



CATALYST BICESTER, WENDLEBURY ROAD, BICESTER

SUSTAINABLE URBAN DRAINAGE (SuDS) MAINTENANCE & MANAGEMENT PLAN

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CATALYST BICESTER SUSTAINABLE URBAN DRAINAGE (SuDS) MAINTENANCE & MANAGEMENT PLAN

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APPENDICES

- A As Built External Works, Drainage Layouts and Maintenance Access Details
- B Landscaping Planting Plans & Management & Maintenance Plan
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1 Introduction

- 1.1 This document sets out the principles for the long-term management and maintenance of the Sustainable Drainage Systems (SuDS) at Catalyst Bicester. This is a “Live Document” which has been revised to now include all phases of work including, S278 access works, Units 1-13 and the David Lloyd development. David Lloyd are responsible for managing their own private on-site drainage infrastructure and therefore outside the scope of this maintenance plan. The management of the S278 works maintenance work is to be done by the developer until final S278 sign off where it shall pass back to the local authority. This is also outside the scope of this maintenance plan.
- 1.2 SuDS are a new environmentally friendly approach to managing rainfall that uses landscape features to deal with surface water. SuDS aim to:
- Control the flow, volume and frequency of water leaving a development area,
 - Prevent pollution by intercepting silt and cleaning runoff from hard surfaces,
 - Provide attractive surroundings for the community,
 - Create opportunities for wildlife
- 1.3 The purpose of this document is to set out the basis of the development SuDS Maintenance Plan and to ensure that the management company is entrusted with a robust inspection and maintenance programme, ensuring the optimum operation of the surface water drainage network is continually maintained for the lifetime of the development and to prevent the increased risk of flooding both on and offsite in accordance with the National Planning Policy Framework (NPPF).
- 1.4 This Management and Maintenance Plan is in accordance with the approved Flood Risk Assessment (FRA) Issue 3 undertaken in February 2020 by Bailey Johnson Hayes. Details of the existing drainage regime, proposed drainage strategy and flood risk assessment can be found online under planning application references No. 19/01740/HYBRID & No. 19/01746/OUT. Reserved matters applications for all Phases of development have also been approved.
- 1.5 The activities listed in this document are generic to the relative SuDS types and represent the minimum maintenance and inspection requirements, however additional tasks or varied maintenance frequency may be instructed by the managing agent as required. Specific maintenance needs of the SuDS elements should be monitored, and maintenance schedules adjusted to suit requirements.
- 1.6 All those responsible for maintenance should follow relevant Health and Safety legislation (Health and Safety at Work Regulations, 1999) for all activities listed within this report including lone working, if relevant, and risk assessments should always be undertaken.
- 1.7 Any contractor employed by the Management Company shall carry out periodic maintenance of all such SuDS in accordance with the schedules listed in this report. Inspection checks shall be carried out by a qualified and competent person, at the minimum intervals listed within the schedules and the appropriate work carried out.

2 Managing the SuDS Features

- 2.1 The surface water drainage strategy for the proposed development utilises SuDS features to intercept and convey all surface water runoff. The design of the system aims to attenuate, treat, and reduce the velocity of runoff. Unfortunately, this site is not considered suitable for infiltration. There are additional flood compensation features which are designed to store river flooding water in extreme river flooding events. These should be treated similar to SuDS features for maintenance and management purposes.
- 2.2 The proposed surface water system consists of the following SuDS components:
- Attenuation Basins/Swales;
 - Pervious Pavements;
 - Petrol Interceptors;
 - Hydrobrakes;
 - Overflow Weir Manholes;
 - Silt traps and Catchpits;
 - Non-Return Valves
- 2.3 In addition to the storm water SuDS systems, the proposed flood compensation system consists of the following components:
- Flood Compensation Basins;
 - Existing Ditches/Watercourses;
 - Overflow Weirs;
 - Culverts
- 2.4 There are three categories of maintenance activities referred to in this report:
- **Regular maintenance** (including inspections and monitoring).
Consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.
 - **Occasional maintenance**
Comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).
 - **Remedial actions**
Comprises intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.
- 2.5 The following section will specifically address SuDS Management and Maintenance items for the whole Catalyst Bicester site.

3 Site Specific Drainage Summary

- 3.1 Masterplan external finishes, site levels, surface water drainage layout, flood water drainage regime and foul water drainage layouts are provided in **Appendix A**.

In accordance with the concept surface water drainage scheme presented in the approved FRA & Drainage Strategy, the SuDS at Catalyst Bicester have been designed for easy maintenance to comprise of the following components below.

- 3.2 Attenuation Basin / Swale 1 is located to the western corner of the site. This landscaped dry attenuation basin is approx. 100m long, 20m wide and 2.0m deep. It is designed with maximum 1:3 banks to encourage plants and wildlife to live and grow near water features. This basin services the run-off generated by Units 10-13 and associated car parks, yards, and footpaths.

Runoff from the car parks is conveyed via underdrain collection pipes to the permeable paving system which direct runoff run within towards main underground pipe runs before being discharged via headwalls into Swale 1. Roof water flows in traditional sealed pipes close to buildings, are transmitted unrestricted into Swale 1 via headwalls. Surface water in delivery yards and access roads is collected by heavy duty line drains or kerb drains which is then pre-treated in by-pass petrol interceptors before discharge into Swale 1 via headwalls.

Surface water collected in Swale 1 then flows through a single, flow-control hydro brake manhole, before outletting into an existing watercourse, adjacent to Promised Land Farm. An overflow weir facility in the manhole is provided so that runoff can discharge safely into the watercourse in failure conditions of the SuDS feature. Discharge is limited to greenfield runoff rate of 8 litres / second into the tributary watercourse of the larger Langford Brook river.

- 3.3 Attenuation Basin / Swale 2 is in the center of the site and considered the main SuDS storage feature. This landscaped dry basin is approx. 200m long, 35m wide and 1.4m deep. It is designed with maximum 1:3 banks to encourage plants and wildlife to live and grow near water features. This basin services the run-off generated by Units 1-9 roofs, car parks, yards, estate roads and landscaping. Additionally, it is designed to take a maximum restricted outflow from the David Lloyd site of 60 litres / second. Note David Lloyd site drainage is outside the scope of this plan.

Flow routes from the car parks are via underdrain collection pipes which collect runoff from the permeable paving system before underground piped conveyance, eventually outletting into Swale 2 via headwalls. Roof water flows in traditional sealed pipes close to buildings, with unrestricted flows into Swale 2 via headwalls.

Surface water collected in the yards is collected by heavy duty line drains, kerb drains or gullies which is then pre-treated in by-pass petrol interceptors, before discharging into Swale 2 via headwalls. The estate road uses gullies and kerb drains to collect water which are then conveyed by large common drains untreated into Swale 2.

Surface water collected in Swale 2 then flows into a single, flow-control manhole, before outletting into a re-newed ditch to the east of the site. An overflow weir facility is provided in failure conditions of the SuDS feature. Discharge limited to greenfield rate of 20 litres / second flows into the tributary ditch which conveyances the water into the larger Langford Brook river.

- 3.4 Car parks are to be either fully or partially constructed out of pervious block paving. Surface water will be directed toward porous sections of block paving where it will infiltrate into underlying open graded stone, attenuating and treating run-off to reduce contamination and create storage volume. It is collected by porous collection pipes and transferred to wider drainage system.
- 3.5 All yards are constructed out of normal reinforced concrete and therefore are considered non-porous hard standing. These are drained traditionally via underground pipes into common drainage corridors.
- 3.6 Flood compensation basins are created in order to provide additional flood storage volume on-site as detailed in the Flood Risk Assessment (FRA). These are to be constructed in a similar manor to attenuation basins with, maximum 1:3 banks to encourage plants and wildlife to live and grow, enhancing biodiversity, while providing practical flood storage. Landscape embankments are constructed to raise the development above the 1 in 100 + climate change level plus 300mm freeboard (64.49m). These building plateaus are provided in order to protect the development and direct surface water into landscape areas away from the development.

4 Off-Site Drainage Features

- 4.1 The following items are to be adopted by the local authority (Cherwell District Council) at final S278 Sign off and are subject to separate management and maintenance regime to normal highway standards and specifications:
- A new vegetated roundabout where storm water is intercepted by gullies or kerb drains. Storm water conveyance is then via underground pipes into a new swale. Final discharge from the swale is into an existing ditch adjacent to Wendlebury road and discharge is near greenfield runoff rates via small diameter pipe.
 - A new 3m wide footway connection adjacent to Wendlebury Road, Garden Centre and the A41. Run-off generated by the new footpath will drain into existing drainage systems locally via new gullies fitted during Section 278 works.
 - A new entrance/exit bell mouth for the David Lloyd development drained via gullies into the existing ditch adjacent to Wendlebury Road.
- 4.2 The following items are to be solely managed and maintained by David Lloyd:
- New asphalt car park is to be drained via gullies into underlying stone blankets or varying thickness. French drains are provided near tennis courts to feed into stone blankets.
 - Roof water is conveyed into underground pipes before being stored in a Geocellular Tank located under the Dome.
 - Both the car parks and roof water is then released into the Catalyst Bicester system via a flow control hydro brake device at an agreed maximum rate of 60 litres /second.

5 Traditional Drainage – Maintenance Schedule

- 5.1 The drainage elements are designed to cater for 1 in 30-year storm conditions without any flooding. In order to ensure that no contamination enters the water courses, silt traps and petrol interceptors are provided at appropriate positions. The main SuDS features have been designed to cater for the 1 in 100-year storm conditions with overland flows directed away from buildings. In designing the System due reference has been given to the CIRIA SuDS Manual, 2015.
- 5.2 **Gullies** - Inspect and de-sludge at least once a year.
- 5.3 **Line Drains** – Inspect and de-sludge silt boxes as necessary. Maintain strictly in accordance with the Manufacturer’s instructions but at least once a year. Check slotted grating for any blockages removing as necessary.
- 5.4 **Kerb Drains** – Inspect and de-sludge silt boxes as necessary. Maintain strictly in accordance with the Manufacturer’s instructions but at least once a year. Check openings for any blockages removing as necessary.
- 5.5 **Catch Pits** - Inspect and de-sludge at least once a year.
- 5.6 **Petrol Interceptors** – Maintain strictly in accordance with the Manufacturer’s instructions but at least once each year. Major refurbishment should be considered on a 15-year cycle, if required.
- 5.7 **Pipe Works** – Inspect and jet clean as necessary but at least once each year.
- 5.8 **Headwalls/Outlets** – These must be inspected and cleaned as necessary but at least twice each year. All gratings/screens and fixings should be checked and secured as necessary.
- 5.9 **Landscaping** – The landscaping is to be planted/managed/maintained as attached Landscape Architects Management & Maintenance Plan which can be found in **Appendix C**, as agreed with Oxfordshire County Council.

6 Swales– Maintenance Schedule

Swales are linear, flat bottomed grassed or vegetated channels that convey water from one place to another which can also store water and allow it to soak into the ground. Maintenance of swales is relatively straightforward for landscape contractors. Adequate access is provided in the design of the swales for appropriate equipment and vehicles.

The major maintenance requirement for dry swales is mowing. Mowing should ideally retain grass lengths of 75-150mm across the main “treatment” surface, to assist in filtering pollutants and retaining sediments. However, longer vegetation lengths, where appropriate, are not considered to pose a significant risk. Grass clippings should be disposed appropriately away from the swale (SuDS Manual, 2015).

Table 1 – Operation and maintenance requirements for swales

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly, or as required
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding > 48 hours	Monthly, or as required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, establish silt removal prog.	Half yearly
Occasional Maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required, or if bare soil if exposed over 10% of swale area
Remedial Actions	Repair erosion or other damage by re-turfing or reseeding	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

7 Storage Basins – Maintenance Schedule

Basins, ponds and wetlands are depressions in the ground where water is stored and treated. Water levels rise after rain and then drops to the normal level as the excess soaks into the ground or is released slowly to a watercourse or drain. Some water maybe held back as a pond for final treatment, amenity or wildlife interest.

The major maintenance requirement for storage basins is mowing. Mowing should ideally retain grass lengths of 75-150mm across the main “treatment” surface. Regular mowing in and around basins is only required along maintenance routes, amenity areas (e.g. footpaths), across any embankment and across the main storage area. The remaining areas can be managed as “meadow” unless otherwise required.

Table 2 – Operation and maintenance requirements for Storage Basins

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes and/or meadow grass in basin	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly, (at start then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect banksides, structures, pipework etc. for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation, establish silt removal prog.	Half yearly
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove minor sediments from inlets, outlets and forebays	Annually
	Manage wetland plants in outlet pool - where provide	Annually
Occasional Maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years
	Remove major sediment from inlets, outlets forebay and main basin when required	Every 5 years
Remedial Actions	Repair erosion or other damage by re-turfing or reseeding	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Realignment of rip-rap	As required
	Repair/restore of inlets, outlets and overflows	As required

8 Pervious Pavements – Maintenance Schedule

Permeable surfaces such as permeable block paving, porous Asphalt, gravel or free draining soils that allow rain to percolate through the surface into underlying drainage layers. They must be protected from silt, sand, compost, mulch, etc. Many of the specific maintenance activities can be undertaken as part of a general site cleaning contract.

Generally, pervious pavements require less frequent gritting in winter to prevent ice formation. There is also less risk of ice formation after snow melt, as the melt water drains directly into the underlying sub-base. A slight frost might occur on block paving.

Table 3 – Operation and maintenance requirements for Pervious Pavements

Maintenance schedule	Required action	Typical frequency
Regular Maintenance	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequency's	Annually
	Monitor inspection chambers	Annually
	Brushing and vacuuming (Standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced based on manufacturers recommendations – pay particular attention to areas where water runs onto pervious surface from nearby impervious area as this area is most likely to collect the most sediment
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised within 50mm of the level of paving	As required
	Remedial work to depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)

9 Management Guidance

9.1 The following details can be found in **Appendix A**:

- Details of the site that identifies runoff sub-catchments, SuDS components, critical water levels, control structures, flow routes (including exceedance routing) and outfalls.
- The extent of the adopted area along with easements and rights of way for access to carry out maintenance.

9.2 The following details can be found in **Appendix B**:

- The access that is required to each surface water management component for maintenance purposes and a plan for the safe and sustainable removal and disposal of waste periodically arising from the drainage system.
- The maintenance specification details the materials to be used and the standard of work required. The specification describes how the work should be carried out and contains clauses giving general instructions to the maintenance contractor.
- The maintenance checklist itemises the tasks to be undertaken and the frequency at which they should be performed so that an acceptable long-term performance standard is secured. This schedule can then be priced, checked on site and form the basis of an inspection log where appropriate. The checklist should act as a living document as it may change, where inspections advise changes to the scheme maintenance requirements.

9.3 The following details can be found in **Appendix C**:

- The landscaping plan, regime, planting schedule and maintenance & management plan. This is provided by the landscape architect and is to be read and implemented in conjunction with the recommendations in this report.

9.4 The following details can be found in **Appendix D**:

- Photographic records of the inspections to be used by the management company. This can pick up long-term changes that might not be apparent on a single visit, especially where inspections are carried out by different members of staff.

9.5 The following details can be found in **Appendix E**:

- A CCTV drain survey is an in-depth inspection of your drainage system using specially designed CCTV cameras. CCTV drain surveys also allow for the easy identification and surveying of potential problems that may arise from your drains. This section has been provided for the management company to use to keep goof records.

9.6 The appointed management company will be fully responsible for all maintenance works. The management company shall appoint a professional management surveying company to ensure all infrastructure and SuDS are properly maintained and managed.

10 Spillage – Emergency Action

- 10.1 Most spillages on development sites are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Therefore, small spillages of oil, milk or other known organic substances should be removed where possible using soak mats as recommended by the Environment Agency with residual spillage allowed to bio-remediate in the drainage system.
- 10.2 In the event of a serious spillage, either by volume or of unknown or toxic compounds, then isolate the spillage with soil, turf or fabric and block outlet pipes from chamber(s) downstream of the spillage with a bung(s). (A bung for blocking pipes may be made by wrapping soil or turf in a plastic sheet or close woven fabric.)

Contact the Environment Agency immediately.

11 Queries Regarding Design Features

In the event of a concern or failure of a SuDS design feature contact:

Bailey Johnson Hayes Ltd
Suite 4, Phoenix House,
63 Campfield Road,
St. Albans,
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AL1 5FL

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Email: wb@bjh.co.uk or james.griffiths@bjh.co.uk

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On behalf of Bailey Johnson Hayes



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W Bailey C.Eng.,
F.I.Struct.E., M.I.C.E.
On behalf of Bailey Johnson Hayes

Bailey Johnson Hayes
Consulting Engineers
S1358/November 2022

APPENDIX A

Drainage Layout Plans, Easement Plans and SuDS Details

Provided by Bailey Johnson Hayes

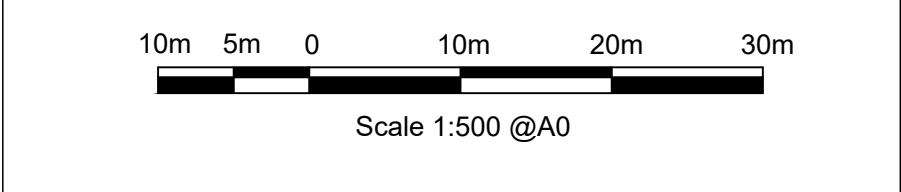
DRAINAGE NOTES

- This drawing is to be read in conjunction with all relevant Architects and Bailey Johnson Hayes drawings and specifications.
- Do not scale. Work only to figured dimensions.
- All dimensions and location of existing drainage to have invert levels confirmed on site prior to commencement of work.
- Proposed Site and Finishes Plan from Comish Architects- Drawing Ref: 22011 - TP - 001 - E Topographical Survey by MK Surveys Limited: Drawing Ref: 25646 (Rev 1) - Topographical Survey
- All works to Adopted Sewers to be carried out in accordance with the requirements of Sewers for Adoption in the Sewerage Sector Guidance v2.2 (2022) and the Adopting authority requirements.
- All private drainage is to be constructed in accordance with the Building Regulations as current at construction.
- Drains to be 'Hepworth Supersewer' or similar approved. Laid in Class S bedding to BS 822:1985, Table 4, or to BS 8301:1985, Appendix D, 450mm Diameter Drains and above are to be Hepworth Concrete Pipes Class H or similar approved drains within the site may be different materials in accordance with Sewerage Sector Guidance v2.2 (2022).
- All drains within trafficked areas to be backfilled with 75mm down graded stone fill, placed and compacted in 150mm layers. All pipes in Roadways / Parking, less than 900mm deep to pipe crown to be encased in concrete and flexible joints provided at 3000mm centres.
- All drains to have Class S granular bed and surround, except where:
 - Cover beneath roads or hardstanding is less than 900mm to Pipe Crown or,
 - Cover beneath landscaping is less than 600mm in which case Class Z bed/surround is required.
- All Manholes greater than 1m to soffit to be constructed in Precast Concrete Rings to BS 5911: Part 1. Rings to be bedded in sealant strips unless otherwise noted in Manhole Schedule.
- Manholes in footpaths or landscaped areas to be backfilled with 40mm down graded stone fill, compacted in layers not exceeding 150mm thick. All manholes beneath roads and parking areas to be cast in minimum 150mm concrete surround.
- All connections to rain water pipes to be provided with Roofing access.
- All road gullies to be Hepworth Road Gullies, Ref 214 RGR4 with 150mm diameter outlets or similar approved. Gullies to be encased in minimum 150mm concrete.
- Drains under buildings and within 300mm of the underside of floor slab to be encased in 150mm concrete. Casing to incorporate flexible fibre board joints at spacings as recommended by the pipe manufacturer. Drains under buildings
- Architect is to provide final rain water pipe positions for construction.
- All Pipes to enter manhole with Soffits Level unless otherwise stated. See manhole details drawings for further clarity of connections.

