new wildflower grassland

Areas of new wildflower grassland around the new buildings and car park will be created from bare ground by suitably experienced staff as follows:

- Areas to be cultivated to a fine seedbed under suitable soil conditions (avoid working on very wet or dry soils).
- Area to be sown to an appropriate wildflower mixture, which is *Emorsgate EM5 Meadow Mixture for Loamy Soils*.
- This seed mix is to be sown in either March or September to October at that rate recommended by the supplier (i.e. 4g/m^2)

Enhancement of existing grassland to wildflower grassland

An area of grassland in the south-west of the car park is to be enhanced to Wildflower grassland from its current status as species-poor semi-improved grassland. This will be achieved by suitably experienced staff as follows:

- Cut the area as short as possible in either March or September-October. Remove arisings and compost.
- Harrow (using a chain harrow) the grassland to expose around 20 to 60% bare soil, to provide opportunities for new seed to germinate.
- Area to be sown to an appropriate wildflower mixture, which is *Emorsgate EM5 Meadow Mixture for Loamy Soils*.
- This seed mix is to be sown in either March or September to October at that rate recommended by the supplier (i.e. 4g/m^2).

Establishment Maintenance (first 5 years after planting)

- Monthly mowing within the first growing season from June onwards, assuming seeding in March, to max. height of 75-100mm, to promote sward establishment.
- No cutting or mowing between 01 April and 20 July.
- Cutting 1x or 2xr annually after first growing season to height of 50-75mm.
- Key cutting time is late July to end August, with an optional springcut to be undertaken dependent on establishment and species prevalence, especially to reduce grass dominance.
- Cutting regime to vary, sections should be cut at different times ranging from late July to late August.
- Area of wildflower grassland in the southwest of the Science park to be cut only once per year, with only 50% being cut each year. This will allow grassland cover over winter for mammals, reptiles, amphibians and invertebrates.
- To protect reptiles, only cut grassland during conditions when reptiles are active and able to move away from machinery (air temperatures above 9 °C). Cut from the centre outwards to encourage movement of reptiles into adjacent suitable habitat and avoid trapping reptiles in the path of machinery.
- Trim edges to hard standing and tree pit mulch circles.
- Arisings to be left in situ for several days to allow seed to fall, before removing.

- Arisings to be removed to on-site composting area.
- Undesirable weeds species will be removed or managed by spot treatment with herbicides.
- Watering to ensure moisture levels are maintained appropriate for optimum growth.
- Repair damaged or failed areas by re-seeding.
- Removal of litter to maintain the site in a tidy condition.
- Review and remove areas of encroaching scrub.

Targets, Monitoring and Remediation

- **Target**: Grassland should be on way to establishment by 24 months after seeding. A good ground covering should be evident, without excessively large bare patches. Grassland will show a mixture of perennial plants and grasses, being free of undesirable weeds and invasive non-natives.
- **Monitoring**: Establishment should be monitored every two months in the first growing season. Check for good seed germination rate and healthy establishment growth afterwards. Review the amount of grass and perennial flowering plants in general, ensuring that grass growth is not dominating. Bare or sparse areas should be noted. Review if soil compaction, waterlogging or dry conditions apparent. Survey by conducting a site walk over to access percentage of species present within grasslands. Invasive plants and weeds etc. will be monitored year round at scheduled maintenance visits.
- **Remediation**: Action will be required to be taken for areas where establishment is unsatisfactory or has failed. Excessive and aggressive grass growth should be controlled in the first growing season. Remediation could require increased cutting frequency, soil de-compaction, additional drainage, reseeding, reseeding areas with perennial flower plants only and amending the watering schedule. Where any invasive plants or weeds are identified control and removal methods will be employed. Other remediation methods will be dependent on the monitoring survey results but would be likely to include replacement or reintroduction of certain species through seeding and /or plug planting.

Target: Wildflower grassland will be in 'Moderate' condition, based on Natural England's Biodiversity Metric 3.0 condition assessment sheets[2]

- **Monitoring:** To be carried out every 5 years, starting 3 years after seeding. Survey by conducting a site walk over to assess percentage of species present within grasslands in line with Natural England conditions assessment sheets. Invasive plants and weeds etc. will be monitored year round at scheduled maintenance visits.
- **Remediation:** Where any invasive plants or weeds are identified control and removal methods will be employed. Other remediation methods will be dependent on the monitoring survey results, these are likely to include replacement or reintroduction of certain species through seeding and /or plug planting.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (years 0-5 only)													
Mowing in first growing season from May	MOnthly												

[2] http://publications.naturalengland.org.uk/file/6101399382523904 [accessed 09/08/21].