LEGEND

- INDICATES SURFACE WATER MANHOLES
 - INDICATES SURFACE WATER PIPE RUNS
 - INDICATES INDICATIVE DAVID LLOYD DRAINS
 - INDICATES LINEAR DRAINAGE CHANNELS
 - INDICATES ROAD GULLIES
 - INDICATES SUBGRADE STONE TANK
 - INDICATES ATTENUATION BASINS
- ALL PIPES CONNECTED DIRECTLY INTO GULLIES TO BE 150MM DIAMETER (COLOURED MAGENTA ON PLAN)

SCALE



ADDITIONAL NOTES

- NOTE: DAVID LLOYD SW DRAINAGE DESIGNED AND CONSTRUCTED BY OTHERS. RESTRICTED TO 60 US INTO CATALYST BICESTER SW SCHEME
- NOTE: DRAINAGE IS A MIXTURE OF INVERT & SOFFIT MANHOLE DESIGN. SEE BJH MANHOLE DETAILS FOR SPECIFIC PIPE INLET/OUTLET LEVELS
- NOTE: ALL RWP PIPE POSITIONS TO BE AGREED WITH THE ARCHITECT

PRELIMINARY

Rev	Date	Revision Description
C	23.11.22	Updated to latest Masterplan layout
B	08.11.22	SW Drainage updated to latest layout
A	01.06.22	Updated to latest Architects Layout

Revision Schedule

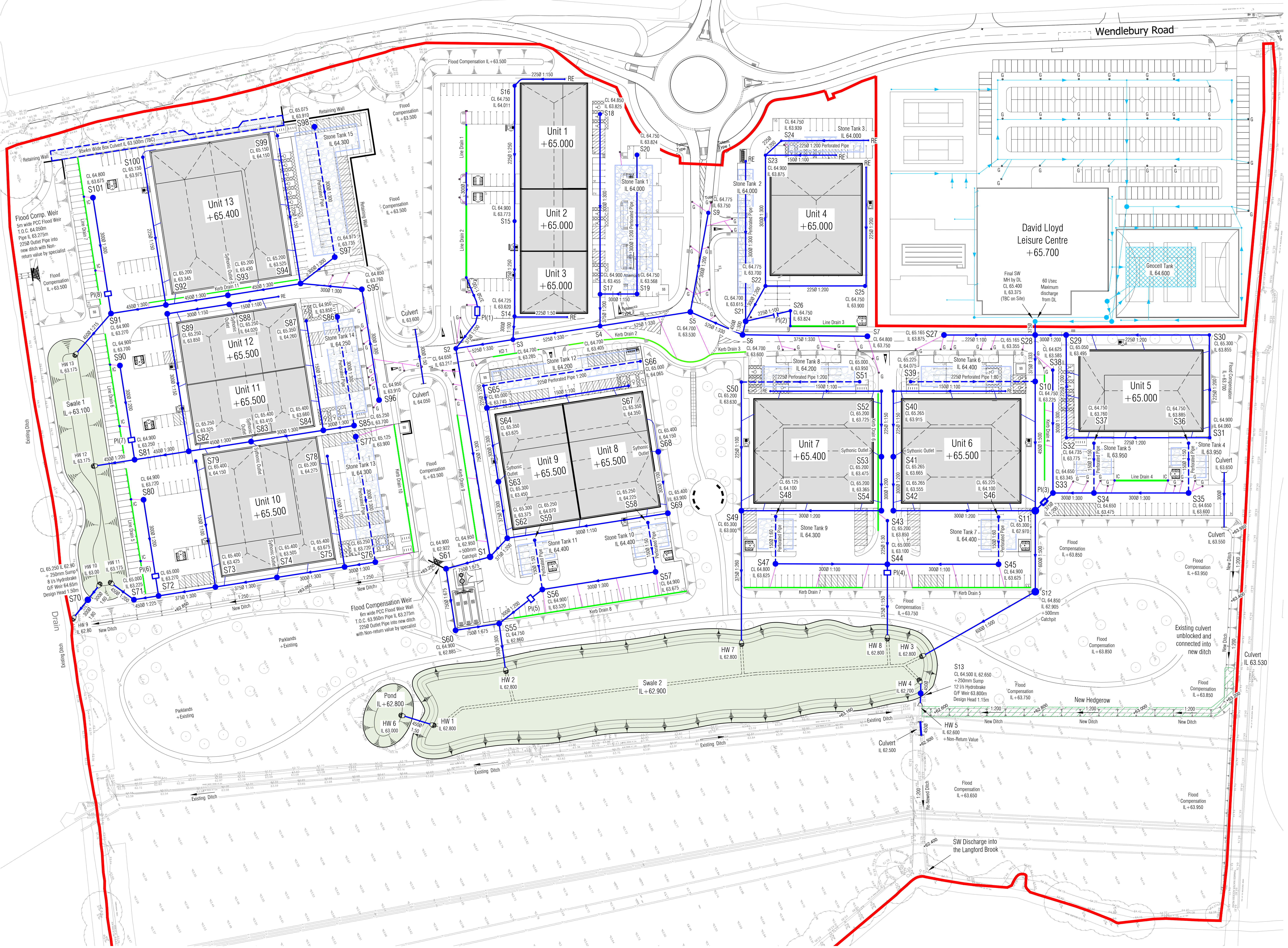
Project Title
**Catalyst Bicester
Wendlebury Road, Bicester**



Drawing Title
**MASTERPLAN
SW Drainage Layout**

BAILEY JOHNSON HAYES
Consulting Engineers

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Date: 08.10.21
Drawn: JNG
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SW Drainage Layout 1:500

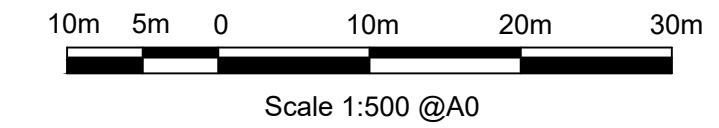
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- All trenches within trafficked areas to be backfilled with 75mm down graded stone fill, placed and compacted in 150mm layers. All pipes in Roadways / Parking, less than 900mm deep to pipe crown to be encased in concrete and flexible joints provided at 3000mm centres.
- All drains to have Class S granular bed and surround, except where:
 - Cover beneath roads or hardstanding is less than 900mm to Pipe Crown or,
 - Cover beneath landscaping is less than 600mm in which case Class S bed/surround is required.
- All Manholes greater than 1m to soffit to be constructed in Precast Concrete Rings to BS 5911: Part 1. Rings to be bedded in sealant strips unless otherwise noted in Manhole Schedule.
- Manholes in footpaths or landscaped areas to be backfilled with 40mm down graded stone fill, compacted in layers not exceeding 150mm thick. All manholes beneath roads and parking areas to be cast in minimum 150mm concrete surround.
- All connections to rain water pipes to be provided with Roofing access.
- All road gullies to be Hepworth Road Gullies, Ref 214 RGR4 with 150mm diameter outlets or similar approved. Gullies to be encased in minimum 150mm concrete.
- Drains under buildings and within 300mm of the underside of floor slab to be encased in 150mm concrete. Casing to incorporate flexible fibre board joints at spacing's as recommended by the pipe manufacturer. Drains under buildings
- Architect is to provide final rain water pipe positions for construction.
- All Pipes to enter manhole with Soffits Level unless otherwise stated. See manhole details drawings for further clarity of connections.

LEGEND

- INDICATES FW BIN STORE GULLIES
 - INDICATES FOUL WATER MANHOLES
 - INDICATES NEW PIPE RUNS
 - INDICATES CATALYST RISING MAIN
 - INDICATES TW ADOPTED RISING MAIN
- ALL PIPES CONNECTED DIRECTLY INTO GULLIES TO BE 150MM DIAMETER

SCALE



ADDITIONAL NOTES

NOTE: DRAINAGE IS A MIXTURE OF INVERT & SOFFIT MANHOLE DESIGN. SEE BJH MANHOLE DETAILS FOR SPECIFIC PIPE INLET/OUTLET LEVELS

NOTE: ALL SVP PIPE POSITIONS TO BE AGREED WITH THE ARCHITECT

NOTE: DAVID LLOYD FW DRAINAGE DESIGNED AND CONSTRUCTED BY OTHERS. RESTRICTED TO 20 L/S INTO CATALYST BICESTER SW SCHEME

PRELIMINARY

Rev	Date	Revision Description
C	23.11.22	Updated to latest Masterplan layout
B	08.11.22	FW Drainage updated to latest layout
A	01.06.22	Updated to latest Architects Layout

Revision Schedule

Project Title
**Catalyst Bicester
Wendlebury Road, Bicester**



Drawing Title
**MASTERPLAN
FW Drainage Layout**

BAILEY JOHNSON HAYES
Consulting Engineers

ST ALBANS: Suite 4, Phoenix House, 63 Campfield Rd, ST ALBANS, Herts AL1 5PL
MANCHESTER: Grange House, John Dalton Street, MANCHESTER, M2 6JW

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Date: 08.10.21
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Drawing Number: S1358-Ext-64 C



FW Drainage Layout 1:500

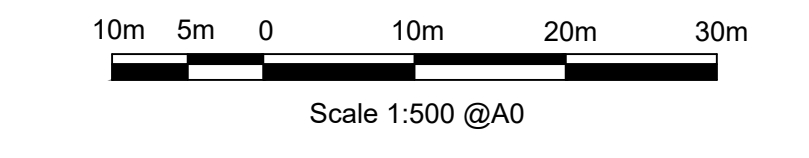
NOTES

- This drawing is to be read in conjunction with all relevant Architects and Bailey Johnson Hayes drawings and specifications.
- Do not scale. Work only to figured dimensions.
- All dimensions to be confirmed on site prior to commencement of work.
- Proposed Site and Finishes Plan from Cornish Architects- Drawing Ref: 22011 - TP - 001 - E
- Topographical Survey by MK Surveys Limited: Drawing Ref: 25646 (Rev 1) - Topographical Survey
- Soft Landscaping and planting to be as per Perform (Phase 1) and Laird Bailey (Phases 2&3) plans and schedules.

LEGEND

- New Office/Production Building
- New Swale SuDS Feature
- 200mm thk RC Yard Slab
- 80mm HD Block Paving
- 60mm Standard Block Paving
- 60mm Permeable Block Paving
- 60mm Footpath Block Paving
- Asphalt Estate Road
- Bitmac Footways
- Resin Bound Gravel Footpath
- Ground Guard Fire Path

SCALE



PRELIMINARY

Rev	Date	Revision Description
F	23.11.22	Updated to latest Masterplan layout
E	01.06.22	Updated to latest Architects Layout
D	25.05.22	Minor Revs to finishes + footpath levels
C	23.05.22	Updated to latest Architects Layout
B	13.04.22	Unit 7&8 FFL raised + Minor Revs
A	12.04.22	Updated to latest Architects Layout

Revision Schedule

Project Title
Catalyst Bicester
Wendlebury Road, Bicester



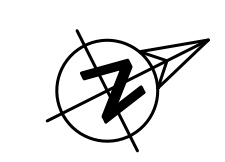
Drawing Title
MASTERPLAN
External Works & Levels

BAILEY JOHNSON HAYES
Consulting Engineers

ST ALBANS: Suite 4, Phoenix House, 63 Campfield Rd, ST ALBANS, Herts AL1 5PL
MANCHESTER: Grange House, John Dalton Street, MANCHESTER, M2 6JW

Scale: 1:500 @A0
Date: 08.10.21
Drawn: JNG

Drawing Number: S1358-Ext-65 F



External Works & Levels Layout 1:500

APPENDIX B

Landscape Architect Design (Planting Plans and Maintenance Plan)

Read in conjunction with SuDS plan

**Landscape Management &
Maintenance Plan**
Phase 1, Catalyst, Bicester

for Albion Land
December 2020

RF18-598-R-02-PL02

re-form
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1. Introduction

- 1.1. This Landscape Management Plan sets out the management and maintenance requirements for the first phase of the site at Catalyst, Bicester. The purpose of this management plan is to aid the efficient and effective management of the site, to ensure the healthy establishment of all planting types and to preserve the design intent for the first five years after planting.

2. Site description

- 2.1. The site is located to the southern edge of Bicester, Oxfordshire. The site is bounded by Wendlebury Road to the west, Bicester Avenue home and garden centre to the north, and agricultural land enclosed by hedgerows to the east and south.
- 2.2. The site is currently agricultural land and comprises of open fields separated with native hedgerow and incidental tree planting. To the east and south of the site is open pasture and farmland, bounded by hedgerows and occasional mature tree planting.
- 2.3. The Phase 1 proposals comprises B2 employment buildings, including parking and service areas; a new access off Wendlebury Road, internal roads, and footpaths; landscaping, including green infrastructure and SUDs provision (swale) as part of a flood compensation area.

3. Objectives

- 3.1. The aims of the management plan are:
 - Provide a quality landscape setting to the new development
 - Conserve and enhance ecology and biodiversity
 - Ensure healthy establishment of the proposed planting
 - Establish important areas of green infrastructure within the new development
- 3.2. All maintenance operations are to be in accordance with BS7370-4: 1993 *Grounds Maintenance: recommendations for maintenance of soft landscape* other than amenity turf.

4. Phasing

- 4.1. The site will be delivered in phases, including an initial enabling phase. This management plan covers landscape management planting for Phase 1 as per re-form Landscape Architecture's Planting Plans RFM-XX-00-DR-L-0001 and RFM-XX-00-DR-L-0002.
- 4.2. The 'Enabling Phase' allows for the removal of existing trees and hedgerows to facilitate the start of the construction works. All existing trees and hedgerows will be protected according to BS 5837:2012 'Trees in relation to construction'.

5. Soft Landscaping & planting

5.1. This management plan is to be read in conjunction with the following drawings by re-form Landscape architecture:

- RFM-XX-00-DR-L-0001 Phase 1 Planting Plan 01
- RFM-XX-00-DR-L-0002 Phase 1 Planting Plan 02

5.2. All maintenance operations are to be in accordance with BS7370-4: 1993 *Grounds Maintenance: recommendations for maintenance of soft landscape* other than amenity turf.

5.3. The proposed soft landscape and planting consists of:

- General tree planting:
Native tree species in a range of sizes: semi mature, extra heavy standard and standard trees. This will include deciduous and evergreen species.
- General native woodland planting:
In conjunction with larger trees, a native woodland mix of transplants, whips and feathered trees shall be provided at an average rate of 1 plant/1.5m². This will form bands of native vegetation comprising both tree and shrub species, including deciduous and evergreen species. Native transplant and whip species will be spread evenly throughout the woodland planting area to maximize cover for visual mitigation and amenity.
- Native shrub planting:
Within more open areas around the access road, generously spaced trees are located within areas of native woodland shrubs planted in swathes at 1500mm centres.
- General amenity shrub planting:
This will comprise a variety of robust & hardy groundcover and low level (below 1.2m mature height with some specimen/accent plants, all requiring minimal maintenance. There will be a predominance of amenity shrub planting with a high proportion of evergreen and flowering species to give year round structure and interest
- Meadow seed mix to swale:
Wet tolerant wildflower meadow grass is used to the proposed swale. This mix will be appropriate for seasonally wet soils in the swale.
- Amenity grass:
Some areas of amenity grass will be provided for verges adjacent to road and footways through the site.
- Soils:
Suitable quality topsoil shall be provided to the following depths:
Native woodland planting (transplants & whips) Planted areas – 300mm
Meadow grass to swale – 100mm low nutrient

Amenity shrubs – 400mm
Amenity grass – 150mm

6. Management Plan

6.1. General preamble

- **Duration of plan:**
There will be a provision of 25 years for plant establishment, maintenance and replacement. The duration of the management plan is to be confirmed within a detailed Management Plan to be provided by the client following practical completion of the landscape works.
- **Area:**
The management plan applies to all external areas within the Phase 1 boundary as shown on drawings RFM-XX-00-DR-L-0001 and RFM-XX-00-DR-L-0002.
- **Visits:**
The contractor shall notify the Client 48 hours prior to any visits to confirm suitability of time and works to be undertaken to avoid disruption to the Client's activities.
- **Specification and planting stock:**
Any replacement planting required during the period of the management plan should be undertaken in accordance with the Landscape Specification as part of the building works. All plant stock should comply as follows:
 - 6.1..1. All plants are to be supplied in accordance with Horticultural Trade Association's National Plant Specification and from a HTA certified nursery. All plants and trees to be planted in accordance with BS3936. Delivery and backfilling of all plant material to be in accordance with BS4428:1989 'Code of practice for general landscape operations' and CPSE Code of Practice for 'Handling and Establishing Landscape Plants, Parts I, II and III'.
 - 6.1..2. The supply and aftercare of trees will be in accordance with BS8545:2014
 - 6.1..3. All excavated areas to be backfilled with either topsoil from site or imported to be BS3882 – General purpose grade. All topsoiled areas to be clear of rocks and rubble larger than 50mm diameter and any other debris that may interfere with the establishment of plants.
 - 6.1..4. Existing trees and hedgerows to be retained shall be protected in accordance with BS5837, from commencement to completion of all works on site.

6.2. Machinery and Tools

Use only machines and tools suitable for the site conditions and the work to be carried out. Use hand tools around trees, plants and in confined spaces where it is impracticable to use machinery. The use of trimmers is not permitted around tree stems below 8-10cm in girth.

6.3. Chemicals

- Legislation

Pesticides include herbicides, insecticides, fungicides and plant growth regulators. The use of pesticides is governed by legislation. The Landscape Contractor must comply with the 'The Control of Pesticides Regulations 1986' made under the 'Food and the Environment Protection Act 1985', 'The Control of Substances Hazardous to Health Regulations 1988' made under the 'Health and Safety at Work Act 1974' and any other legislation enacted during the contract period.

All pesticides must be products on the current list of Agricultural Chemicals Approval Scheme. All pesticide users shall comply with the conditions of approval relating to use clearly stated on the product label.

The Contractor must comply with all relevant Codes of Practice issued by DeFRA. In particular, where work is near water, comply with the 'Code of Practice for the Use of Herbicides on Weeds in Watercourses and Lakes'. Written approval from the Environment Agency should be obtained prior to the use of pesticides within these areas.

Wherever practical, other non-chemical means of plant removal should be used in consultation with the Environment Agency.

- Use of pesticides

The Contractor shall keep a written logbook detailing all uses and pesticide applications carried out.

The Contractor is required to notify the public of any pesticide application. A warning sign shall be posted on the railing to any public routes. Where contained solely within planting beds the sign shall be placed adjacent to edges in noticeable positions. Details of the application and a contact person shall be indicated on the sign.

The Contractor shall in accordance with COSHH Regulations protect employees and other persons, including the public, who may be exposed to substances hazardous to health.

6.4. General planting maintenance (1 to 25 years)

- Failures of planting: general

Any trees/shrubs/plants that have died or failed to thrive (not developing full foliage throughout all branches) within the period of this maintenance plan should be replaced.

Years 1 – 3:

Replacements must match the size of adjacent or nearby plants of the same species or should match the original specification, whichever is the greater.

Years 4 – 25:

Replacements to be as original specification. Replacements of tree species left to grow to maturity, after thinning at years 7 – 10 must be to original specification.

- Watering: general

The contractor shall make due allowance in his rates for carrying out these tasks outside normal working hours when necessary to avoid premature evaporation or leaf damage caused through watering in bright sunlight.

The contractor is to allow for the provision of water, water carts or hoses with a fine hose attachment or sprinklers at normal mains pressure. The contractor is to include and state in his tender the cost of compliance with this clause so that the cost of visits can be deducted in whole or in part if not required to be used.

Drought Conditions:

Should emergency legislation restricting the use of water during drought conditions be imposed, the contractor will be required to ascertain — before operations — the availability and cost of, and arrange to collect and apply second class water by bowser or other means from an approved sewage works, deliver to site and apply as specified. When required by the Architect, the contractor shall arrange for tests of this water to be carried out in accordance with BS 6068:2000 Water Quality.

- Pests and Diseases: general

Maintenance shall include the control of insects, fungus and disease by spraying with an approved insecticide or fungicide.

- Litter Collection: general

The contractor shall at all times keep the site clean, tidy and free from litter and carry out a litter collection at each maintenance visit.

'Litter' is anything whatsoever that is thrown down, dropped or otherwise deposited in onto or from any place in the open air to which the public are permitted to have access without payment.

'Fly tipping': large items such as discarded furniture that require two or more people to lift or are in excess of 0.5m³ will be treated as fly tipping and not litter. The contractor should provide a cost for removal and depositing for fly tipping on each and every occasion.

The contractor shall take care to avoid any spillage of fuel, oil, chemicals or other materials toxic to plant life. Plants or soil contaminated by such material must be removed off site and replaced.

- Cleanliness: general

At completion and at each visit, remove soil and other debris from all hard surfaces and grassed areas and leave the works in a clean and tidy condition.

- Leaf Clearance: general

The contractor is responsible for the clearance of leaves, twigs, etc from all areas of the grounds including planting beds, lawns, paths, channels, drains, car park steps and other areas specified by the Client, from leaf fall (normally October until end December). The Client will instruct the contractor when to begin.

The clearance shall be carried out with hand raking or sweeping, or using machinery appropriate and approved by the Client.

All collected leaves to be removed from site and should not be left in piles awaiting removal but cleared immediately.

Leaves should not be left on ground for more than a week. The contractor shall schedule operations to achieve this standard.

- Management of proposed tree planting

General Health of Trees, Years 1, 3 and 5:

Check general health of all trees by qualified arboriculturalist. Recommendations will be made for replacements and remedial works as required.