Trim edges to hard standing and tree mulch circles	As required or every two weeks in growing season												
Repair of damaged & failed areas	As required												
Removal of weeds	As required												
Watering of area to ensure moisture levels are appropriate	As required												
Establishment & Long Term Maintenance Operations													
Main grassland cut: Mow and remove arisings	1x								1				
Optional spring grassland cut: Mow and remove arisings	1x			1									
Mowing of grassland in southwest of science park	1x. Only cut 50% in any one year								1				
Weed control and removal (Long term frequency to be reviewed and reduced as required)	4 x Annually				1		1		1		1		
Removal of litter	At time of each maintenance visit												
Removal of leaves from swales	As required												
Removal of scrub	1x Annually											1	
Check for nesting birds prior to any management works	As required												

Long Term (year 6 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

3.8 Amenity Grass

Management Objectives

Amenity grass areas are to be maintained to establish a healthy vigorous sward free of moss, thatch, weeds, casts, discolouration, scorch, litter or leaves. Grass areas should remain attractive year round providing important greenery in every season. Areas are to be maintained in a tidy condition within specified height ranges. Where different mowing regimes are intended to provide varying character to the landscape these shall be closely followed to ensure the design intent is achieved. Maintenance operations should aim to deliver high quality grasslands with optimum use of fertilisers and minimal use of pesticides and herbicides.

Establishment Maintenance (first 5 years after planting)

- There are two mowing regimes for this grassland type; a long cut with 2 cuts annually only, and a short cut with regular mowing between March and October to max. height of 35mm. These areas are demarcated on the Soiling and Seeding plans.
- Mowing strips to be maintained adjacent all paths and hard landscape areas, cut to max. height of 35mm.
- Trim edges to hard standing, planting beds and tree pit mulch circles.
- Do not cut areas containing bulbs until 6 weeks after flowering has finished.
- Control and removal of aggressive self seeded weeds.
- Reform edges once per year with edging tool to create clean straight lines and flowing curves, form clean edge and remove soil as required.
- Application of a slow release fertiliser as necessary to ensure soil fertility is maintained at appropriate levels.
- Watering to ensure moisture levels are maintained appropriate for optimum growth.
- Arisings to be removed
- Repair damaged or failed areas by re-seeding and top dressing or turfing.
- Removal of litter to maintain the site in a tidy condition.
- Aerate soil by spiking or hollow tines once a year to depth of 75mm. Spike when needed to relieve compaction and areas of ponding.
- Scarifying to be carried out in spring to remove excess thatch and moss.
- Remove leaves regularly in autumn.

Targets, Monitoring and Remediation

- **Target**: Grass should be fully established within 12 months after seeding. A dense sward should be evident and no bare ground visible. Grass will be free of weeds or moss. Edges will be well formed and crisp.
- **Monitoring**: Establishment should be monitored every two weeks in the first growing season. Check for good seed germination rate and healthy establishment growth afterwards. Bare or sparse areas should be noted. Review if soil compaction, waterlogging or dry conditions apparent.
- **Remediation**: action will be required to be taken for areas where grass establishment is unsatisfactory or has failed.
- Remediation could require, soil de-compaction, additional drainage, reseeding and an amended watering schedule.

- **Target**: Grass should be in excellent condition by year 5, a dense sward will have been maintained that is free of weeds and moss. No areas of compaction or bare patches from wear will be visible. All edges will be in a neat and tidy condition, with straight lines and clean flowing curves.
- **Monitoring**: All areas should be reviewed regularly in accordance with the cutting schedule. Problem areas subject to compaction, wear and tear or waterlogging should be noted. Measures can then be put in place as part of the regular maintenance schedule, avoiding total failure in these areas. A general review should also be taken twice yearly, in spring and autumn in line with the seasonal maintenance requirements.

- **Remediation**: Could require additional fertiliser application, change to fertiliser type, soil de-compaction /aeration, scarification to remove dead thatch, providing additional drainage, regular reseeding, change to seeding species mix specification.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation have been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (years 0-5 only)													
Mowing in first growing season	As required												
Trim edges to hard standing and tree mulch circles	As required or every two weeks in growing season												
Repair of damaged & failed areas	As required												
Removal of weeds	As required												
Watering of area to ensure moisture levels are appropriate	As required												
Establishment & Long Term Maintenance Operations													
Mowing regime to be based on regime for short and long cut areas as required	As required												
Weed control and removal (Long term frequency to be reviewed and reduced as required)	4 x Annually				1		1		1		1		
Removal of litter	At time of each maintenance visit												
Removal of scrub	Annually											1	
Check for nesting birds prior to any management works	As required												

Long Term (year 6 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

3. 9 Reptile mounds

Management Objectives

To create and maintain these features so that they provide shelter and hibernation habitat for reptiles and amphibians, including maintaining tussocky grassland cover and maintaining the availability of cavities for hibernation.