In order to ensure that trees do not become hazardous, the condition of all trees at the site should be checked annually. Trees should also be checked following storms, where there may be damage from wind throw.

Deciduous trees are often vulnerable to diseases caused by pathogens, fungi, bacteria and viruses. Trees should be monitored for signs of diseases, which may include visible mushrooms and patchy and discoloured leaves. Where it is suspected that a tree may be suffering from a disease advice should be sought from an Arboriculturalist.

Hazardous branches or mature trees that are to be removed must be surveyed for potential birds' nests or bat roosts prior to felling. Trees and hazardous branches should only be removed outside the bird-breeding season, between March and August for most species, unless a suitably qualified ecologist undertakes a survey of the affected area.

All tree surgery works should be undertaken by a professional tree surgeon who should work in accordance with BS 3998:1989 'Recommendations for Tree Work'.

Inspection of trees:

Arboricultural inspections and works are to continue up to the 25 years and beyond. They will address wind damage, disease, dead wooding and tackling windblown trees.

- Newly Planted Trees

Trees to be compliant with BS8545: 2014 *Trees: from Nursery to independence in the landscape – Recommendations*.

1. Staked trees will be inspected at each maintenance visit, and any trees which have died or are excessively damaged will be removed from site, complete with the stake, and the ground reinstated.
2. Irrigation timing and frequency will take into account the prevailing weather conditions, soil moisture release, response of the tree species to water deficits or prolonged soil saturation. The holding capacity of the soil and amount of water available to the tree to be assessed at each visit. Frequency of watering is more important than the volume and should be undertaken as required.
3. Monitoring is recommended when 10 consecutive days at 25 degrees is recorded during the growing season. Water should only be added if the probe / tensiometer values indicate that it would be appropriate to do so.
4. Mulched areas around trees will be maintained to an acceptable standard (see details on mulching standard set out below in reference to ornamental shrub planting).
5. At the start and end of each growing season all stakes, ties and guying systems will be inspected. Any looseness, constriction or abrasion will be corrected by adjustment or replacement as necessary. Where the support of a stake is no longer required the stake will be removed from site.
6. All trees to be formatively pruned in accordance with BS3998: 2010 to prevent unhealthy growth and future failures.

7. Any trees which have died as a result of the Contractors operations or omissions will be replaced by the Contractor at their expense during the next planting season.

8. Where the appointing authority has agreed that plant deaths have arisen due to circumstances out of the control of the Contractor, replacement planting will be instructed by the appointing authority and paid for at an agreed rate.

9. A formal assessment of tree health and development carried out annually, foliar appearance assessment necessary (lack of leaf chlorosis and/or necrosis), leaf size and leaf canopy density, extension growth and incremental girth development.

General tree maintenance & establishment:

Watering: Year 1 and 2 – Establishment

Between May and September all newly planted trees shall be watered at a rate of 50 litres per visit.

Mulching and weeding: Years 1-3

Maintain a mulched, weed-free area 500mm radius around each tree. Mulch should be maintained at a depth of 75mm deep. Weeding within this zone should be hand-weeding which should be done as often as required or through the use of biodegradable mulch.

Inspection of stakes, ties etc. Years 1-3

Twice a year check condition of stakes, ties, guys and guards.

Redundant ties: Check for excessive movement at ground level by pulling on tree at shoulder height. If most of movement is in the bending of the stem then it is likely that the root system is providing adequate support and stakes and ties can be removed.

Adjustment and/or replacement of ties:

Trees should be able to move approximately 50mm (2”) in all directions when staked properly. Too little movement may result in poor root structure and inability to withstand wind loading. Too much movement may cause rocking and damage of new root growth. Ties should not rub bark. Ties should be loosened, tightened or replaced as required.

Stakes to be removed after the third winter from time of planting, unless further tree stabilisation is required.

Re-firming Trees and Specimen Shrubs:

Re-firming Trees and Shrubs – shall be carried out after strong winds, frost heave and other disturbances. To re-firm the Contractor should tread around the base until firmly bedded. Any collars in the soil at the base of tree stems, created by tree movement should be broken up by fork, avoiding damage to roots. The voids should be backfilled with topsoil and re-firmed.

- Pruning newly planted trees: Years 1 onwards

Prune at appropriate times, to remove dead, dying, damaged and diseased wood along with crossing branches (where branches are rubbing together) in accordance with BS 3998: 1989, to promote healthy growth and natural shape. Trees should be allowed to grow to their natural mature height. Pruning shall only be carried out to remove dead, diseased or dying branches.

All trees shall be cut using sharp shears, reciprocating hand held cutters or secateurs.

All cuts shall be clean and any ragged edges shall be removed using a sharp knife or secateurs. Keep wounds as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.

All arisings shall be collected immediately following cutting or at the end of each work period and taken to the designated location for disposal.

The Contractor shall ensure that trees do not present a hazard or obstruction to pedestrians, pavements, roads or signs at any time.

Once commenced, the cutting operation shall continue and be completed without delay.

The Contractor shall avoid cutting/pruning in March to June to cause minimum disturbance to nesting birds and wildlife, in compliance with the Wildlife and Countryside Act.

- Disease of fungus

Give notice if detected. Do not apply fungicide or sealant unless instructed.

- Watering

Water throughout the growing season in line with the maintenance schedules.

- Thinning Out

The object of the native woodland planting is to encourage full woodland growth to encourage the screening of large units. Trees shall be checked from 3 years to ensure healthy growth. Vigorous deciduous trees in the native woodland mix shall be thinned out after 7 to 10 years to allow slower growing species to reach their full height.

The following species are to be allowed to grow onto maturity:

Acer campestre

Pinus sylvestris

Prunus avium

Quercus robur

These species are to be spread evenly throughout the woodland to achieve desired coverage as set out in the planting matrix. Trees that are over shadowing these species shall be selected and removed to the base. Any encroaching vegetation adjacent to public rights of way will be thinned out in order to maintain width and sightlines.

- Mulching
All mulch beds to tree planting to be topped up in line with the maintenance programme
- Protection
All planting shall be suitably supported during the establishment period and protected from damage caused by animals e.g. rabbits

6.5. Management of native shrub mix

- Watering

Water as necessary through the growing season in line with the maintenance schedules.
- Cutting back/foilage removal

Native shrubs to be maintained at maximum 1.8m height. Plants should be cut twice a year in the spring and summer to promote healthy growth and maintain a neat, dense form.

6.6. Management of grass

- Mowing

For first year of management mow regularly throughout the first year of establishment to a height of 40-60mm, removing cuttings if dense. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers.

For future years:

Swale meadow mix:

Grass to be cut back once a year in late August and early September, left for a minimum of 3 days and then arisings removed, thus allowing the majority of the grassland plants to bloom and set seed.

Amenity grass verges:

Grass to be cut to height of 50mm monthly during growing season with arisings to be removed.

- Weeding

Weeds, over 100mm in height in late May, that do not form part of the seed mix should be removed from site.

- Re-seeding

Bare patches to be re-seeded annually in September as per the original specification. If bare patches appear, do not top dress with topsoil and do not apply fertiliser. Add grass seed as per original specification.

6.7. Amenity shrub planting

- Watering: Year 1 – Establishment

Between May and September of the first year shrub beds will be watered on each visit if there has been no rainfall for a period of seven days. Shrub areas should be watered at a rate of 15 litres per square metre. During subsequent years watering should be undertaken as necessary.

- Weeding and mulching: Years 1-25

Shrub beds should be weeded monthly during the growing season, March to October inclusive, utilizing the following methods:

Ornamental shrub & perennial areas - Hand pulling only

General amenity shrub areas - Hand pulling or herbicide spot treatment

Use only an approved herbicide in accordance with manufacturer's instructions. Care should be taken not to spray the green parts of shrubs or low ground cover planting. All weeds are to be removed from site once they have died down.

Remulch as necessary the whole surface of shrub beds to ensure a depth of 75mm. Ensure that the soil is thoroughly moistened prior to remulching, applying water where necessary.

- Fertiliser: Years 1-3

Annual application of a slow release organic fertilizer in accordance with manufacturer's instructions.

- Protective fencing: Year 1

Where newly planted areas are protected with Chestnut Paling fencing. Maintain fencing until end of Defects period then remove and reinstate ground. Make good any damage to planting until area is accepted. The fencing will remain the property of the Contractor.

- **Pruning: Years 1-25**
Shrub plants should be pruned at appropriate times, to remove dead or dying and diseased shoots or branches, to promote healthy growth and natural shape. Prune overgrowing specimens to avoid suppression of adjacent species, overgrowth onto grass or paving etc. Ensure that shrubs are maintained at a maximum of waist height.

All shrubs shall be cut using sharp shears, reciprocating hand held cutters or secateurs. Large leafed species such as Prunus should only be pruned using secateurs or similar approved equipment. All cuts shall be clean and any ragged edges shall be removed using a sharp knife or secateurs.

All arisings shall be collected immediately following cutting or at the end of each work period and taken to the designated location for disposal off site by the contractor. This includes trimmings hung up in shrubs and the sweeping of adjacent hard surfaces.

Once commenced, the cutting operation shall continue and be completed without delay.

- Maintenance of shrub area base

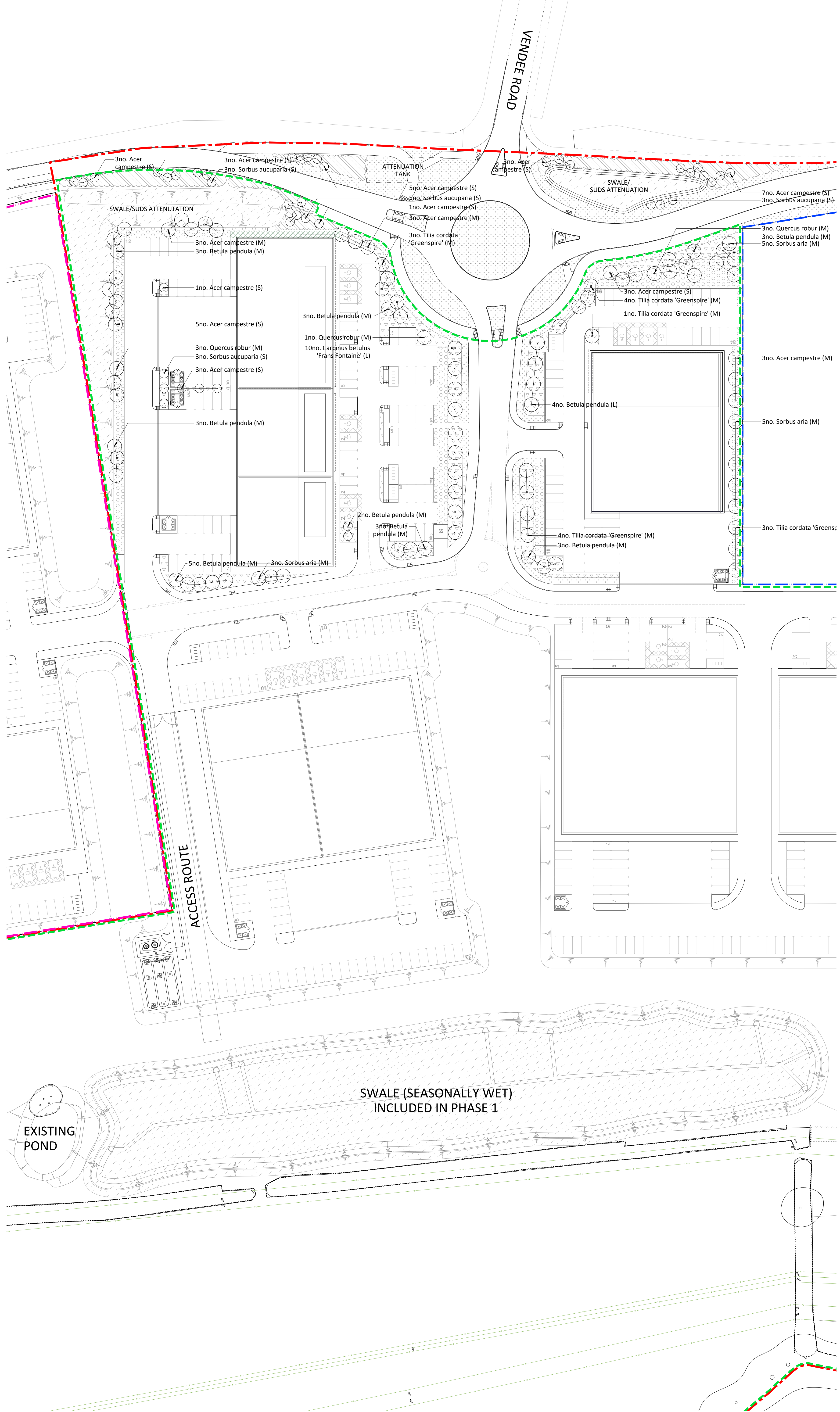
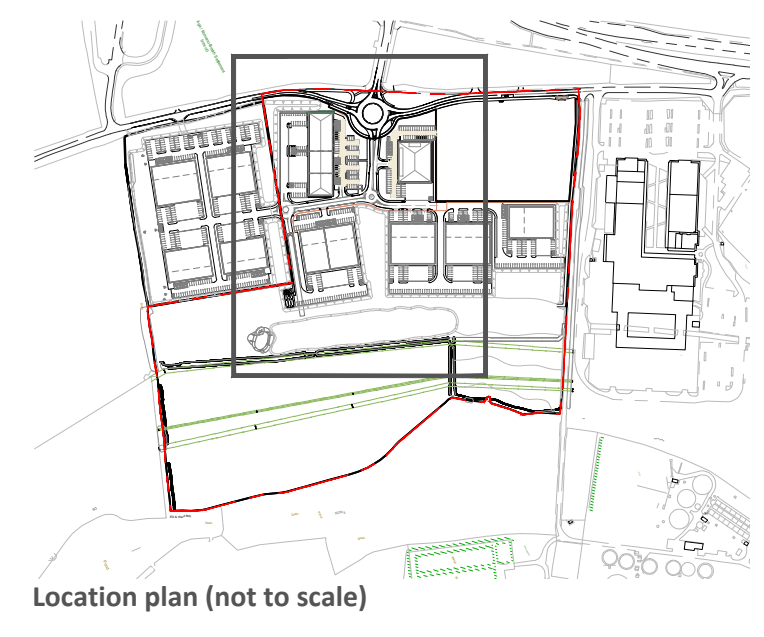
The Contractor shall be required to leave the base of the shrub beds clean, tidy and weed free on every occasion that maintenance operations are carried out, and this shall include the removal of all litter, leaves, debris and other such deleterious matter. The site shall be left clean and tidy.

All beds and bare areas shall be maintained free of litter and weeds at all times.

Bed soil shall be pushed back and left at a 45-degree angle from the bed edge, starting slightly below surrounding levels.

7. Maintenance schedule

On following page. All landscape maintenance operations will be carried out in accordance with Landscape Services' Technical Specifications, as a requirement of the 106 Agreement. This is to ensure that the appropriate standard of landscape maintenance is achieved.



Key

- Site boundary
- Phase 1 Reserved Matters Application boundary
- Land in Applicant's ownership - Farm site boundary
- David Lloyd site boundary (separate application)
- Existing trees to be retained
- Existing hedgerow vegetation to be retained
- Proposed tree in soft landscape (Semi mature & extra heavy standard sizes)
- Proposed tree in soft landscape (Standard size)
- Proposed native woodland planting mix
- Proposed amenity planting mix
- Proposed native shrub planting mix
- Proposed amenity grass seed
- Proposed swale meadow grass (seasonally wet)

- REFER TO DRAWING RFM-XX-00-DR-L-0002 FOR PLANTING SCHEDULE AND MATRIXES
- Notes**
1. Scaling from drawing if printed incorrectly may lead to errors.
 2. All information outside red line boundary shown for contextual purpose only.
 3. All hatch patterns are indicative only unless stated otherwise.
 4. This drawing is to be read in conjunction with the following re-form landscape architecture documentation:
 - RFM-XX-00-DR-L-0002-Phase 1 planting Plan 02
 - AND all relevant documentation from the design team
 5. Any discrepancies in the design information are to be brought to the attention of re-form landscape architecture, in writing, prior to commencement of construction works.
 6. Refer to other consultants' drawings and specifications for the following design information:
 - Levels & Drainage design and infrastructure
 - Lighting and ducting
 - Existing & proposed utilities
 7. Plant quantities are to suit site areas in accordance with scheduled plant densities.
 8. Any proposed plant substitution shall be agreed with the landscape architect prior to ordering.

Date	Description of revision	Drawn	Checked	Approved	Revision
14.12.20	Prunus spp. replaced; b.pendula moved 2m away from kerbs	AF	AF	GD	PL04
01.12.20	Paths added to Unit 3-3 car park	AF	AF	GD	PL03
23.11.20	Additional planting to car parks	AF	AF	GD	PL02
28.09.20	RMA Phase 1 Issue	AF	AF	GD	PL01
08.07.20	Trif issue	AF	AF	GD	PL02

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Project
CATALYST BICESTER
RF18-598

Client
ALBION LAND

Document title
RESERVED MATTERS
PHASE 1 PLANTING PLAN 01

Paper size
A1

Status
FOR INFORMATION

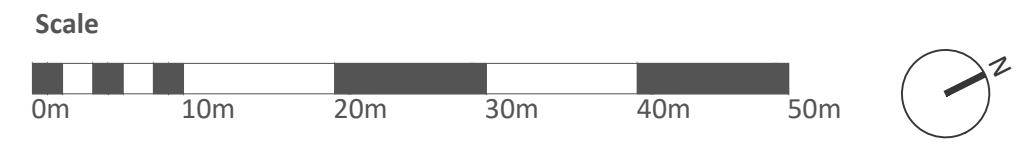
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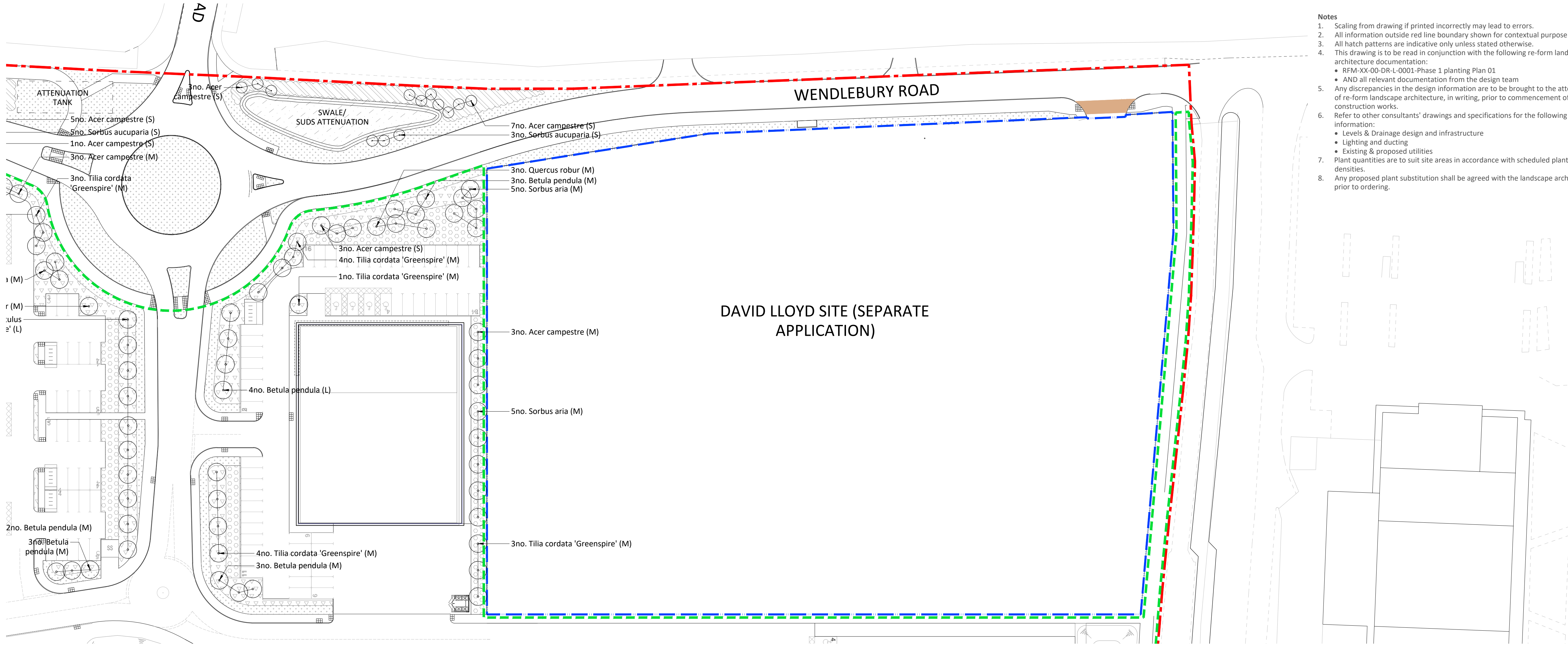
© re-form landscape architecture

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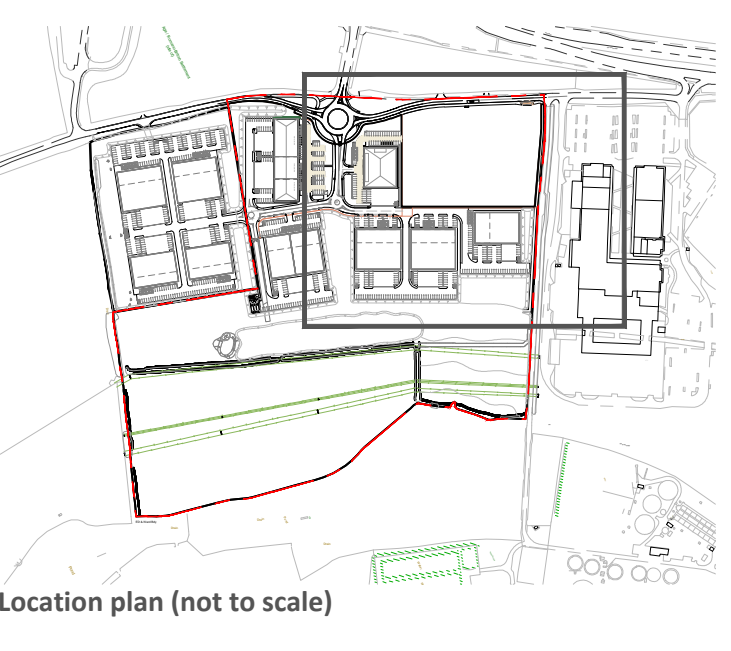
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Revision
PL04





- Notes**
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 - RFM-XX-00-DR-L-0001-Phase 1 planting Plan 01
 - AND all relevant documentation from the design team
 - Any discrepancies in the design information are to be brought to the attention of re-form landscape architecture, in writing, prior to commencement of construction works.
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 - Lighting and ducting
 - Existing & proposed utilities
 - Plant quantities are to suit site areas in accordance with scheduled plant densities.
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- Key**
- Site boundary
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 - Proposed amenity planting mix
 - Proposed native shrub planting mix
 - Proposed amenity grass seed

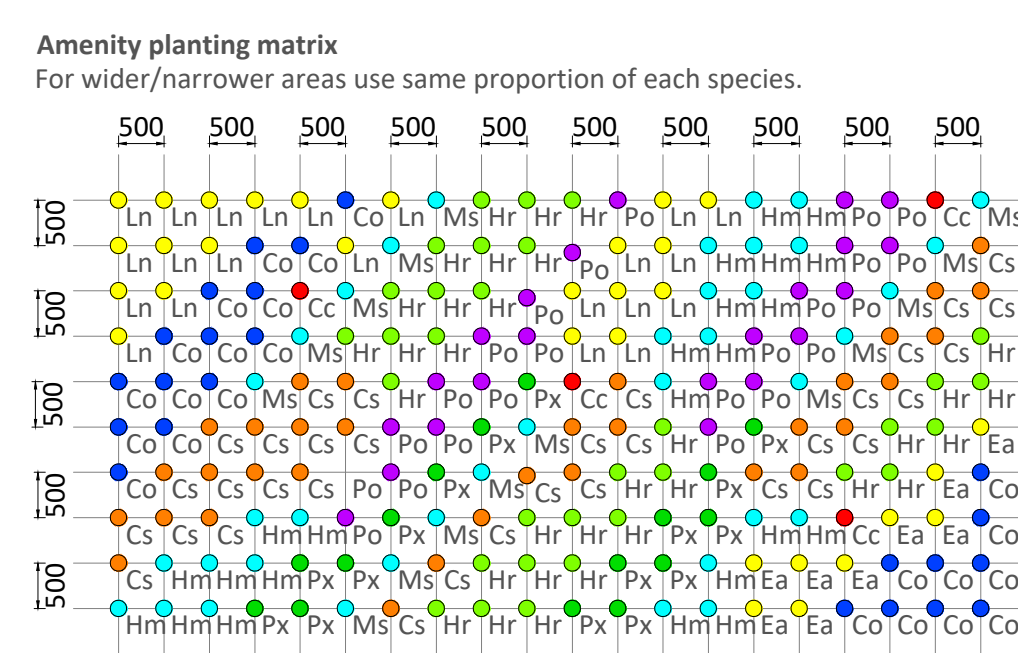
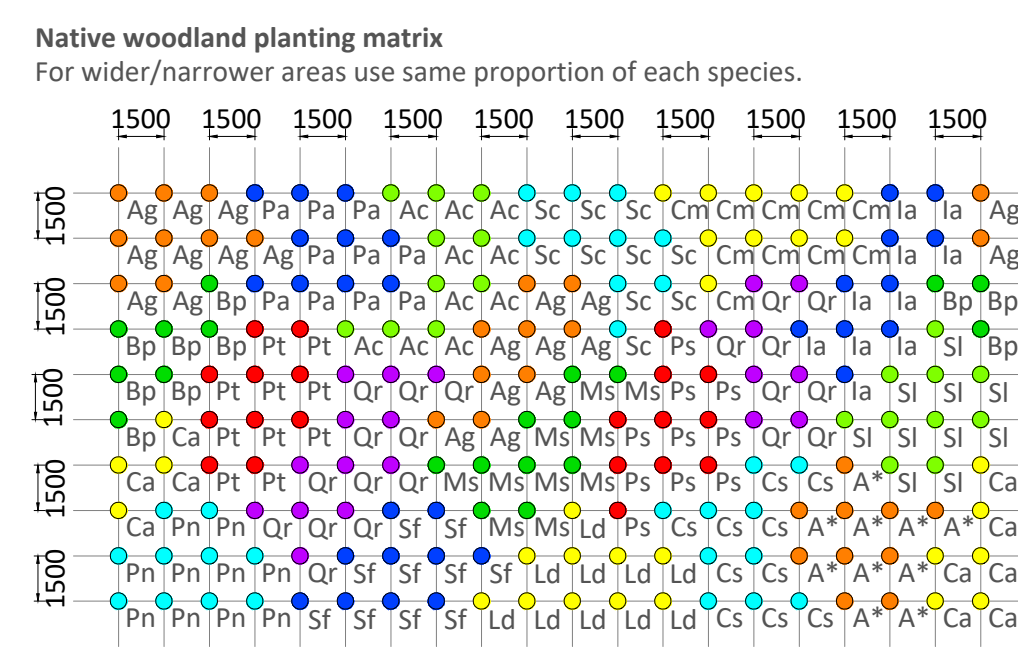
DAVID LLOYD SITE (SEPARATE APPLICATION)

PLANTING SCHEDULE

Botanical Name	No. times transplanted	Root condition	Overall height (cm)	Form	Girth (cm)	Mature Height (m)	Specification
Trees							
Betula pendula (L)	-	C*	min. 500	SM	20-25cm	8m	1.8-2m clear stem
Carpinus betulus 'Frans Fontaine (L)	-	C*	min. 500	SM	20-25cm	10m	1.8-2m clear stem
Acer campestre (M)	3x	C*	min. 450-500	EHS	16-18cm	10m	1.8-2m clear stem
Betula pendula (M)	3x	C*	min. 450-500	EHS	16-18cm	8m	1.8-2m clear stem
Quercus robur (M)	3x	C*	min. 450-500	EHS	16-18cm	10m	1.8-2m clear stem
Sorbus aria (M)	3x	C*	min. 450-500	EHS	16-18cm	8m	1.8-2m clear stem
Tilia cordata 'Greenspire' (M)	3x	C*	min. 450-500	EHS	16-18cm	10m	1.8-2m clear stem
Shrubs							
Acer campestre (S)	1x	B/RB	min. 2.5-3.0	S	8-10cm	10m	1.75-2m clear stem
Sorbus aucuparia (S)	1x	B/RB	min. 2.5-3.0	S	8-10cm	8m	1.75-2m clear stem

* If trees to be planted within the planting season contractor may consider RB

Code	Botanical Name	Root condition	Form	Height (cm)	% Mix
Native woodland planting mix					
A*	Alnus glutinosa	BR	Feathered	150cm	5
Ag	Alnus glutinosa	BR	1+1	60-80cm	5
Bp	Betula pendula	BR	1+1	60-80cm	5
Ca	Corylus avellana	BR	Feathered	150cm	5
Pn	Populus nigra spp. betuifolia	BR	1+1	60-80cm	5
Pt	Populus tremula	BR	Feathered	150cm	5
Qr	Quercus robur	BR	Feathered	150cm	10
Pa	Prunus avium	BR	1+1	60-80cm	5
Ac	Acer campestre	BR	Feathered	150cm	5
Sc	Salix caprea	BR	1+1	60-80cm	5
Sf	Salix fragilis	BR	1+1	60-80cm	5
Ms	Malus sylvestris	BR	Feathered	150cm	5
Ld	Larix decidua	BR	1+1	60-80cm	5
Pn	Pinus sylvestris	BR	Feathered	150cm	10
Cs	Cornus sanguinea	BR	bushy, 3 brks	60-80cm	5
Cm	Crataegus monogyna	BR	bushy, 3 brks	60-80cm	5
la	Ilex aquifolium	BR	bushy, 3 brks	60-80cm	5
Sl	Sorbus leyana	BR	bushy, 3 brks	60-80cm	5



Code	Botanical Name	Root condition	Size	Density
Amenity shrub planting				
Co	Carex oshimensis 'Evergold'	C	2L	4/m ²
Cs	Cornus sanguinea 'Midwinter fire'	C	3L	4/m ²
Cc	Cotinus coggygria 'Purple Flame'	C	5L	As shown
Ea	Escallonia 'Apple Blossom'	C	3L	4/m ²
Hr	Hebe 'Red Edge'	C	3L	4/m ²
Hm	Hebe 'Mrs Winder'	C	3L	4/m ²
Px	Photinia x fraserii 'Red Robin'	C	5L	4/m ²
Po	Prunus 'Otto Luyken'	C	3L	4/m ²
Ln	Lonicera nitida 'Maigrun'	C	3L	4/m ²
Ms	Miscanthus sinensis	C	3L	4/m ²

Code	Botanical Name	Root condition	Form	Height (cm)	% Mix
Native shrub mix					
	Cornus sanguinea	BR	bushy, 3 brks	60-80cm	15
	Viburnum opulus	BR	bushy, 3 brks	60-80cm	20
	Viburnum lantana	BR	bushy, 3 brks	60-80cm	20
	Euonymus europaeus	BR	bushy, 3 brks	60-80cm	15
	Crataegus monogyna	BR	bushy, 3 brks	60-80cm	15
	Salix purpurea	BR	bushy, 3 brks	60-80cm	15
Swale meadow grass mix (seasonally wet)					
MIXTURE					
EG8 (Meadow grass mixture for wetlands)					
Supplier: Emorsgate Seeds, SOW RATE: 5g/m ² (50kg/ha)					
Amenity grass mix					
MIXTURE					
A19 - All purpose landscaping mixture					
Supplier: Germinal Amenity, SOW RATE: 50g/m ²					

REFER TO PLANTING MATRIX
Notch planted in a matrix pattern at 1500mm centres with rabbit protection.
Plant in single species groups with 7-13no. plants by species.

Date	Description of revision	Drawn by	Checked by	Approved by	Revision
14.12.20	Prunus spp. replaced; b.pendula moved 2m away from kerbs	AF	AF	GD	PL04
01.12.20	Paths added to Unit 1-3 car park	AF	AF	GD	PL03
23.11.20	Additional planting to car parks	AF	AF	GD	PL02
28.09.20	RMA Phase 1 issue	AF	AF	GD	PL01
08.07.20	draft issue	AF	AF	GD	PL02

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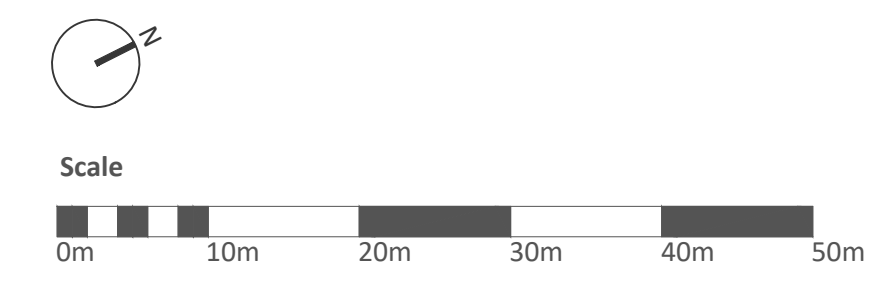
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PHASE 1 PLANTING PLAN 02

Paper size
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PL04

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Landscape and Ecology Management Plan



**Catalyst, Bicester,
Units 5, 6, 7, 8 and 9– RM4**

31st May 2022
LBLA Report No. LB291/R03a/AL/DB

Report No:	Date	Revision	Author	Checked
LB291/R03	03.05.22	-	David Bailey CMLI	Andrew Laird CMLI
LB291/R03a	31.05.22	a		

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Plans:

LB291_D04a: RM4 - Soft Landscape Proposals (Sheets 1-4)
11920_P09_Ecological Enhancement Plan



Section 1: Introduction

Purpose

- 1.1 This Landscape Management Plan (LMP) has been prepared by Laird Bailey Landscape Architects (LBLA) on behalf of Albion Land for Catalyst, Bicester, Units 5, 6, 7, 8 and 9 (hereafter referred to as the 'site'). The site is centred on OS grid reference SP575210.
- 1.2 The purpose of the LMP is to provide details of measures to ensure the successful establishment and ongoing maintenance of the soft and hard landscape elements of the development proposals.
- 1.3 This LMP should be read in conjunction with drawings LB291_D04a – RM4 – Soft Landscape Proposals (Sheets 1-4).

Scope of the Landscape Management Plan

- 1.4 This Landscape Management Plan is set out as follows:
 - Section 2 describes the site, and provides an overview of the existing landscape and its condition;
 - Section 3 describes the proposed soft landscaping typologies;
 - Section 4 describes the proposed hard landscaping typologies;
 - Section 5 sets out the long-term design objectives;
 - Section 6 sets out the management regimes and responsibilities;
 - Section 7 sets out the maintenance operations for all the soft landscape areas; and
 - Section 8 sets out the maintenance operations for all the hard landscape areas.



Section 2: Site Overview of Existing Landscape and its Condition

Site Context

- 2.1 The site is located to the southern edge of Bicester, Oxfordshire. The site is proposed for five units (Units 5, 6, 7, 8 and 9), associated landscaping and highways.
- 2.2 The site currently comprises of grazing pasture and vegetated field boundaries with a series of drainage gully's which serve surrounding agricultural land. Soft landscaping elements are mainly contained to the site's peripheries with an internal hedgerow and tree planting dissecting a portion of the site. The sites western boundary is open with phase 1 of the Catalyst development beyond which is flanked by Wendlebury Road and a belt of existing trees. To the north lies a series of existing industrial units and a row of trees. To the east a continuous buffer of mature trees and water course and to the south a vegetated field boundary comprising trees and hedgerow beyond which lies agricultural land.
- 2.3 The character of the site is semi-urban with a mix of built development and agricultural land surrounding the site in all directions.



Section 3: Proposed Soft Landscaping

1.5 This LEMP is to read in conjunction with details of proposed soft landscaping (see LBLA Drawing No. LB291_D04a – RM4 – Soft Landscape Proposals (Sheets 1-4).

3.1 Soft landscaping within the site is designed to:

- Create an attractive and appropriate setting for the new Industrial Units (5a, 5b and 6), providing all year-round interest and colour.
- Create a strong soft landscape framework with planting to the perimeter of the site including trees, selected to maximise biodiversity;
- Ensure trees and shrubs are managed appropriately to promote the growth of flowers, berries and general 'form' offering the maximum benefit of amenity/habitat for birds, small mammals, and insects, and;
- Provide additional habitats for bats and nesting birds.

3.2 Proposed soft landscaping elements and planting consists of the following.

Trees

3.3 A selection of native trees, planted at a range of appropriate sizes (ranging between selected standard up to semi mature) will feature across the scheme.

Native Woodland Planting

3.4 In addition to specimen trees, a native woodland mix of feathered trees, whips and transplants shall be planted at an approximate density of 1 plant/1.5msq. Over time this will form a dense understorey screen to larger tree specimens, contributing to the overall bio-diversity value and visual mitigation/amenity, reducing visual coalescence between the built form.

Native Shrub Mix and Native Hedgerow

3.5 Featuring within the development and upon the site boundaries, creating a series of green corridors linking to the wider landscape fabric. Hedgerows will consist of a variety of native species (typically those which are prevalent in the local area) planted as double staggered rows at 5 plants per linear meter.

Wetland/Scrapes

3.6 An area of Wetland/Scrapes are to be implemented within the southern area of the site. This area is to consist of shallow depressions with gently sloping edges, which holds a varying degree of water throughout the year. Proposed scrapes create in-field wet features that are attractive to wildlife, as well as supporting a wide variety of invertebrates and provide important feeding areas for breeding and wading birds.



Amenity Shrub Planting

- 3.7 This consists of species which are mainly evergreen and offer all year-round seasonal interest. Specimens will be chosen due to their hardiness/robustness and need for minimal maintenance/management once established. Ultimately, mature sizes will range between 0.3m-1.5m in height. It has also been deemed important that the majority should be flowering species to provide added bio-diversity value and a food source for pollinators.

Wildflower Meadow Mix

- 3.8 Wildflower areas will be limited to the outer perimeters of the development and mainly form a successional buffer to understorey woodland and native hedgerows. Seed mixes will consist of a range of shade tolerant non-invasive grass and long-lasting wildflowers, offering maximum benefits to bees, butterflies, birds, and small mammals.

Amenity Grass Mix

- 3.9 Amenity grass areas will be provided around buildings and for verges flanking access roads and pedestrian paths throughout the site.

Swale Meadow Grass Mix

- 3.10 This is to be implemented on the margins/banks of swales and scrapes, both planted with a wetland meadow mix (Emorsgate EM8 composed of 20% wildflowers and 80% slow growing grasses).



Section 4: Proposed Hard Landscaping

4.1 This LEMP is to read in conjunction with details of proposed hard landscaping (see relevant Cornish Architects drawings).

4.2 Hard landscaping within the site is designed to:

- Create an attractive and appropriate setting for the new Industrial units (5, 6, 7, 8 and 9), providing hard landscape which is fit for purpose, durable and robust;
- Indicate change in use, identifiable from other hard surfaced areas; and
- To provide a pallet of materials which are aesthetically and visually appropriate for the various settings and uses within the development.

Tarmacadam Road and Bitmac Footway Surfacing

4.3 Tarmac surfaces are to be built to the given build-up specification and executed to a high standard. All bound surfaces will be edged accordingly to maintain crisp lines and the structural integrity of the surface build-up.

Concrete Block Paving to Parking Spaces/circulation and footpaths

4.4 Parking spaces, vehicular areas of circulation and footpath are to be laid to concrete blocks differentiating these spaces from main highways within the site and each other. All concrete block surfaces will be edged accordingly to maintain crisp lines and the structural integrity of the surface build-up.

Brushed Concrete Yards

4.5 Unit yards to be laid to brushed concrete for functional purposes. All brushed concrete surfaces will be edged accordingly to maintain crisp lines and the structural integrity of the surface build-up.



Section 5: Long-term Design Objectives

Existing Trees and Hedgerows

- 5.1 Management of existing trees, hedgerows and shrubs offers to secure the current landscape elements that have potential for enhancement without compromising other important aims of the development.
- 5.2 Specific objectives include:
- Ensuring long-term enhancement of trees and hedgerows with additional native planting and ‘gapping-up’ where required;
 - Maintaining long-term health of existing trees and hedgerows to contribute to buffering the development from neighbouring land and infrastructure;
 - To extend the life of mature trees through sound arbouricultural management; and
 - Creating a healthy tree and shrub understorey to knit into the proposed soft landscaping proposals, offering a series of mature/interconnected wildlife corridors
- 5.3 Any tree/hedgerow works such as the removal of hazardous branches or the felling of mature trees will be completed outside of the active period for breeding birds (generally understood as March to August inclusive but some bird species may nest all year round). Should any management be required within the breeding bird period, checks for nesting birds by a suitably trained ecologist will take place prior to any works commencing to ensure that no breeding birds are present. Should a nest be present then a suitable buffer would be installed until the nest is confirmed as being inactive.
- 5.4 Checks for the presence of roosting bats would also be completed prior to management taking place regardless of the time of year. Potential bat roosting features can include woodpecker holes, rot holes, any cracks or splits in the tree bark, cankers, gaps between overlapping stems or branches, partially detached ivy (with stem diameters in excess of 50mm), and man-made holes. If any of the potential bat roosting features are identified, evidence of roosting bats is identified or a bat is found, then works would temporarily stop and an licenced ecologist/Natural England consulted.