Creation of reptile mounds

- These features will be created during the construction stage using an excavator.
- They can be created any time between September and April
- Two will be created, in locations shown on the Landscape Plan in Appendix 2.
- At each location a 2m x 1.5m hole will be excavated 0.5m deep, and filled with equal parts stones or inert rubble (ca. 30cm diameter), logs (ca. 30 to 40cm diameter and 30 to 60 cm long) and brash, to create a mound 1 m high at its centre.
- The mound will be partially covered with soil and turf from the excavation, ensuring that there are exposed holes and crevices.

Establishment Maintenance (first year after creation)

- Control and removal of undesirable weeds (e.g. thistle and nettle – smaller wildflowers will generally not be removed) by hand weeding or application of herbicide (monitor and act in June)
- However, rough grassy vegetation is to be accepted and encouraged in the mounds, and for at least a 1 m boundary surrounding them.
- In the first year, encourage a grassy sward (rather than tall weedy vegetation) by hand strimming every 2 months.
- Staff should disturb the vegetation with stick before strimming to ensure that any reptiles present have move away.

Targets, Monitoring and Remediation

- **Target**: At least one mound should provide grassy cover at all times, with the vegetation not dominated by tall weeds such as nettles.
- **Monitoring**: Monitor annually in July to determine if weedy vegetation is outcompeting grasses and shading the mounds.
- **Remediation**: If weedy vegetation is outcompeting grasses and starting to shade the mounds, then a period of intensive strimming (1 strim per month) should be carried out between May and August to encourage a more grassy sward. This should be terminated once grasses return to dominance. Prior to any strimming, the area should be disturbed with a stick to ensure that any reptiles present have move away.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (year 1 only)													

Monitor and control large weeds if necessary	1 x Annually						1						
Hand strim every 1 to 2 months April to August	3 x Annually				1		1		1				
Establishment & Long Term Maintenance Operations													
Monitor weed growth on both mounds each year prior to strimming	1 x Annually								1				
Hand strim one mound only each year.	1 x Annually								1				

Ongoing management (year 2 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

- In following years, the vegetation should be managed by mowing each mound in August in an alternate year (so that only one mound is cut in any one year).
- Staff should disturb the vegetation with stick before strimming to ensure that any reptiles present have moved away.

3.10 Invertebrate mounds

Management Objectives

To create and maintain these features so that they provide open low vegetation on well drained sandy soils as habitat for invertebrates.

Creation of invertebrate mounds

- These features will be created during the construction stage using an excavator.
- They can be created any time of year.
- They will need to be created prior to the construction of the eastern building, since they will utilise sandy soil (and associated seed bank) from an area within construction zone B.
- Two will be created, in locations shown on the Landscape Plan in Appendix 2.
- Sandy surface soil form the western portion of zone B (the area bounded by a beech hedger, see landscape plan in Appendix 2) will be transported to the invertebrate bank locations.
- Sufficient soil will be moved to create a 2m x 1.5m mound of sandy soil in each location.
- There will be no seeding as the soil will have its own seedbank, vegetation will be allowed establish itself.

Establishment Maintenance (first year after creation)

- Control and removal of undesirable weeds (e.g. thistle and nettle – smaller wildflowers will generally not be removed) by hand weeding or application of herbicide.
- In the first year, encourage a low sward (rather than tall weedy vegetation) by hand strimming every 2 months.

- Staff should disturb the vegetation with stick before strimming to ensure that any reptiles present have moved away.

Targets, Monitoring and Remediation

- **Target**: The mounds should develop a sparse vegetation with exposed sandy soils.
- **Monitoring**: Monitor annually in July to determine if weedy vegetation is developing or if all bare ground is being coved by vegetation.
- **Remediation**: If vegetation is close to covering all of the mound then it should be scraped back from around 50% of the mound using a hand spade. Having some soil/sand exposed provides good habitats for a range of invertebrates.

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Establishment Maintenance Operations (year 1 only)													
Hand strim every 1 to 2 months April to August	3				1		1		1				
Establishment & Long Term Maintenance Operations													
Monitor weed growth on both mounds each year prior to strimming	1 x Annually								1				
Hand strim one mound only each year.	1 x Annually								1				

Ongoing management (year 2 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

- In following years, the vegetation should be managed by mowing each mound in August in an alternate year (so that only one mound is cut in any one year).
- Staff should disturb the vegetation with stick before strimming to ensure that any reptiles present have moved away.

3.11 Bird and bat boxes

Management Objectives

To install and maintain these features so that they provide suitable roosting sites of bats and nesting sites for birds at the site.

Installation of bird and bat boxes

- These features will be installed in the locations indicated the plan in Appendix 2. They will comprise:
- 10 bat boxes mounted towards to the top of plant screens on the building roofs, facing south (a suitable product is the Schwegler 1FF[3] bat box).
- 8 bird boxes suitable for small species incorporated on the brickwork or mounted externally on the west side of the western building and the north side of the eastern building, at around 3 m height (suitable products are the Type 24 Brick nest box (for integration into the brickwork), the Schwegler 1SP Sparrow Terrace[4] (for integration or external mounting), the Schwegler 1MR Avianex[5] (for external mounting) or the Schwegler Bird House[6] (for external mounting).
- Five boxes suitable for swifts will be installed externally or incorporated into the walls on the north face of the western building. These will be situated around 0.5m below the top of the wall. Suitable products are the Schwegler No 16 Swift Box (for integration into the wall), the Woodstone Swift Nestbox[7] (for external mounting) or the Schwegler No 17b Swift Next Box[8].
- Boxes should be securely attached or incorporated to prevent risk of falling. Suitable safety precautions should be taken during installation to prevent injury during or after installation.
- Boxes should not be placed directly above windows or doors.
- Boxes should be subject to a check by the construction manager following installation to verify that they have been correctly and safely installed, and by a suitably experienced ecologist to verify that they have been correctly installed.

Targets, Monitoring and Remediation

- **Target**: The numbers sand types (or equivalents) of boxes should be maintained at the site, in a safe and usable condition, throughout the lifespan of the buildings.
- **Monitoring**: Monitor annually to determine safe and usable condition.
- **Remediation**: If any boxes are found to be unsafe or unusable, they should be fixed or replaced. Replacement of, or works to, bat boxes should only be carried out under guidance form a suitably experienced ecologist. Work to or removal of bird boxes should be carried out in the period September to February (i.e. .outside the typical breeding season).

Maintenance Schedule

The below schedule includes the initial maintenance operations as well as long term maintenance requirements. The frequency and timings of each operation has been indicated for a typical annual cycle or as required.

[3] https://www.nhbs.com/1ff-schwegler-bat-box-with-built-in-wooden-rear-panel
[4] https://www.nhbs.com/1sp-schwegler-sparrow-terrace
[5] https://www.nhbs.com/1mr-schwegler-avianex
[6] https://www.nhbs.com/schwegler-bird-house
[7] https://www.nhbs.com/woodstone-swift-nest-box
[8] https://www.nhbs.com/no-17b-schwegler-swift-nest-box-single-cavity

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Long Term Maintenance Operations													
Monitor safe and usable condition	1 x Annually									1			
.Repair or replace	As necessary									1			

Ongoing management (year 2 onwards)

Following the establishment maintenance period, it is recommended that the appointed Management Company and/or appointed contractor undertake the relevant long term maintenance operations listed in the maintenance schedule and use these as a basis for a long term management plan / strategy, including the ongoing inspection and maintenance requirements. The type, extent and frequency of maintenance operations to be undertaken in the long term are subject to review, and should be monitored in perpetuity to align with the management objectives.

- In following years, boxes should be subject an annual inspection for safety and usability.
- Repairs or replacement should be carried out as required.
- Any works to , or replacement of, bat boxes should eb carried out under guidance of suitably experienced ecologist.

4. Management Prescriptions - Hard Landscape

The following section sets out management prescriptions specific to hard landscape treatments and features included within the site. Each sub section below details the maintenance operations and schedule relevant to the hard landscape component.

4.2 Hard Surfaces

4.3 Street Furniture

4.4 Structures and Fencing

4.2 Hard Surfaces

Maintenance

Blacktop:

- Collect and remove all litter and any fouling at each scheduled maintenance visit.
- Brush surface to remove debris and either hose down or use a light pressure washer to remove dirt build up once every year.
- Inspect surface for damage such as cracking or potholes, make good as required.
- Apply weed and moss removal treatments if required. Ensure treatments are suitable for use on asphalt surfaces.
- Inspect path edging for damage or failure, make good or replace as required.
- Autumn leaves are to be removed from the surface as required.