Proposed Trees and Native Woodland Planting

- 5.5 The long-term design and management objective is to ensure that on-site trees thrive and contribute to an attractive environment. Trees shall be managed to develop to a healthy and even form. Stems should only be removed so as to retain the natural appearance of the individual plant species or to remove broken or badly damaged branches and dead wood. Tree surgery such as crown lifting should be carried out as required to prevent restriction to pedestrians or vehicles.



- 5.6 Any tree works will have consideration for the potential presence of roosting bats and breeding birds as per the management considerations stated within the retained tree prescriptions above.

Existing and Proposed Native and Amenity Shrub Planting

- 5.7 The long-term design objective of the shrub planting is to ensure the plants thrive to create shrubbery for local amenity and habitat for wildlife. Planting will be managed to achieve a maximum height of 2.5 metres. Pruning should be undertaken to promote flowering and fruiting in accordance with the species and age of the plant.
- 5.8 As such, any management will take place at the end of the winter months to avoid the active period for most wildlife, providing the plants with time to produce flowers, seeds and berries. Should any management be required within the breeding bird season (March and August inclusive), checks for nesting birds will take place prior to any works commencing by a suitably qualified ecologist. Should a nest be present then a suitable buffer would be installed until the nest is confirmed as being inactive. Any vegetation management will have consideration for the potential presence of breeding birds as per the management considerations stated above.

Proposed Native Hedgerow

- 5.9 Hedgerows are to be incorporated into the southern area of the site delineating the access pathway from the ecological habitat area as shown on the planting plan. The hedgerow should create a physical barrier to discourage access to the ecological planting to the south and provide an attractive edge to the car park and access path. The creation of hedgerow will also increase connectivity of the site for wildlife and provide additional foraging and nesting habitat for a variety of species.
- 5.10 Hedgerow planting will be managed to achieve a maximum height of 1.2m.
- 5.11 The ground around the hedgerow transplants will be bark mulched to conserve moisture and reduce weed growth.
- 5.12 Careful trimming and pruning will be required in the early years to ensure the development of a well-clothed hedge. Trimming should aim to form an 'A' profile.
- 5.13 Any hedgerow management will have consideration for the potential presence of breeding birds as per the management considerations stated above.

All Hedging

- 5.14 Inspect monthly for the first year and maintain shrubs/hedging in a weed free condition through combined techniques by hand, herbicides, cultivation and mulching.
- 5.15 Prune or clip to promote bushy, healthy growth and required shape when necessary.



- 5.16 Trimming back of growth overhanging adjacent footpaths or windows when required.
- 5.17 Remove/replace individual specimens as required.

Wetland/Scrapes

- 5.18 Once scrapes are created, it is important to maintain open, muddy margins where wading birds can find and access food. If the margins become too overgrown with plants such as rush, wader use will decline rapidly. If possible, allow livestock to graze and poach the margins at low levels, and do not fence the scrape off. Scrape margins should be managed by mowing each year to maintain access for waders and other animals. Maintain a small proportion of longer marginal vegetation to provide additional habitat variety, which will benefit invertebrates and plants and provide cover for offspring.
- 5.19 Where vegetation is to be cut back this should be completed in September/October to avoid any impacts to breeding birds and also any impacts to potentially over wintering waterfowl.

Proposed Wildflower Meadow Mix, Amenity Grass Mix and Hedgerow Margins

- 5.20 Management aims to increase structural diversity and species composition both in a manner compatible with user's amenity requirements and with the needs of fauna such as invertebrates, reptiles, birds and foraging bats. The management objectives are as follows:
- Secure foraging habitats for wildlife without disturbance by retaining grassland within root protection areas of retained hedgerows and trees;
 - Provide structured mosaics varying from regularly mown amenity grassland to wildflower and grass edges cut on less frequent mowing rotations;
 - Enhance species composition in the seeding mix by specifying a species-rich wildflower and grassland mix for the public open space and hedgerow margins.
- 5.21 Amenity grass will be cut to a height of 50mm monthly during the growing season with arisings removed. Proposed wildflower meadow and hedgerow margins would be cut back once a year in late August and early September, left for a minimum of 3 days and then arisings removed, thus allowing the majority of the grassland plants to bloom and set seed.

Proposed Swale Meadow Grass Mix

- 5.22 Wetlands and other aquatic environments on site will aim to provide a unique habitat for thousands of species of aquatic and terrestrial plants and animals. Equally wetlands, swales and attenuation basins will offer flood protection and water quality improvement as well as a valuable, aesthetically pleasing, recreational resource. This would be cut back annually as per the prescription for Wildflower Meadow.



Improve Opportunities for Bats

- 5.23 The retention of hedgerows on site in conjunction with the new hedgerow and tree planting will maintain and enhance the foraging and commuting opportunities for bats across the site and to the wider area. The provision of wildflower grassland, wetland scrapes and swale planting will also provide foraging opportunities for some bat species.
- 5.24 Additional roosting opportunities are proposed in order to provide further ecological enhancement for bats post-development. This will include the installation of eleven bat boxes across the Catalyst Bicester Phase 2.1 site (Vivaro Pro or similar). The boxes should be placed as high as possible (3 m and above), ensuring the entrance is free from obstruction. Favoured sites are close to linear features along the hedge line or incorporated into the building and away from street lighting. See ecological enhancement plan (Ref: 11920_P09) for suggested specification and location of bat boxes.
- 5.25 The bat boxes are designed to be low maintenance and the only monitoring which should be completed after Year 1 is to confirm that the spec and location is appropriate.

Improve Opportunities for Birds

- 5.26 The creation and appropriate management of new native shrub, hedgerow, wetland scrapes and tree planting will provide and overall enhancement to bird foraging and nesting resources within the site post-development.
- 5.27 To provide an additional enhancement for birds, fifteen bird boxes will be erected on the buildings or suitable retained trees. Boxes will be positioned so they are sheltered from prevailing wind, rain and strong sunlight, normally facing north through to south east on buildings, at a height of between 2m and 5m (5m minimum for the swift boxes), ensuring a clear flight path to the entrance. See ecological enhancement plan (Ref: 11920_P09) for suggested specifications and location of bird boxes.
- 5.28 All boxes should be Vivara Pro or similarly created from woodcrete as these are known to be durable, long-lasting and to regularly attract birds to nest.
- 5.29 All boxes should be annually inspected for presence, damage, obstruction and if necessary, should be cleaned. Inspection and cleaning should be conducted annually during the winter months to avoid impact to nesting birds. If replacement through loss or damage is required, it should be for an identical product positioned in the same or a similar location.



Section 6: Management Regimes and Responsibilities

- 6.1 The landscaping works will receive post installation maintenance for a one-year defects liability period (DLP). All defects resulting from plant loss, disease, or failure will be replaced on a like for like basis. A visit every month, or more frequently should watering be required, is recommended during the DLP. Subsequently a minimum of 12 maintenance visits per annum is recommended.
- 6.2 Maintenance and management activities are set out below (which covers a minimum period of five years) to ensure the soft landscaping is managed effectively beyond the time limits of the implementation and establishment works. The responsibility for this management and maintenance is to be agreed. LBLA's recommendation is for the landscape contractor that undertakes the planting works to be engaged to carry out the one-year establishment maintenance.
- 6.3 Management and maintenance operations will be monitored and reviewed annually on an on-going basis and where required, modified if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.
- 6.4 As a minimum, maintenance visits should be undertaken to inspect, monitor as well as to carry out routine operations, including weeding and litter picking, with other specific operations being undertaken as scheduled below.



Section 7: Soft Landscaping Maintenance Works Schedule

Component	Task	Time of Year	Frequency
<p><i>Visits every month throughout the one-year defects and establishment period, more frequently if required due to prologued dry weather conditions and the need for watering. Subsequently management and maintenance operations will be monitored and reviewed annually on an on-going basis and where required modified if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.</i></p>			
Trees & Native Woodland Planting	Prune and repair wounds in accordance with good horticultural and arboricultural practice.	Oct-Feb	As required (annually).
	Check the ties regularly for rubbing and adjust if necessary. Constriction of the stem by ties happens very quickly, so fast-growing trees need frequent checking. After bad weather, check for abrasion and snapped stakes or ties. Re-firm tree by adjusting tree ties and ensuring soil is re-firmed around the base.	All year round and especially after strong winds, frost heave and other disturbances.	As required (annually).
	Hand weed mulched areas around trees.	Mar-Sep	Every visit.
	Apply suitable non-selective herbicide to control weeds.	Mar/Oct	Only if required.
	Replace any failed specimens.	Oct-Mar	As required during the one-year DLP (next available planting season).
	Remove debris/litter	Throughout	Every visit.



Component	Task	Time of Year	Frequency
	Top up bark mulch around bases of trees to full depth of 75mm.	Mar/Apr	As required during the DLP.
	Newly planted trees will be watered throughout May-August months after any period of four weeks without significant rain to thoroughly wet the top 150mm of soil around the tree roots.	Throughout	As required after a period of four weeks without significant rainfall.
	Trimming and selective thinning of the canopy. Trim back growth overhanging adjacent footpaths when required.	Oct-Mar	Annually if required.
	In years 2 and onwards remove staking if tree has established well and the stakes are no longer required.	Any	As required.
Amenity Shrub Planting	Trimming and reshaping to encourage healthy bushy growth. Trim back growth overhanging adjacent footpaths when required.	Oct-Mar	Annually if required.
	Hand weed.	Throughout	Every visit.
	Apply suitable non-selective herbicide to control weeds.	Apr-Sep	Only if required.
	Remove debris/litter.	Throughout	Every visit.
	Replace any failed specimens.	Oct to March	Within the DLP, as required (next available planting season).



Component	Task	Time of Year	Frequency
	Top up bark mulch around bases of shrubs to full depth of 75mm.	Apr	As required during the DLP.
	Watering of newly established shrubs.	Throughout	As required after a period of four weeks significant rainfall, during the DLP.
Native Hedgerows/ Native Shrub Mix	Re-shaping.	Hard-prune Oct-Feb	Annually if required.
	Hand weed.	Throughout	Monthly/every visit.
	Apply suitable non-selective herbicide to control weeds.	Apr-Sep	As required.
	Apply fertiliser: Slow release, applied as per manufacturer's recommendations.	Mar/Apr	Annually.
	Remove debris/litter.	Throughout	Monthly/every visit.
	Replace any failed specimens.	Oct-Mar	As required (next available planting season).
	Top up bark mulch hedge base to full depth of 75mm.	Apr	Annually.
	Watering of newly established hedgerows.	Throughout	As required after a period of four weeks without significant rainfall.
	Trim and top hedgerow as necessary avoiding bird nesting season.	Feb	As required (annually).



Component	Task	Time of Year	Frequency
Wetland/ Scrapes	During the first year allow annual weeds to establish to protect seed stock. Cut, compost and remove in August. In subsequent years mow meadow margins to 50mm.	August	Once per year. Leave hay cuttings to drop seed for minimum of 3 days (up to 7) before removing.



Component	Task	Time of Year	Frequency
	Aquatic plant management/thinning	August to October	Aquatic plant thinning should be carried out on a 3-year cycle to halt the natural succession process and ensure an open body of water maintained.
	Clearance of debris/ rubbish	Throughout	Water bodies to be regularly checked for rubbish or other detritus material. Any rubbish to be cleared by hand and removed from site
	Dredging and silt removal	September to October	It is recommended that attenuation basins/ ponds are de-silted on a 5–7 year cycle. Silt should be carefully removed by mechanical means (typically a long arm dredging excavator) and deposited and spread along the bank margins dependant on the volume removed.



Component	Task	Time of Year	Frequency
Wildflower Meadow Mix	Mowing/strimming.	Late Aug/early Sep	Cuttings must be left for a minimum period of 3 days before being raked up and removed, to allow wildflowers to bloom and disperse seeds
	Weeding.	Throughout	Monthly/every visit. Weeds exceeding 75mm and which don't feature in the seed mix should be removed.
	Re-seeding (if required).	Sep	Any bare patches of ground where seed has failed to germinate should be re-seeded as per the original specification.
Amenity Grass Mix	Mowing and removal of arisings.	Mar-Oct	Monthly/every visit. Grass should be mown regularly to aid with establishment to a height of 50mm.
	Clearance of debris/rubbish	Throughout	Water bodies to be regularly checked for rubbish or other detritus material. Any rubbish to be cleared by hand and removed from site.



Component	Task	Time of Year	Frequency
Swale Meadow Grass Mix	Weed control.	Mar-Sep	Invasive weeds to be spot treated with a glyphosate herbicide applicator. Herbicide must not be applied within 2m of attenuation or swale bank if permanent standing water is present. Any weeds within this 2m zone or on sloping banks should be removed by hand or mechanically.
	Aquatic planting management/thinning.	Sept-Oct	Aquatic plant thinning should be carried out on a 3-year cycle to halt the natural succession process and ensure an open body of water maintained.
	Weeding.	Mar-Sep	Invasive weeds to be spot treated with a glyphosate herbicide applicator. Herbicide must not be applied within 2m of attenuation or swale bank if



Component	Task	Time of Year	Frequency
			permanent standing water is present. Any weeds within this 2m zone or on sloping banks should be removed by hand or mechanically.
Improve opportunities for bats	Installation of bat boxes into the buildings on site or suitable retained trees to include a range of different aspects (mainly to the south or west, but providing a variety of different positions to offer a range of climatic conditions). Boxes should be placed as high as possible (3m and above), ensuring the entrance is free from obstruction. To be installed within six months of implementation of the LEMP preferably between November and February.	During construction phase	Once
	After Year 1 a check would be completed to ensure that they have been installed in the correct/optimal locations. Bricks / boxes should then be checked annually for presence, damage and obstruction.	Anytime	Annually



Component	Task	Time of Year	Frequency
Improve opportunities for birds	<p>Installation of bird boxes into the buildings on site or suitable retained trees to include a range of different aspects (mainly to the north or north-west, but providing a variety of different positions to offer a range of climatic conditions).</p> <p>Boxes should be placed as high as possible (3m and above, 5m minimum for swift boxes), ensuring the entrance is free from obstruction.</p> <p>To be installed within six months of implementation of the LEMP preferably between November and February.</p>	During construction phase	Once
	<p>All boxes should be inspected annually for presence, damage, obstruction and if necessary, should be cleaned. Inspection and cleaning should be conducted during the winter months to avoid impact on nesting birds.</p>	Oct-March	Annually



Section 8: Hard Landscaping Maintenance Works Schedule

Component	Task	Time of Year	Frequency
<p><i>Visits every month throughout the one-year defects and liability period. Management and maintenance operations will be monitored and reviewed annually on an on-going basis and where required modified if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.</i></p>			
Hard landscape surfaces	Weeding/litter picking/sweeping.	Throughout	Hard surfaces within external areas should be maintained in a clean and tidy appearance free from weeds and litter. This will include general sweeping, weeding and occasional spray of surfaces as required.
	Repairs to cracked or worn surfaces.	Throughout/weather permitting	Hard landscape road and footways should be checked quarterly; any areas of wear that may become a safety concern should be assessed and repaired.



Component	Task	Time of Year	Frequency
Street Furniture	Check/assessment of street furniture.	Throughout	Undertake regular checks, maintenance, and repairs as necessary to ensure furniture and boundary treatment remains safe, in a usable condition and in a good state of repair. Empty litter bins at intervals appropriate to level of use.
	Litter collection.	Throughout	Empty litter and dog bins at intervals appropriate to level of use.



Plan:

LB291_D04a – RM4 - Soft Landscaping Proposals (Sheets 1 – 4)