Small Unit Paving (concrete block / clay pavers):

- Collect and remove all litter at each scheduled maintenance visit.
- Brush surface to remove general dirt and detritus and either scrub the area with soapy water or use a light pressure washer to remove dirt build as required. Particular care must be taken to ensure no loss of jointing material through the use of pressure washers, Pressure washers should be angled at 30 degrees and sprayed diagonally on a medium pressure to minimise potential loss of jointing material. Replace any lost jointing material immediately to maintain the paving's structural integrity.
- Stubborn and persistent stains may require the application of a specific acid cleaning treatment. Extreme care must be taken when using chemical cleaners and specialist advice on specific products is recommended prior to use.
- Inspect surface for loose, broken, cracked and uneven units, make good as required.
- Apply weed and moss removal treatments if required. Check manufacturer's guidance to ensure any chemical treatments are suitable for use on each specific paving type.
- Inspect path edging for damage or failure, make good or replace as required.
- Autumn leaves are to be removed from the surface as required.

Resin Bound Gravel:

- Collect and remove all litter at each scheduled maintenance visit.
- Brush surface to remove debris, leaves and other organic material
- Washing can be carried out by hand using a portable cold water pressure washer (typically up to 150 bar rating) for smaller areas, providing care is taken not to damage the surface with excessive pressure by holding a lance too close to the surface or with a narrow jet focused on a single spot.
- Stubborn stains should be removed by lightly scrubbing the affected area with warm water and detergent using a plastic or natural fibre bristle brush. A rotary type patio cleaner is preferred over a wand for improved cleaning consistency.
- For larger areas, mechanical brush pressure washer cleaning can be used provided that precautions are taken to keep the pressure and frequency of application to a minimum whilst being consistent with cleaning of the surface.
- It is always recommended that particular cleaning method should be trialed in a discrete / small area before extensive use
- Inspect surface for damage such as cracking, differential settlement and areas of ponding, make good as required.
- Apply weed and moss removal treatments if required. Check manufacturer's guidance to ensure any chemical treatments are suitable for use on each specific paving type.
- Inspect path edging for damage or failure, make good or replace as required.

Self Binding Gravel:

- Collect and remove all litter and any fouling at each scheduled maintenance visit.
- Inspect path edging for damage or failure, make good or replace as required.
- Inspect surface for damage such as potholes. Repairs should be carried out as soon as a pot hole appears. Cut out a neat square around the pot hole and remove all material in that square down to the Type 1 sub-base. Fill the area with new Wayfarer gravel and compact using wacker plate or roller in accordance with our laying instructions.
- Weeds: spray the area with a water non-residual weed killer. Never pull the weeds up out of the gravel, this will loosen the bonded surface.
- Remove moss using a water based weed killer or moss remover and apply this to the affected area when dry (and no rain expected for a few days) using either a watering can with a rose, a sprayer, a roller or a soft brush. This should take a few days to start working, then use a light rake to loosen the moss and sweep away, however take care not to put too much pressure on the surface and loosen up the bonded gravel itself.
- Autumn leaves are to be removed from the surface by using a blower or a vacuum. Alternatively, a very soft broom can be used to gently sweep off the surface leaves. Never use a coarse hard brush.

Maintenance Schedule

The below schedule includes required maintenance operations with frequency and timings of the works throughout the year.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	**Frequency**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Remove litter, debris and fouling from footpaths /cycleways and timber surfaces	1x per month or at each scheduled maintenance visit	1	1	1	1	1	1	1	1	1	1	1	1
Footpaths /cycleways: Brush and wash surface	1 x Annually			1									
Removal or treatment of weeds, moss and algae from all surfaces	2x Annually			1						1			
Remove autumn leaves from all surfaces	As Required												
Inspect all surfaces and edging, make good, repair or replace	2x Annually or as part of the play area			1						1			

4.3 Street Furniture

Maintenance

Seats and Benches:

- A visual check to identify any signs of damage, vandalism, breakdown of surface finish, build-up of salt, dirt or atmospheric residue, and loose fixings should be completed monthly. Any splinters or sharp edges of wood to be lightly sanded to remove them. Apply wood stain if needed post sanding.
- In the event of serious damage to any main component, the seating element should be isolated and the manufacturer contacted immediately for detailed technical advice.
- Wood should be coated with a proprietary wood treatment on an annual basis so as to preserve its appearance and longevity.
- Inspect all timber for signs of rot and decay twice yearly. Any benches or seats identified as no longer fit for purpose should be removed and replaced with a product either to the original specification or an equivalent product.
- Inspect all ground fixing to ensure benches and seating are secure and free from movement. Re-secure and make good as needed.
- Cleaning should be undertaken every three months or at frequencies noted in manufacturer's specific guidance, whichever is more frequent. The application of mild, soapy, warm water followed by a clean water rinse should be adequate for most products. For any more stubborn markings, refer to manufacturer's guidance.
- All cleaning and maintenance should be recorded, detailing the method of cleaning, what products have been used, and what repair work has been undertaken to support any warranty claims.

Cycle Stands:

- Visually inspect every month for signs of damage. Repairs to be made in accordance with manufacturer's instructions.
- Clean every three months using mild soapy water or car wash and wax products using a soft brush or sponge, then rinsing with clean water.
- Remove graffiti using non-solvent cleaners such as car t-cutting compound or other specialist cleaner.

Litter / Recycling and Dog Waste Bins:

- Empty bins every two weeks or to a scheduled time period agreed to meet usage requirements.
- Visually inspect every month for signs of damage. Repairs to be made in accordance with manufacturer's instructions.
- Clean every three months using mild soapy water or car wash and wax products using a soft brush or sponge, then rinsing with clean water.
- Remove graffiti using non-solvent cleaners such as car t-cutting compound or other specialist cleaner.

Bollards / Cycle Bollards:

- A visual check should be completed twice annually, any splinters or sharp edges of wood to be lightly sanded to remove them.
- Apply wood stain if needed post sanding.
- Wood should be coated with a proprietary wood stain system on an annual basis so as to preserve its appearance and longevity
- Inspect all timber for signs of rot and decay twice yearly. Any bollards identified as no longer fit for purpose should be removed and replaced with a product either to the original specification or an equivalent product.
- Inspect all ground fixing to ensure bollards are secure and free from movement. Re-secure and make good as needed.

Signage, way-markers and interpretation boards:

- A visual check should be completed twice annually, any splinters or sharp edges of wood to be lightly sanded to remove them.
- Apply wood stain if needed post sanding.
- Wood should be coated with a proprietary wood stain system on an annual basis so as to preserve its appearance and longevity
- Inspect all timber for signs of rot and decay twice yearly. Any items identified as no longer fit for purpose should be removed and replaced with a product either to the original specification or an equivalent product.
- Inspect all ground fixing to ensure they are secure and free from movement. Re-secure and make good as needed.
- Remove graffiti as required using methods recommended by the manufacturer.

Maintenance Schedule

The below schedule includes required maintenance operations, with frequency and timings of the works throughout the year.

		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
All Street Furniture: Visually inspect for signs of damage. Repairs to be made in accordance with manufacturer's instructions	12x Annually	1	1	1	1	1	1	1	1	1	1	1	1
Seating & benches: Inspect all fixings, repair and replace as required	4x Annually			1			1			1			1
All timber street furniture: Check for any splinters or sharp edges of wood to be lightly sanded to remove them	2x Annually			1						1			
All timber street furniture: Apply wood stain	1x Annually									1			
All timber street furniture: Inspect for sign of decay, Repair or replace	2x Annually			1						1			
All Street Furniture: Inspect ground fixings, re-secure as required	12x Annually												
Powder coated steel street furniture: Wash down with soapy water and repair any damaged coating as required	4x Annually			1			1			1			1
Remove graffiti	As required												
Empty bins	Every two weeks or as agreed												

4.4 Structures and Fencing

Maintenance

Headwalls:

- Walls should be checked annually for damage. Maintenance should be undertaken without delay to prevent further deterioration.
- The ground above and below the wall should also be inspected for signs of any movement. Inspect every 3 months.

Fencing:

- Inspect all fixings every 3 months, repair and replace as required to maintain fencing in a safe and fit for purpose condition.
- Inspect all timber for signs of rot and decay twice yearly. Any timber with rot and decay identified should be replaced as soon as possible.

Steps and handrails:

- Inspect all fixings every 3 months, repair and replace as required to maintain fencing in a safe and fit for purpose condition.
- Inspect any timber for signs of rot and decay twice yearly. Any timber with rot and decay identified should be replaced as soon as possible.
- Collect and remove all litter and any fouling at each scheduled maintenance visit.
- Autumn leaves are to be removed from the steps as required.
- Once a year give a thorough cleaning using a gentle pressure spray or a purpose-made cleaning product which is formulated to remove grease and algae.