11920_P09_Ecological Enhancement Plan



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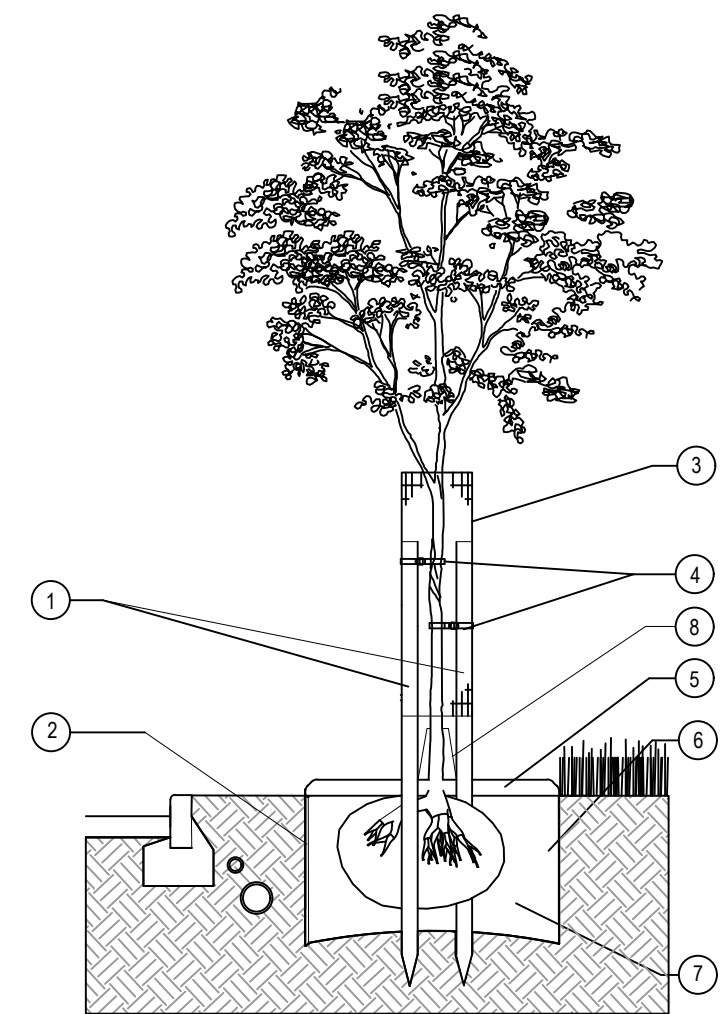
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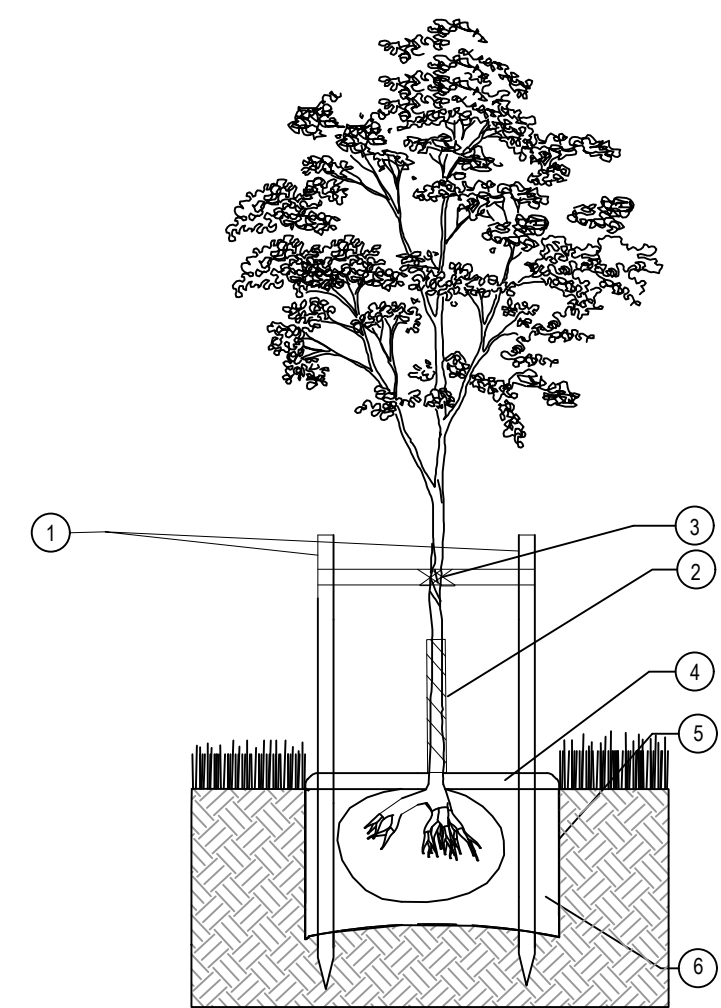
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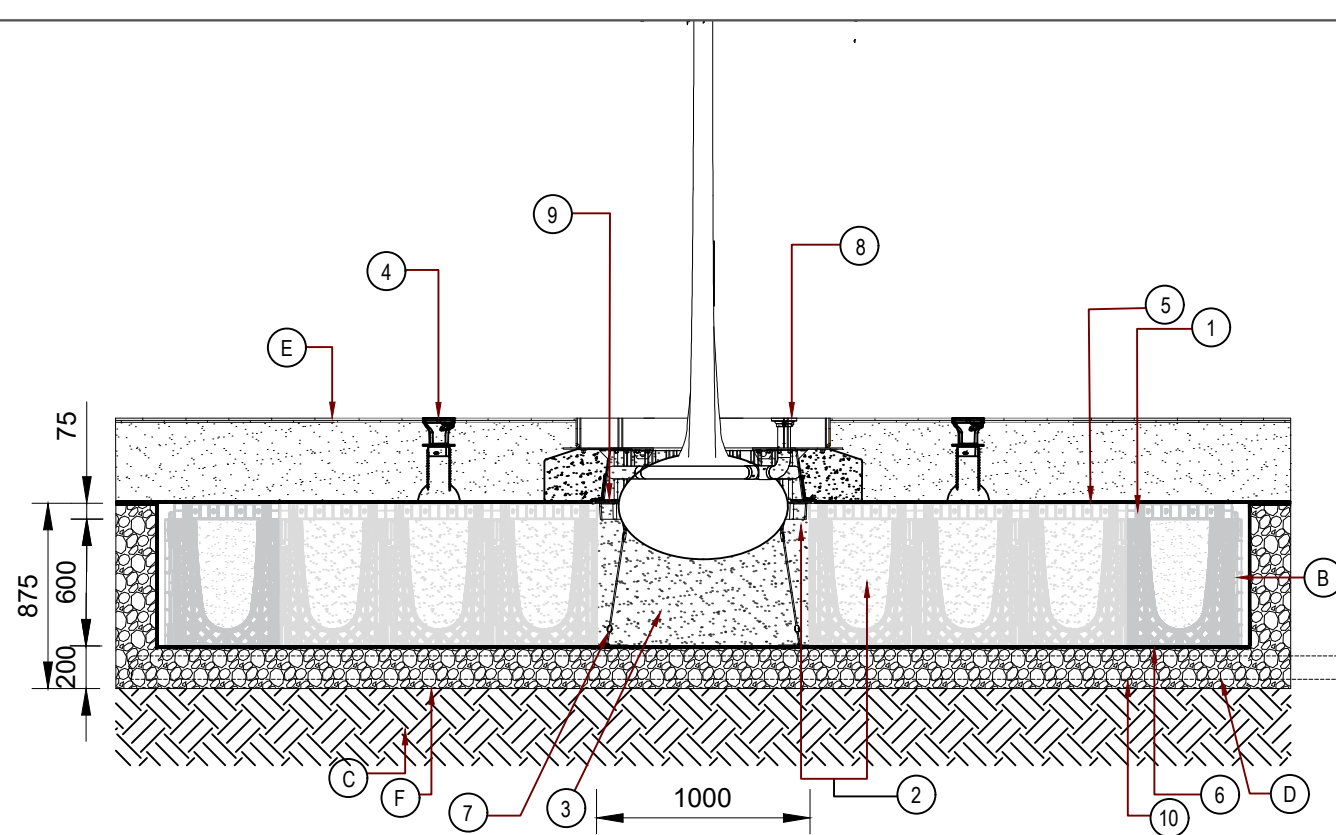
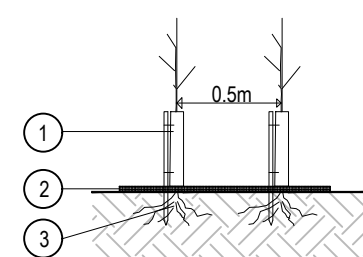
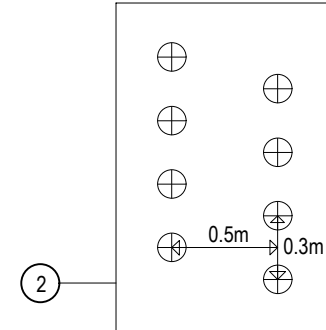
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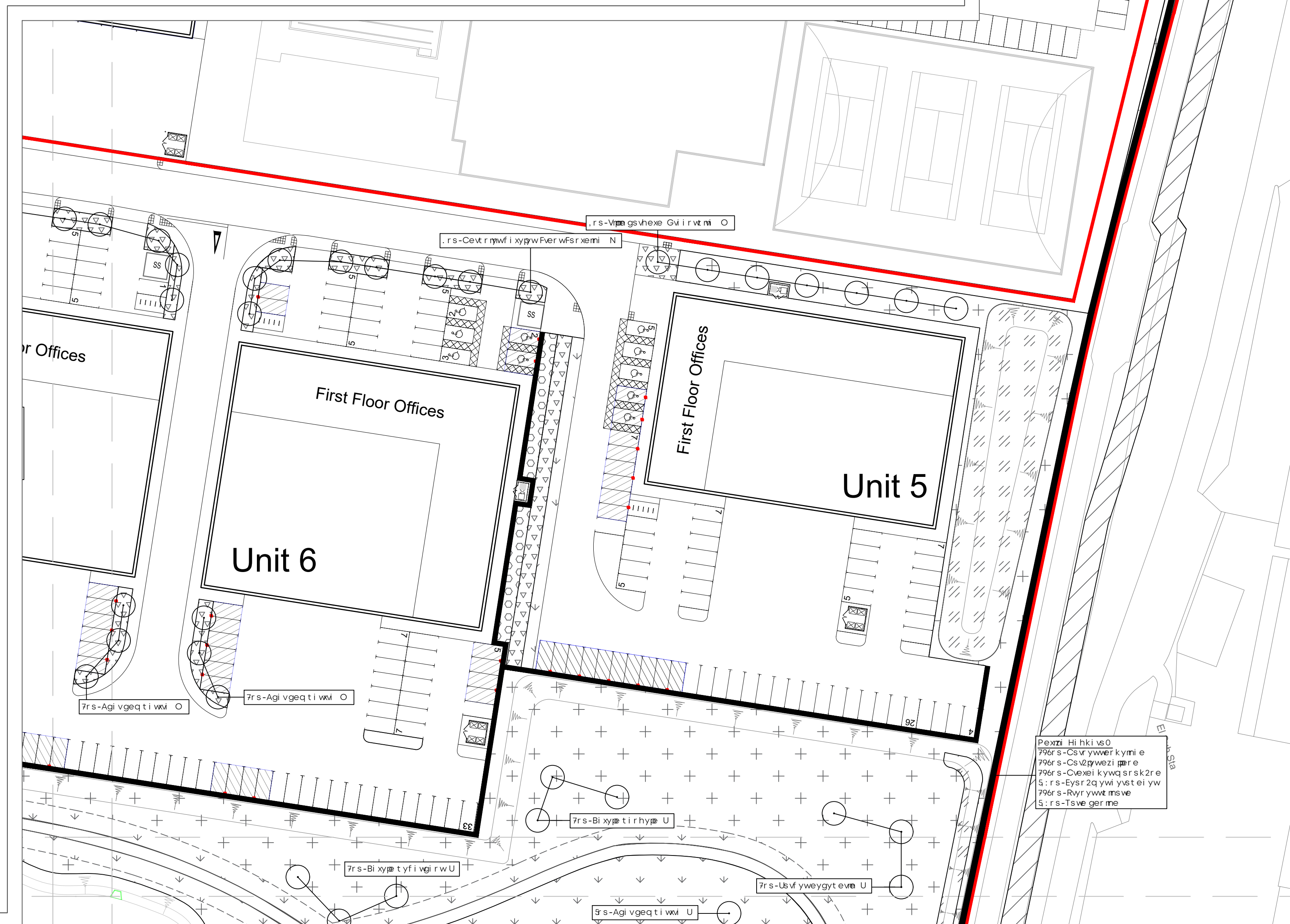


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- 5 V 0 m 0 e p h w y g y v e p k i s r i x s v e g g i t x e f p i u y z e p r x
- 6 6 4 q q Q t i r v i m j s v g m k q i w
- 7 A v f s k y 2 e r g i s v t p e x i w w e t t i h e r g l s v v 2 w i q v e v e t 4 : e s v e g g i t x e f p i u y z e p r x
- 8 T s s x v e m e v f s v z i r x m n w e p h v 2 w i q g e w p 5 e s v e g g i t x e f p i u y z e p r x
- 9 O i h n y q v s x h n i g s v 0 n d v s s x h i j p b g m x v f w h 5 4 4 w e s v e g g i t x e f p i u y z e p r x w x e x i h k i s j t p e r x n k e v i e
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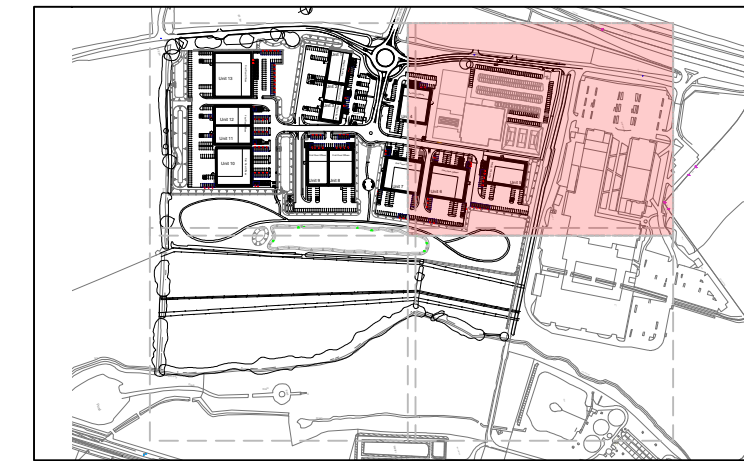
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- E B y r h y t x s w y n i r k m i v h i v t a r w e r h v i u y n i q i r x w U x y g y v e p i r k m i i v v r s i l
- F A h h n s r e p 0 m 0 e p k i s r i x k p 0 k r e x s f i m n w e p h 0 l i i v y f f e w m n w e p h f i p 0 7 g f v q m r q y q 6 g f v s j j s v q e x s r p z i p s f i e w i w h f 2 i r k m i i v

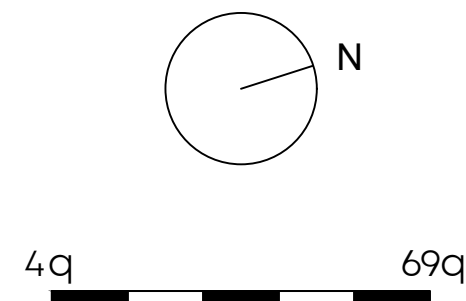


- Uxi Bsyhev2
- Ner h Wf hi v At t pger xw Q0 ri w r h
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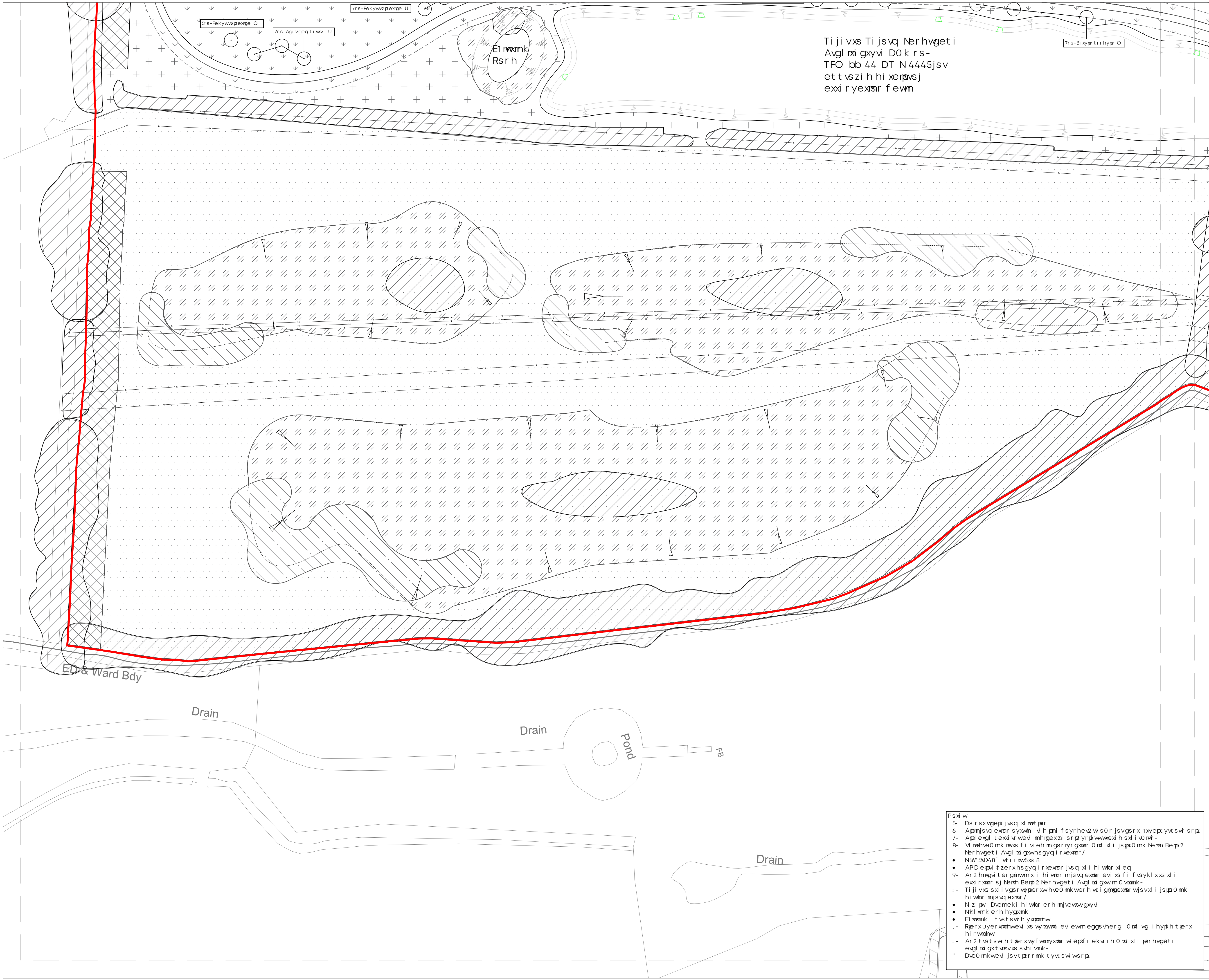
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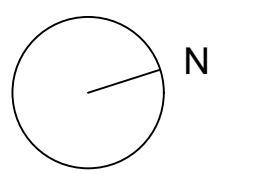
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Botanical Name	Min Girth (cm)	Min Height (cm)	Specification
Large (L)			
Carpinus betulus 'Frans Fontaine' (L)	20-25	500	RB; Semi-Mature; 2m Clear Stem; Double Staked
Medium (M)			
Acer campestre (M)	14-16	450-500	RB; 4x; Extra Heavy Standard; 2m Clear Stem; Double Staked
Betula pendula (M)	14-16	450-500	RB; 4x; Extra Heavy Standard; 2m Clear Stem; Double Staked
Fagus Sylvatica (M)	14-16	450-500	RB; 4x; Extra Heavy Standard; 2m Clear Stem; Double Staked
Quercus robur (M)	14-16	450-500	RB; 4x; Extra Heavy Standard; 2m Clear Stem; Double Staked
Sorbus aria (M)	14-16	450-500	RB; 4x; Extra Heavy Standard; 2m Clear Stem; Double Staked
Tilia cordata 'Greenspire' (M)	14-16	450-500	RB; 4x; Extra Heavy Standard; 2m Clear Stem; Double Staked
Small (S)			
Acer campestre (S)	8-10	250-300	RB; Select Standard; 1,8-2m Clear Stem; Single Stake
Betula pendula (S)	8-10	250-300	RB; Select Standard; 1,8-2m Clear Stem; Single Stake
Betula pubescens (S)	8-10	250-300	RB; Select Standard; 1,8-2m Clear Stem; Single Stake
Fagus Sylvatica (S)	8-10	250-300	RB; Select Standard; 1,8-2m Clear Stem; Single Stake
Sorbus aucuparia (S)	8-10	250-300	RB; Select Standard; 1,8-2m Clear Stem; Single Stake

%	Code	Botanical Name	Min Height (cm)	Specification
5	A*	Alnus glutinosa	150	BR; Feathered
5	Ag	Alnus glutinosa	60-80	BR; 1+1
5	Bp	Betula pendula	60-80	BR; 1+1
5	Ca	Corylus avellana	150	BR; Feathered
5	Pn	Populus nigra spp. betulifolia	60-80	BR; 1+1
5	Pt	Populus tremula	150	BR; Feathered
10	Qr	Quercus robur	150	BR; Feathered
5	Pa	Prunus avium	60-80	BR; 1+1
5	Ac	Acer campestre	150	BR; Feathered
5	Sc	Salix caprea	60-80	BR; 1+1
5	Sf	Salix fragilis	60-80	BR; 1+1
5	Ms	Malus sylvestris	150	BR; Feathered
5	Ld	Larix decidua	60-80	BR; 1+1
10	Pn	Pinus sylvestris	150	BR; Feathered
5	Cs	Cornus sanguinea	60-80	bushy, 3 brks
5	Cm	Crataegus monogyna	60-80	bushy, 3 brks
5	la	Ilex aquifolium	60-80	bushy, 3 brks
5	Sl	Sorbus leyana	60-80	bushy, 3 brks

Mixture	Supplier	Sow Rate
Swale Meadow Grass Mix (Seasonally Wet)		
EM6 (Meadow grass mixture for wetlands)	Emorsgate Seeds	5g/m ² (50kg/ha)
Wetland Dry Meadow Mix		
EM5 - Meadow Mixture for Loamy Soils	Emorsgate Seeds	4g/m ² (40kg/ha)
Wildflower Meadow Mix		
EM2 - Standard General Purpose Meadow Mixture	Emorsgate Seeds	4g/m ² (40kg/ha)

%	Botanical Name	Min Height (cm)	Specification	Planting density
15	Cornus sanguinea	60-80	BR; 1+1	1/m ²
20	Viburnum opulus	60-80	BR; 1+1	1/m ²
20	Viburnum tatarica	60-80	BR; 1+1	1/m ²
15	Euconymus europaeus	60-80	BR; 1+1	1/m ²
15	Crataegus monogyna	60-80	BR; 1+1	1/m ²
15	Salix purpurea	60-80	BR; 1+1	1/m ²

Code	Botanical Name	Pot Size	Specification	Planting density
Co	Carex oshimensis 'Evergold'	2L	Full Pot	4/m ²
Cs	Cornus sanguinea 'Midwinter fire'	3L	Full Pot	4/m ²
Cc	Cornus coccinea 'Purple Flame'	5L	Full Pot	As shown
Ea	Escallonia 'Apple Blossom'	3L	Full Pot	4/m ²
Hr	Hebe 'Red Edge'	3L	Full Pot	4/m ²
Hm	Hebe 'Mrs Winder'	3L	Full Pot	4/m ²
Px	Photinia x fraseri 'Red Robin'	5L	Full Pot	4/m ²
Po	Prunus 'Otto Luyken'	3L	Full Pot	4/m ²
Ln	Lonicera nitida 'Maigrun'	3L	Full Pot	4/m ²
Ms	Miscanthus sinensis	3L	Full Pot	4/m ²

%	Botanical Name	Min Height (cm)	Specification	Planting density
20	Cornus sanguinea	80-100	BR; 1+1	5/LM
20	Corylus avellana	80-100	BR; 1+1	5/LM
20	Crataegus monogyna	80-100	BR; 1+1	5/LM
10	Euconymus europaeus	80-100	BR; 1+1	5/LM
20	Prunus spinosa	80-100	BR; 1+1	5/LM
10	Rosa canina	80-100	BR; 1+1	5/LM

Botanical Name	Min Height (cm)	Specification	Maximum Planting Depth (cm)	Planting density
Phragmites australis	40cm	1L; Full pot	50	4/m ²
Carex riparia	30cm	1L; Full pot	20	4/m ²
Carex pendula	30cm	1L; Full pot	10	4/m ²
Carex pseudocyperus	30cm	1L; Full pot	5	4/m ²

%	Botanical Name	Min Height (cm)	Specification	Planting density
5%	Cornus alba 'Sibirica'	40-60	3L; Branched; 3 brks; C	4/m ²
5%	Cornus sanguinea	40-60	3L; Branched; 3 brks; C	4/m ²
30%	Crataegus monogyna	40-60	3L; Branched; 3 brks; C	4/m ²
25%	Prunus spinosa	40-60	3L; Branched; 3 brks; C	4/m ²
15%	Salix alba	40-60	3L; Branched; 3 brks; C	4/m ²
15%	Salix viminalis	40-60	3L; Branched; 3 brks; C	4/m ²
5%	Viburnum opulus	40-60	3L; Branched; 3 brks; C	4/m ²