Maintenance Schedule

The below schedule includes required maintenance operations, with frequency and timings of the works throughout the year.

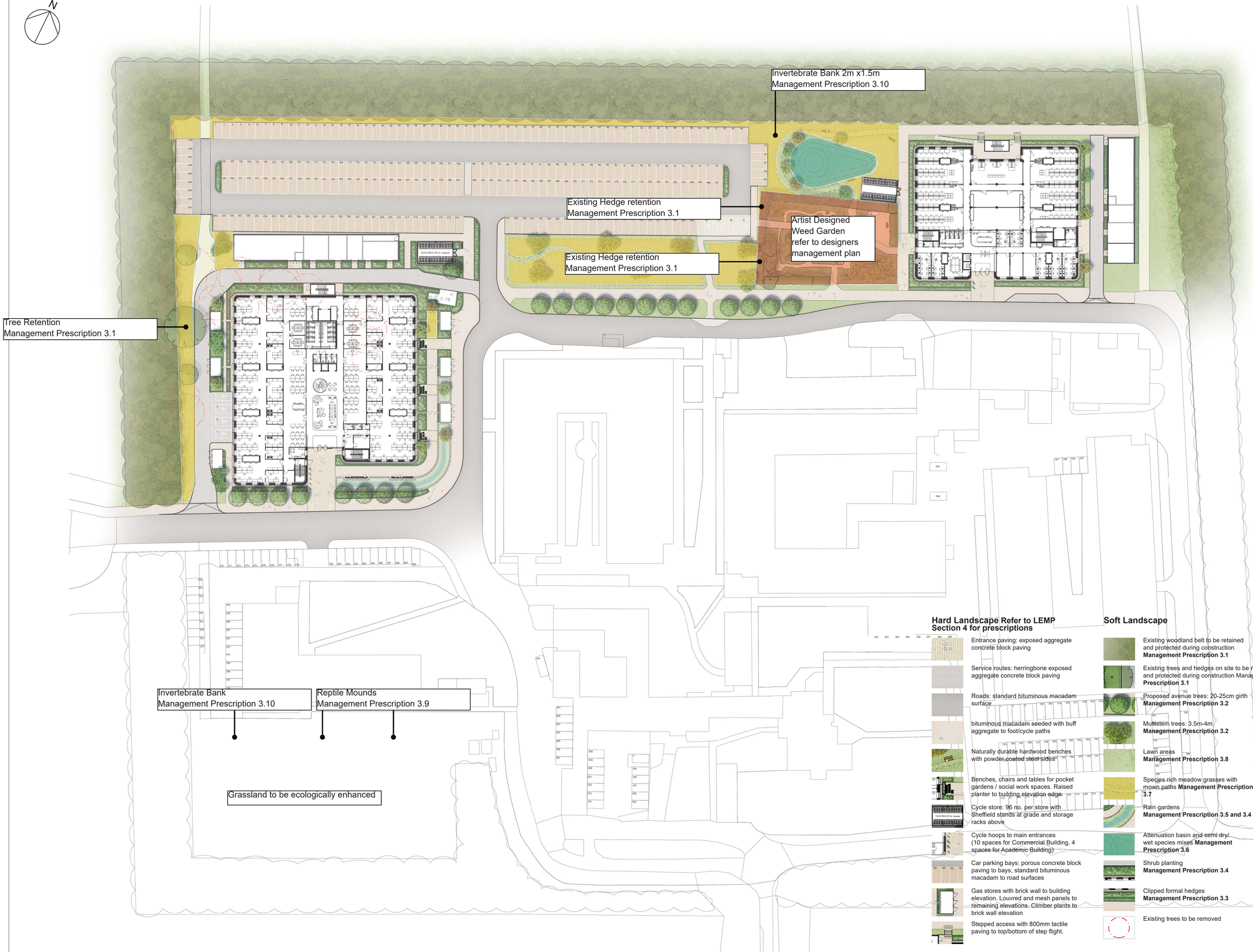
		Time of year when maintenance operation is required or number of operations required											
Maintenance Operation	Frequency	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Brickwork walls: Check for damage and repair as required	1x Annually			1									
Concrete headwalls: Check for damage and repair as required	1x Annually			1									
Brickwork walls: Inspect ground to top and base for signs of movement	4x Annually			1			1			1			1
Steps and bridge decks: Clean using pressure spray or deck cleaning products	1x Annually												1
Steps, handrails, fences and bridges: Inspect and repair all fixings and any damage to finish	4x Annually			1			1			1			1
Steps, handrails, fences and bridges: Inspect for decay and replace	2x Annually			1						1			
Bird box and pole/feeding station: inspect all fixings and timber repair / replace as required	2x Annually	1										1	