- Marginal Planting Mix**
 PLANTING NOTES:
 Plant randomly directly into the ground in same species groups (between 5-9) at 4 plants per m².
- Ps xi w
 5- Ds rsvxgæþ jvsq xl nvt þæ
 6- Aþmjsvq exsæ syxwih v hani f syrhev2 w s0r jvsgrvxi lxyept yvt sw sr þ-
 7- Aþl exgl t exi v wæi mhæxæzi sr þæ rþvæwæi h sxl i v0 n w -
 8- V mhve0 mk nws fi v eh m gr yr gæxæ 0 nð xli jsþ0 mk Nerh Berþ 2 Ner hvget i Avgl nð gw hsgyq i r xæxæ r /
 • NB6' 5D48f w i i xw5s 8
 • APD eþpi þæz xhsgyq i r xæxæ jvsq xli h i wæ r xi eq
 9- Ar 2 hmvq ter gnw m xli h i wæ r mjsvq exsæ evæ x s fi f vsykl xxs xli exi r xæ r sj Nerh Berþ 2 Ner hvget i Avgl nð gw m 0 vænk -
 :- T i j j v s x l i v g s r w p e r h v h e 0 m k w e r h v t i g r i g e x æ r v s v j s l i j s þ 0 m k h i w æ r m j s v q e x s æ r /
 • N i z i p D v e m e k i h i w æ r e r h m j v e w y g w i w
 • N t a l x m k e r h h y m k
 • E i t m n k t v t s w h y x p æ i w
 :- R æ r x u y e r x æ r i w e i v s y w a n n i e v i e w n e g g s v h e r g i 0 n ð v g l i h y þ t þ æ x h i r w æ n n i w
 :- Ar 2 t v s t w h t þ æ r x w y f w æ x æ r w e p f i e k v i h 0 n ð x l i þ æ r h v g e t i e v g l n ð g t v s v s v h v i v n k -
 :- D v e 0 m k w e i j s v t þ æ r m k t y t s w s r þ -

GEPE TAN NAP VP G URECIFICAVI QP U

- Rvst svæpvs fi v eh m gr yr gæxæ 0 nð Avgl nð gxwer h Er kmi i wDve0 mkw6
- Aþæ r hvget i sti v æ x æ r w s fi m e g g s v h e r g i 0 n ð B U 8 8 6 . / 5 . " B U 7 " 7 : / 5 " 6 e r h e p e q i r h q i r x w s h e x i %
- Rþæ r x q e i v æ p s g s r j s v q x s x l i P e x æ r e p R æ r x U t i g r i g e x æ r %
- Ar 2 t þ æ r x q e i v æ p t þ æ r h i s y w h i x l i v i g s k r n i h t þ æ r x m k w e v æ r P s z F i f _ x s fi g s r x e m i v w h w s g o e r h v y t t þ æ h e x l i v æ i v w t i g r i n h %
- Rþæ r x l e r h æ n k e r h t þ æ r x m k s t i v æ x æ r w s fi m e g g s v h e r g i 0 n ð H V A ' H e r h æ n k e r h E w e f þ æ m k N e r h v g e t i R þ æ r x w t e w w l l i l %
- Aþt þ æ r x m k x s fi q e m x e m i h e r h k y e v e r x i h j s v 5 6 q s r x l w s m g y h i 0 e i v n k _ 0 i i h m k t i w h w e i g s r x s þ
- M i þ æ r h v g e t i v y f g s r x e g s v n w s x e d e p æ v e j x 2 t v g e y æ r w s t v i z i r x e r 2 m i n v 2 x s e r 2 t i w s r w i i þ æ r h v g e t i v y f g s r x e g s v w e p p s q t þ 0 n ð x l i v u y m i q i r x w s j x l i H i e p l e r h U e j i x 2 e x a s v o A g x 5 , 8 e r h g y w l r x C s r w y g æ x æ r _ D i w æ r e r h O e r e k i q i r x T i k y æ x æ r w
- M i þ æ r h v g e t i v y f g s r x e g s v w e p p s r j n q x l i þ æ g æ x æ r s j e p y r h i v k s y r h v z r g i w f i j s v j g s q q i r g i q i r x s j t þ æ r x m k e r h v t s w o l i v x i v æ i h k i w e v w y k k i w i h 0 n ð m 6 q s j r h i v k s y r h v z r g i w e r h 9 q s j f y r þ m k w

UQINAPD OWCH

- E i t m n k x s t v æ r þ æ t v i r x e r h w y æ f þ x s fi w æ t i t i e r h w s v i h s r w æ m l i e t w s x i t g i i h m k 6 q m l i r d l x e r h a t x 0 i i h j v i %
- Ar 2 g s q t e g h h y f v æ r p s fi f v s a i r y t x e p p 0 j v i h v e m e k i e r h x s i r e f þ x s t v æ r p s a i 2 m s w y j e g i %
- Ar 2 r a t s w i h x s t v æ r p s fi x s B U 7 . 6 q i h y q x i t x y i _ r i y x e p R H z e p i _ u e v e r e f þ w s r i j v i 0 n ð r s w s r i v s z i v 6 4 q m v n i %
- U s r p s v a i e h s 0 k v e w æ r h x s fi g s q t s w h s j t v t e v h w y f v æ r p y x i n r x t s s v %
- V s t v æ r p h i t x w s fi 7 4 4 j s v w y f w l i h k i w g æ q f i w e r h k s y r h g s z i v t þ æ r x m k %
- F m n w i h x s t v æ r p z i p w s fi 6 9 q e f s z i e h n e g i r x t e z i h w y j e g i h q s 0 m k 0 t h i l e h w y j e g i h q s 0 m k q e w k x s fi t v s z i h i 0 l i v æ 0 r e h s m v y r þ m k w 6
- Aþt þ æ r x m k e v e w s fi g s z i v h 0 n ð e . 9 q q h i t x l s j q i h y q k v e h i f e v o q y g l -

RNAPVOAVETIANVTEAVOEPV

- Aþps fi B v a n n i k v s 0 r w s g o e r h j y p l e v h i r i h s j j %
- T s s x D r n R s t v i n e v 2 T s s x D r n e t t þ æ h x s e p f e v i v s s x w g o e x x q i s j þ æ r x m k e r x y w v 2 e r h t v s v s t þ æ r x m k %
- A r x n D i w g g e r x R s t v i n e v 2 e r x n h i w g g e r x s fi e t t þ æ h x s j s þ æ k i s j e p p s r x e m i v w h æ s s x f e p h q e i v æ p n þ e j _ v t i g r i r g s r j n h i w e r h i z i v k i i r w i x g - t v s v s x e r v t s w e x æ r e r h y m k e r 2 h i þ æ 2 m t þ æ r x m k %
- R y r m k A þ s 0 j s v t y r m k s j e p h i g h y s y w m i w e r h w y f w f 2 5 @ þ g s þ 0 m k t þ æ r x m k e x N e r h v g e t i A v g l n ð g x w h n i g æ x æ r s v e w n h r e x i h m x l i t þ æ r x m k v g l i h y þ %
- W i i U e c i w e r h w i n w U e c i w s fi t v w y v i x e i h _ s y r h v g s s x l e r h t i i þ N e v l s v C l i w r y x r x p w x l e r 5 4 4 q m h r a e q i x i v A H z e r g i h r y w v 2 w s g o h s y f þ w e d i h 0 n ð g u s w f e v -

EBIUMQP VTEEUAPD UHTWBU

- A z s t h h e a q e k l x s f v e r g l i w x y r o w e r h v s s x w s j x i w A þ æ 1 n n w k x i w e r h l i h k i w s fi v i x e m i h e v i w y f n g x x s B U 7 . 6 4 4 9 e r h e p e q i r h q i r x w s h e x i W i w n v i þ æ x æ r x s C s r w y g æ x æ r T i g s q q i r h e x æ r w e r h w s y þ f i j y p l j i r g i h s j j t v s v s x l i g s q q i r g i q i r x s j e r 2 0 s o w
- a l i v i i n n w k x i w e r h w y f w e v x s fi v i x e m i h i 2 w s y þ f i v y f n g x x s j y p l A v s v g y þ v e p n v i g æ x æ r s v v e j i x 2 %
- Ar 2 w y k i v 2 v u y m i h w e p f i m e g g s v h e r g i 0 n ð B U 7 " . 6 4 5 e r h e p e q i r h q i r x w s h e x i W i i a s v o T i g s q q i r h e x æ r w e p p s q t þ 0 n ð e r 2 i i n n w k v R - Q v u y m i q i r x w h i w e p i u y m i x l i t v s v e t t v z e p s j x l i N e r h v g e t i A v g l n ð g x %
- P s w s v e k i s j q e i v æ p t m k s v e p s j y f f n v n ð j n v w t n æ k i s j s i p æ r x g i r g e p k v s y r h g s q t e g x æ r _ i t g e z æ x æ r s v g l e r k i w n þ z i p w e p f i g e w n h s y x 0 n ð m i l i n n w k x i i ð i h k i g e r s t m w

VTEEU

- P s x i i w s fi t þ æ r x i h 0 n ð m 7 q i x i w s j w 0 i w s v v i z r g i w s v s x i i v e w q i r x v j g s q q i r h i h f 2 x l i v i þ æ r x w e x y s v 2 y r h i w e d v 0 n ð s y x l i y w s j x i i v s s x f e w n w i k G v i r þ e j T i v s s x : 4 4 @ 4 t þ æ g i h f i x 0 i i r x l i x i i e r h v z r g i v 6
- A þ m x i w s 0 r x s fi t þ æ r x i h i r v w y m k x e x l i 2 e v i e p æ v 9 q i x i w e 0 e 2 j v s q f y r þ m k w 6
- C s r x e g s v s e v g i w e m x l i þ æ g æ x æ r s j e p p 0 i w e r h v z r g i w t v s v s x i i t þ æ r x m k %
- T s s x f e w n v s f i m w e p h m t þ æ r x m k t æ v n i r e v t v l r n 2 x s y r h i v k s y r h v z r g i w e r h f y r þ m k w 6
- A þ s 0 j s v d i y w s j g s r x e m i v k v s 0 r w s g o h y m k x l i t i v i s h w 5 A t v p s 7 5 Q x s f i e r h j n þ k v s 0 r w s g o j v s P s z i q f i v s 7 5 O e v g l y r þ v s w l i v 0 n v i g r i n h m x l i t þ æ r x m k v g l i h y þ %
- W i i t þ æ r x i h 0 n ð m k w e i h e v e w s fi t v s z i h i 0 n ð e t t v s t v æ i g s r i g e p w æ q i v i k y e v h w 6
- F i e l i v h x i w y t x e r h m g y h m k 5 5 5 g q k n w x s fi t þ æ r x i h m x l i t n w ' 4 4 h r a e q i x i v i ' 4 4 q q h i i t _ w y t t s w i h f 2 e v n k þ w y f w e d i %
- U e r h e v h x i w y t x e r h m g y h m k 5 4 5 g q k n w x s fi t þ æ r x i h m x l i t n w ' 4 4 h r a e q i x i v i ' 4 4 q q h i i t _ w y t t s w i h f 2 e v n k þ w y f w e d i %
- H i e z 2 w e r h e v h x i w 5 5 5 g q k n w x s fi t þ æ r x i h m x l i t n w ' 4 4 h r a e q i x i v i ' 4 4 q q h i i t _ w y t t s w i h f 2 h s y f þ w e d i w 6
- W i i t n w s g s r w w x s j : 4 4 q x s t v æ r p z i v 7 4 q q w y f v æ r p
- B e w s j t m s f i f v s a i r y t x 5 9 4 q h i t x l f i r i e x 5 9 4 q g þ e r g s e w e r k y r þ v k v e z i þ
- a l i v i r i g i w e v 2 m g i e w x i t i m h r i r w æ r w s i r y w i x e x i i t n w e i e x p æ w . 9 q q h i i t v e r h 5 9 4 q 0 n h i v l e r v s s x f e p B i e o y t f s s x q s j t n w s e h i t x l s j 5 9 4 q - C s q t e g i h k þ 3 i h v h i w s j t n w v s y þ f i v s k l i r i h -

UHTWBU QTPAOEPVANAPD URECIOEP

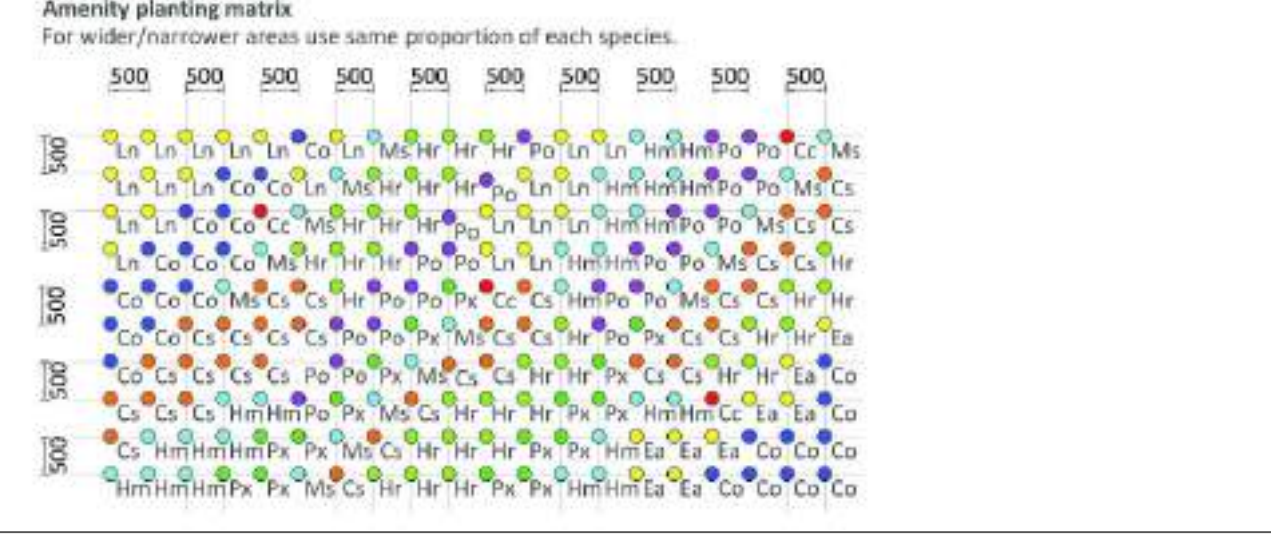
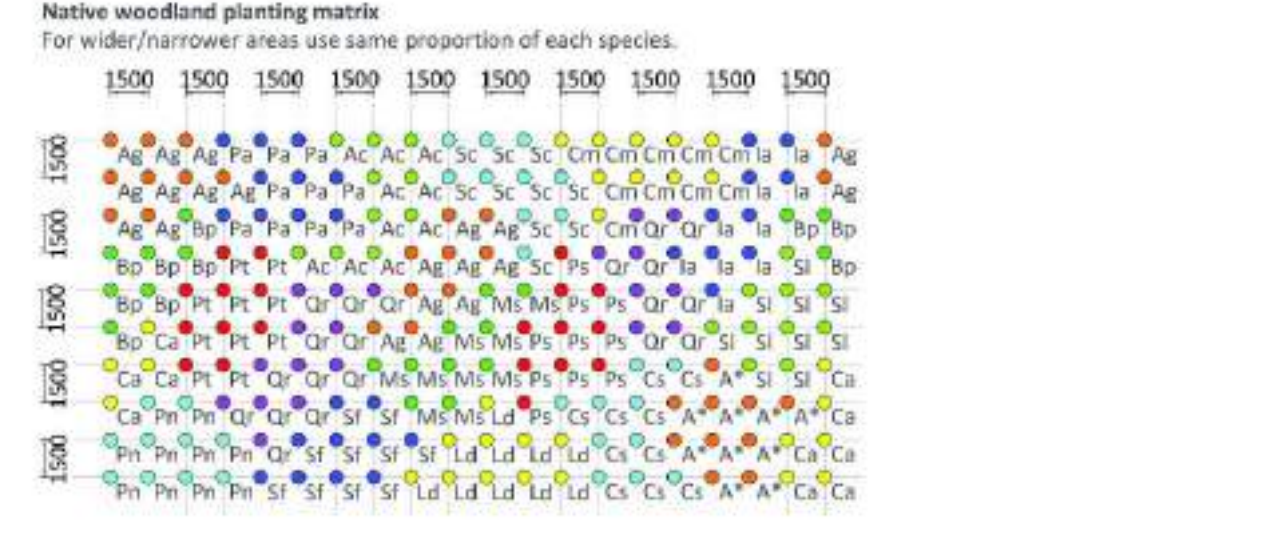
- A þ æ t i g r i r w y f w s fi t þ æ r x i h m t n w 0 r g i x i w æ i s j l i t s x m h i t x l e r h 0 n ð e r h f e g g i r þ h 0 n ð e 9 4 x s t v æ r þ æ h w y f t þ æ r x m k q m -

UEEDIPG

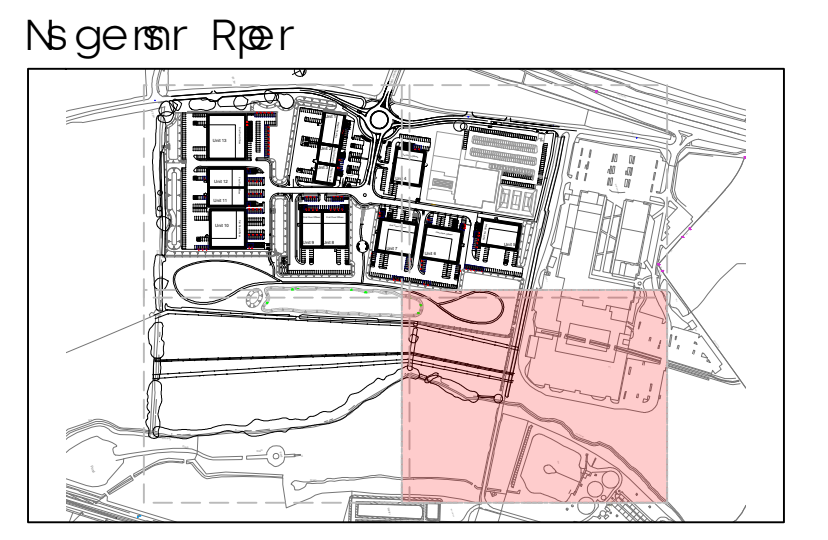
- G v e w w i h m k g y p æ z æ x æ r x s fi f v s y k l x s e j m i x p l e r h e p æ w s r i w s z i v 6 9 q m e p þ n i g æ x æ r w i q s z i h - A v i e w x s fi y r j s v q þ j n a i h -
- A t t þ e t t v s z i h l i v r i g h i x s g r x s p t i v r r e p þ i i h w e r h e p s 0 t i v s h s j x q i x s i þ e w e w i g s q q i r h i h f 2 q e r y j e g y v i v f i j s v j m e p y p æ z æ x æ r -
- G v e w w i h x s fi v 6 0 r e x e v i w s 0 r f i þ 0 e r h e w t i v e q s w k e i v g s q q i r h e x æ r w
- A q i r n 2 G v e w w i e v s f i w i h i h 0 n ð G i v q m e p a q i r n 2 A 5' A p t y t s w þ æ r h v g e t m O r m y u s v w q þ æ v e t t v z i h _ v 6 0 r e x 9 k @ %
- O i e h s 0 k v e w i h e v e w s fi w i h i h 0 n ð E q s w k e i E 0 5 B e w g G i r i v e p R y t s w O i e h s 0 e t t v s z i h _ v 6 0 r e x 9 k @ %
- Q x l i v O i e h s 0 k v e w i h e v e w s fi w i h i h 0 n ð E q s w k e i E 0 6 U e r h e v h G i r i v e p R y t s w O i e h s 0 O r m y u s v w q þ æ v e t t v z i h _ v 6 0 r e x 8 k @ %
- U 0 e p e v e w s fi w i h i h 0 n ð E q s w k e i E G . O i e h s 0 G v e w w O r m y u j s v a i x þ æ r h v g e t i v 6 0 r e x 9 k @ 6 %
- T s p d i w i h i h e v e 0 n ð e v r h i g u n o þ s v C e q f v h k i v s p v y t s r g s q t þ æ x æ r %
- a l i r k v e w w i v i x 0 i i r 8 4 . 9 q q l n l v q s z i w s r i w e r h i f v w i t g i i h m k 9 4 q m e r 2 h r a i r w æ n - C y x k v e w w x s e t v s l r a e q i þ 7 9 q l n l % O i e h s 0 k v e w s fi g y x 0 r g i e 2 i v e m O e v g l e r h Q x s f i v
- T i q s z i e r h h n t s w s j e p æ v n n k w