Appendix 1

LEMP Supporting Diagram

amendements

Rev
00



Hard Landscape Refer to LEMP Section 4 for prescriptions

- Entrance paving: exposed aggregate concrete block paving
- Service routes: herringbone exposed aggregate concrete block paving
- Roads: standard bituminous macadam surface
- bituminous macadam seeded with buff aggregate to foot/cycle paths
- Naturally durable hardwood benches with powder coated steel sides
- Benches, chairs and tables for pocket gardens / social work spaces. Raised planter to building elevation edge.
- Cycle store: 96 no. per store with Sheffield stands at grade and storage racks above
- Cycle hoops to main entrances (10 spaces for Commercial Building, 4 spaces for Academic Building)
- Car parking bays: porous concrete block paving to bays, standard bituminous macadam to road surfaces
- Gas stores with brick wall to building elevation. Louvred and mesh panels to remaining elevations. Climber plants to brick wall elevation
- Stepped access with 800mm tactile paving to top/bottom of step flight.

Soft Landscape

- Existing woodland belt to be retained and protected during construction **Management Prescription 3.1**
- Existing trees and hedges on site to be retained and protected during construction Management **Prescription 3.1**
- Proposed avenue trees: 20-25cm girth **Management Prescription 3.2**
- Multistem trees: 3.5m-4m **Management Prescription 3.2**
- Lawn areas **Management Prescription 3.8**
- Species rich meadow grasses with mown paths **Management Prescription 3.7**
- Rain gardens **Management Prescription 3.5 and 3.4**
- Attenuation basin and semi dry/ wet species mixes **Management Prescription 3.6**
- Shrub planting **Management Prescription 3.4**
- Clipped formal hedges **Management Prescription 3.3**
- Existing trees to be removed

PLANNING

project:

Begbroke Science Park

job number:

LP2264

drawing title:

LEMP Supporting Diagram

drawing number:

LP2264-FIR-00-ZZ-DR-L-0008

revision	scale	date
00	1:500 @ A1	25/08/21

	drawn	auth	date
for information	RS	VP	25/08/21
for construction			

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Appendix 2

Planning Drawings

Movement

- Key pedestrian connections (minimum width 1.8m)
- Shared pedestrian cycleway (width varies 3.0-3.5m)
- Vehicular circulation
- Service vehicle routes

Number key

1. Commercial Building
2. Academic Building
3. Courtyard
4. Accessible parking spaces
5. Ancillary buildings: (refuse/sprinkler tanks etc)
6. Pocket Gardens / social work spaces
7. Pumping station
8. Public Art - Weed Garden (refer to art consultant's design information)

Hard Landscape

- Entrance paving: exposed aggregate concrete block paving
- Service routes: herringbone exposed aggregate concrete block paving
- Roads: standard bituminous macadam surface
- bituminous macadam seeded with buff aggregate to foot/cycle paths
- Naturally durable hardwood benches with powder coated steel sides
- Benches, chairs and tables for pocket gardens / social work spaces
- Cycle store: 96 no. per store with Sheffield stands at grade and storage racks above
- Cycle hoops to main entrances (10 spaces for Commercial Building, 4 spaces for Academic Building)
- Gas stores with naturally durable hardwood screen to building elevation. Mesh panel to remaining elevations
- Stepped access with 800mm tactile paving to top/bottom of step flight

Soft Landscape

- Existing woodland belt to be retained and protected during construction
- Existing trees and hedges on site to be retained and protected during construction
- Proposed avenue trees: 20-25cm girth
- Multistem trees: 3.5m-4m
- Lawn areas
- Species rich meadow grasses with mown paths
- Rain gardens
- Attenuation basin and semi dry/wet species mixes
- Shrub planting: 6 plants per m^2 minimum
- Clipped formal hedges
- Existing trees to be removed

amendements

Rev	
01	DW 18/08/21 Drawing status for Planning; general updates to design layout to reflect design development
02	DW 25/08/21 Updates to design layout to include art consultant's proposal
03	RS 26/08/21 Updated following comments from the design team prior to planning

PLANNING

project:

Begbroke Science Park

job number:

LP2264

drawing title:

Reserved Matters
Landscape Masterplan

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	drawn	auth	date
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for construction			

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Appendix 3
Construction Ecological Management Plan (CEMP)