WWF

- V y j w y t t þ æ h x s fi e g g s v h m k B U 7 " : " w e r h e v h j v s q e r e t t v s z i h v s y q i %
- a l i r x s t v æ r p w i e v s e r e f þ h v 2 e r h 0 s v æ f þ _ k v e h i x s w q s s x l _ j þ 0 m k g s r x s y w i q s z m k e p p m s v l s þ 0 w e r h v h k i w %
- C y p æ z æ v æ p s j y p h i t x l e r h f v e o y t e r 2 g s q t e g i h x s t v æ r %
- A t t þ e t t v s z i h l i v r i g h i x s g r x s p t i v r r e p þ i i h w e r h e p s 0 t i v s h s j x q i x s i þ e w e w i g s q q i r h i h f 2



- U n i B s y r h e v 2
- N e r h W f h i v A t t þ æ r x w Q 0 r i w r n
- E i t m n k X i k i x e x æ r x s f i T i x e m i h
- R v s t s w h W i i
- R v s t s w h P e x z i a s s h æ r h R æ r x m k
- R v s t s w h H i h k i v s 0
- R v s t s w h a i x æ r h R æ r x m k
- R v s t s w h T i i h B i h
- R v s t s w h A q i r n 2 R æ r x m k O m
- R v s t s w h P e x z i U l y f R æ r x m k
- R v s t s w h a r þ j s 0 i v O i e h s 0 O m
- R v s t s w h U 0 e þ U i i h O m
- a i x æ r h D v 2 O i e h s 0 O m
- R v s t s w h A q i r n 2 G v e w w U i i h æ y j



f	Ne2syxWt hexl @li vzrgi w Cs vlnhæxæ r	6, 49-
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Legend

 Site boundary

Bat Boxes

 Vivara Pro Large Multichamber

 Vivara Pro Beaumaris Box

 Vivara Pro Harlech Box

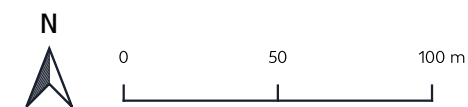
Bird Boxes

 Vivara Pro Swift Nest Box

 Woodstone Alicante Open Nest Box

 Woodstone Seville 32mm Box

 Woodstone Seville 28mm Box



Project	Catalyst Bicester
Drawing Title	Ecological Enhancement Plan
Scale	As Shown (Approximate)
Drawing No.	11920/P09
Date	May 2022
Checked	WW/AP



WeWork Offices, 30 Stamford Street, Southbank, London, SE1 9LQ
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Landscape and Ecology Management Plan



**Catalyst, Bicester,
Units 10, 11, 12 and 13 – RM5**

15 November 2022
LBLA Report No. LB291/R04b/AL/DB



Report No:	Date	Revision	Author	Checked
LB291/R04	03.05.22	-	David Bailey CMLI	Andrew Laird CMLI
LB291/R04a	22.06.22	a	-	-
LB291/R04b	15.11.22	b	-	-

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Plans:

LB291_R05: RM5a- Soft Landscape Proposals (Sheets 1-3)

11920_P09_Ecological Enhancement Plan



Section 1: Introduction

Purpose

- 1.1 This Landscape Management Plan (LMP) has been prepared by Laird Bailey Landscape Architects (LBLA) on behalf of Albion Land for Catalyst, Bicester, Units 10, 11, 12 and 13 (hereafter referred to as the 'site'). The site is centred on OS grid reference SP575210.
- 1.2 The purpose of the LMP is to provide details of measures to ensure the successful establishment and ongoing maintenance of the soft and hard landscape elements of the development proposals.
- 1.3 This LMP should be read in conjunction with drawings LB291_D05a 'RM5 – Soft Landscape Proposals (Sheets 1-3)'.

Scope of the Landscape Management Plan

- 1.4 This Landscape Management Plan is set out as follows:
 - Section 2 sets out relevant standards and legislation;
 - Section 3 describes the site, and provides an overview of the existing landscape and its condition;
 - Section 4 describes the proposed soft landscaping typologies;
 - Section 5 describes the proposed hard landscaping typologies;
 - Section 6 sets out the long-term design objectives;
 - Section 7 sets out the management regimes and responsibilities;
 - Section 8 sets out the maintenance operations for all the soft landscape areas; and
 - Section 9 sets out the maintenance operations for all the hard landscape areas.



Section 2: Technical and Environmental Considerations

- 2.1 The contractor shall familiarise themselves and their operatives with all British Standards and regulations, as referred to in this document, and any subsequent revisions thereof. All chemical weed control must be carried out by suitably trained staff in accordance with the manufacturers recommendations and the legislation set out below.
- 2.2 The Contractor must only use chemicals specifically approved for the purpose for which it is intended as dictated by the Control of Pesticides Regulations 1986 and the conditions of approval for the chemicals and any relevant code of practice issued by DEFRA. The Contractor will consider in every instance whether the use of chemicals is strictly necessary before application.

Relevant Standards and Legislation	
ISO 7851	Classification scheme for fertilizers and soil conditioners
BS4428	Code of practice for general landscape operations
BS 5837	Trees in relation to design, demolition and construction Recommendations
3882:2015	Topsoil
The Food and Environment Protection Act (1985)	
The Control of Pesticides Regulations 1986 (COPR) (as amended 1997)	
The Control of Substances Hazardous to Health Regulations (2002)	
The Environment Protection Act (1990)	



Section 3: Site Overview of Existing Landscape and its Condition

Site Context

- 3.1 The site is located to the southern edge of Bicester, Oxfordshire. The site is proposed for a several units (Units 10, 11, 12 and 13), associated landscaping and highways.
- 3.2 The site currently comprises a chicken farm with a residential unit, pond, scattered trees and hedgerows. Field boundaries are vegetated to the south and west with the southern boundary serves by a drainage gully. Soft landscaping elements are contained to the site's peripheries and around the pond. The site's north and east boundary are fenced and remain open with the wider agricultural field. To the south the field boundary is well vegetated with trees and a hedgerow. The sites western boundary is well vegetated with trees and is shared with Wendlebury Road to the west.
- 3.3 The character of the site is peri-urban with a mix of built development and agricultural land surrounding the site in all directions.



Section 4: Proposed Soft Landscaping

4.1 This LEMP is to read in conjunction with details of proposed soft landscaping (see LBLA Drawing No. LB291_D05a – RM5 – Soft Landscape Proposals (Sheets 1-3).

4.2 Soft landscaping within the site is designed to:

- Create an attractive and appropriate setting for the new Units (10, 11, 12 and 13), providing all year-round interest and colour.
- Create a strong soft landscape framework with planting to the perimeter of the site including trees, selected to maximise biodiversity;
- Ensure trees and shrubs are managed appropriately to promote the growth of flowers, berries and general 'form' offering the maximum benefit of amenity/habitat for birds, small mammals, and insects, and;
- Provide additional habitats for bats and nesting birds.

4.3 Proposed soft landscaping elements and planting consists of the following.

Trees

4.4 A selection of native trees, planted at a range of appropriate sizes (ranging between selected standard up to semi mature) will feature across the scheme.

Native Woodland Planting

4.5 In addition to specimen trees, a native woodland mix of feathered trees, whips and transplants shall be planted at an approximate density of 1 plant/1.5msq. Over time this will form a dense understorey screen to larger tree specimens, contributing to the overall bio-diversity value and visual mitigation/amenity, reducing visual coalescence between the built form.

Native Shrub Mix and Native Hedgerow

4.6 Featuring within the development and upon the site boundaries, creating a series of green corridors linking to the wider landscape fabric. Hedgerows will consist of a variety of native species (typically those which are prevalent in the local area) planted as double staggered rows at 5 plants per linear meter.

Amenity Shrub Planting

4.7 This consists of species which are mainly evergreen and offer all year-round seasonal interest. Specimens will be chosen due to their hardiness/robustness and need for minimal maintenance/management once established. Ultimately, mature sizes will range between



0.3m-1.5m in height. It has also been deemed important that the majority should be flowering species to provide added bio-diversity value and a food source for pollinators.

Headwall Climbers

- 4.8 Several species of ivy have been proposed along attenuation headwalls to assist in softening hard landscape elements. Specimens are planted at 1 plant per linear meter.

Wildflower Meadow Mix

- 4.9 Wildflower areas will be limited to the outer perimeters of the development and mainly form a successional buffer to understorey woodland and native hedgerows. Seed mixes will consist of a range of shade tolerant non-invasive grass and long-lasting wildflowers, offering maximum benefits to bees, butterflies, birds, and small mammals.

Swale Meadow Grass Mix

- 4.10 This is to be implemented on the margins/banks of swales and scrapes, both planted with a wetland meadow mix (Emorsgate EM8 composed of 20% wildflowers and 80% slow growing grasses).



Section 5: Proposed Hard Landscaping

- 5.1 This LEMP is to read in conjunction with details of proposed hard landscaping (see relevant Cornish Architects drawings).
- 5.2 Hard landscaping within the site is designed to:
- Create an attractive and appropriate setting for the new Industrial units (5, 6, 7, 8 and 9), providing hard landscape which is fit for purpose, durable and robust;
 - Indicate change in use, identifiable from other hard surfaced areas; and
 - To provide a pallet of materials which are aesthetically and visually appropriate for the various settings and uses within the development.

Tarmacadam Road and Bitmac Footway Surfacing

- 5.3 Tarmac surfaces are to be built to the given build-up specification and executed to a high standard. All bound surfaces will be edged accordingly to maintain crisp lines and the structural integrity of the surface build-up.

Concrete Block Paving to Parking Spaces/circulation and footpaths

- 5.4 Parking spaces, vehicular areas of circulation and footpath are to be laid to concrete blocks differentiating these spaces from main highways within the site and each other. All concrete block surfaces will be edged accordingly to maintain crisp lines and the structural integrity of the surface build-up.

Brushed Concrete Yards

- 5.5 Unit yards to be laid to brushed concrete for functional purposes. All brushed concrete surfaces will be edged accordingly to maintain crisp lines and the structural integrity of the surface build-up.



Section 6: Long-term Design Objectives

Existing Trees and Hedgerows

- 6.1 Management of existing trees, hedgerows and shrubs offers to secure the current landscape elements that have potential for enhancement without compromising other important aims of the development.
- 6.2 Specific objectives include:
- Ensuring long-term enhancement of trees and hedgerows with additional native planting and ‘gapping-up’ where required;
 - Maintaining long-term health of existing trees and hedgerows to contribute to buffering the development from neighbouring land and infrastructure;
 - To extend the life of mature trees through sound arbouricultural management; and
 - Creating a healthy tree and shrub understorey to knit into the proposed soft landscaping proposals, offering a series of mature/interconnected wildlife corridors
- 6.3 Any tree/hedgerow works such as the removal of hazardous branches or the felling of mature trees will be completed outside of the active period for breeding birds (generally understood as March to August inclusive but some bird species may nest all year round). Should any management be required within the breeding bird period, checks for nesting birds by a suitably trained ecologist will take place prior to any works commencing to ensure that no breeding birds are present. Should a nest be present then a suitable buffer would be installed until the nest is confirmed as being inactive.
- 6.4 Checks for the presence of roosting bats would also be completed prior to management taking place regardless of the time of year. Potential bat roosting features can include woodpecker holes, rot holes, any cracks or splits in the tree bark, cankers, gaps between overlapping stems or branches, partially detached ivy (with stem diameters in excess of 50mm), and man-made holes. If any of the potential bat roosting features are identified, evidence of roosting bats is identified or a bat is found, then works would temporarily stop and a licenced ecologist/Natural England consulted.

Proposed Trees and Native Woodland Planting

- 6.5 The long-term design and management objective is to ensure that on-site trees thrive and contribute to an attractive environment. Trees shall be managed to develop to a healthy and even form. Stems should only be removed so as to retain the natural appearance of the individual plant species or to remove broken or badly damaged branches and dead wood. Tree surgery such as crown lifting should be carried out as required to prevent restriction to pedestrians or vehicles.



- 6.6 Any tree works will have consideration for the potential presence of roosting bats and breeding birds as per the management considerations stated within the retained tree prescriptions above.

Existing and Proposed Native and Amenity Shrub Planting

- 6.7 The long-term design objective of the shrub planting is to ensure the plants thrive to create shrubbery for local amenity and habitat for wildlife. Planting will be managed to achieve a maximum height of 2.5 metres. Pruning should be undertaken to promote flowering and fruiting in accordance with the species and age of the plant.
- 6.8 As such, any management will take place at the end of the winter months to avoid the active period for most wildlife, providing the plants with time to produce flowers, seeds and berries. Should any management be required within the breeding bird season (March and August inclusive), checks for nesting birds will take place prior to any works commencing by a suitably qualified ecologist. Should a nest be present then a suitable buffer would be installed until the nest is confirmed as being inactive. Any vegetation management will have consideration for the potential presence of breeding birds as per the management considerations stated above.

Proposed Native Hedgerow

- 6.9 Hedgerows are to be incorporated into the southern area of the site delineating the access pathway from the ecological habitat area as shown on the planting plan. The hedgerow should create a physical barrier to discourage access to the ecological planting to the south and provide an attractive edge to the car park and access path. The creation of hedgerow will also increase connectivity of the site for wildlife and provide additional foraging and nesting habitat for a variety of species.
- 6.10 Hedgerow planting will be managed to achieve a maximum height of 1.2m.
- 6.11 The ground around the hedgerow transplants will be bark mulched to conserve moisture and reduce weed growth.
- 6.12 Careful trimming and pruning will be required in the early years to ensure the development of a well-clothed hedge. Trimming should aim to form an 'A' profile.
- 6.13 Any hedgerow management will have consideration for the potential presence of breeding birds as per the management considerations stated above.

All Hedging

- 6.14 Inspect monthly for the first year and maintain shrubs/hedging in a weed free condition through combined techniques by hand, herbicides, cultivation and mulching.
- 6.15 Prune or clip to promote bushy, healthy growth and required shape when necessary.



- 6.16 Trimming back of growth overhanging adjacent footpaths or windows when required.
- 6.17 Remove/replace individual specimens as required.

Proposed Wildflower Meadow Mix, Amenity Grass Mix and Hedgerow Margins

- 6.18 Management aims to increase structural diversity and species composition both in a manner compatible with user's amenity requirements and with the needs of fauna such as invertebrates, reptiles, birds and foraging bats. The management objectives are as follows:
- Secure foraging habitats for wildlife without disturbance by retaining grassland within root protection areas of retained hedgerows and trees;
 - Provide structured mosaics varying from regularly mown amenity grassland to wildflower and grass edges cut on less frequent mowing rotations;
 - Enhance species composition in the seeding mix by specifying a species-rich wildflower and grassland mix for the public open space and hedgerow margins.
- 6.19 Amenity grass will be cut to a height of 50mm monthly during the growing season with arisings removed. Proposed wildflower meadow and hedgerow margins would be cut back once a year in late August and early September, left for a minimum of 3 days and then arisings removed, thus allowing the majority of the grassland plants to bloom and set seed.

Proposed Headwall Climbers

- 6.20 Management aims to develop a 'green wall' along the length of headwalls whilst maintaining functionality of inlet/outlets.
- 6.21 Climbers should be supported through the establishment phase to ensure adequate take to the headwall;
- 6.22 Climbers should not be allowed to form a ground cover mat and encroach into neighbouring areas such as amenity space nor within attenuation basins. Climbers should be cut back to headwall boundaries;
- 6.23 Climbers should be maintained as to ensure the functionality of attenuation basins are operational. Climbers should be cut back from all inlet/outlets connecting drainage infrastructure to attenuation basins.

Proposed Swale Meadow Grass Mix

- 6.24 Wetlands and other aquatic environments on site will aim to provide a unique habitat for thousands of species of aquatic and terrestrial plants and animals. Equally wetlands, swales and attenuation basins will offer flood protection and water quality improvement as well as a valuable, aesthetically pleasing, recreational resource.



- 6.25 This would be cut back annually as per the prescription for Wildflower Meadow.

Improve Opportunities for Bats

- 6.26 The retention of hedgerows on site in conjunction with the new hedgerow and tree planting will maintain and enhance the foraging and commuting opportunities for bats across the site and to the wider area. The provision of wildflower grassland, wetland scrapes and swale planting will also provide foraging opportunities for some bat species.
- 6.27 Additional roosting opportunities are proposed in order to provide further ecological enhancement for bats post-development. This will include the installation of eleven bat boxes across the Catalyst Bicester Phase 2.1 site (Vivaro Pro or similar). The boxes should be placed as high as possible (3 m and above), ensuring the entrance is free from obstruction. Favoured sites are close to linear features along the hedge line or incorporated into the building and away from street lighting. See ecological enhancement plan (Ref: 11920_P09) for suggested specification and location of bat boxes.
- 6.28 The bat bricks are designed to be low maintenance and the only monitoring which should be completed after Year 1 is to confirm that the spec and location is appropriate.

Improve Opportunities for Birds

- 6.29 The creation and appropriate management of new native shrub, hedgerow, wetland scrapes and tree planting will provide and overall enhancement to bird foraging and nesting resources within the site post-development.
- 6.30 To provide an additional enhancement for birds, fifteen bird boxes will be erected on the buildings or suitable retained trees. Boxes will be positioned so they are sheltered from prevailing wind, rain and strong sunlight, normally facing north through to south east on buildings, at a height of between 2m and 5m (5m minimum for the swift boxes) ensuring a clear flight path to the entrance. See ecological enhancement plan (Ref: 11920_P09) for suggested specifications and location of bird boxes.
- 6.31 All boxes should be Vivara Pro or similarly created from woodcrete as these are known to be durable, long-lasting and to regularly attract birds to nest.
- 6.32 All boxes should be annually inspected for presence, damage, obstruction and if necessary, should be cleaned. Inspection and cleaning should be conducted annually during the winter months to avoid impact to nesting birds. If replacement through loss or damage is required, it should be for an identical product positioned in the same or a similar location.



Section 7: Management Regimes and Responsibilities

- 7.1 The landscaping works will receive post installation maintenance for a one-year defects liability period (DLP). All defects resulting from plant loss, disease, or failure will be replaced on a like for like basis. A visit every month, or more frequently should watering be required, is recommended during the DLP. Subsequently a minimum of 12 maintenance visits per annum is recommended.
- 7.2 Maintenance and management activities are set out below (which covers a minimum period of five years) to ensure the soft landscaping is managed effectively beyond the time limits of the implementation and establishment works. The responsibility for this management and maintenance is to be agreed. LBLA's recommendation is for the landscape contractor that undertakes the planting works to be engaged to carry out the one-year establishment maintenance.
- 7.3 Management and maintenance operations will be monitored and reviewed annually on an on-going basis and where required, modified if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.
- 7.4 As a minimum, maintenance visits should be undertaken to inspect, monitor as well as to carry out routine operations, including weeding and litter picking, with other specific operations being undertaken as scheduled below.
- 7.5 Legal responsibilities of the parties, the landscape contractor and management company shall be addressed under the Manage Company Structure, with the appropriate insurances, along with the stated compliance with health and safety law and the implementation of landscape-related risk assessments are essential.
- 7.6 The appointed Contractor must provide details of all necessary insurances and certification to carry-out the works specified in this management plan. It is the responsibility of the appointing authority to ensure that all submitted insurances and certificates are up to date and provide the appropriate level of cover for the specified works.
- 7.7 Defects in the landscape are identified early and addressed promptly.



Section 8: Soft Landscaping Maintenance Works Schedule

Component	Task	Time of Year	Frequency
<p><i>Visits every month throughout the one-year defects and establishment period, more frequently if required due to prologued dry weather conditions and the need for watering. Subsequently management and maintenance operations will be monitored and reviewed annually on an on-going basis and where required modified if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.</i></p>			
Trees & Native Woodland Planting	Prune and repair wounds in accordance with good horticultural and arboricultural practice.	Oct-Feb	As required (annually).
	Check the ties regularly for rubbing and adjust if necessary. Constriction of the stem by ties happens very quickly, so fast-growing trees need frequent checking. After bad weather, check for abrasion and snapped stakes or ties. Re-firm tree by adjusting tree ties and ensuring soil is re-firmed around the base.	All year round and especially after strong winds, frost heave and other disturbances.	As required (annually).
	Hand weed mulched areas around trees.	Mar-Sep	Every visit.
	Apply suitable non-selective herbicide to control weeds.	Mar/Oct	Only if required.
	Replace any failed specimens.	Oct-Mar	As required during the one-year DLP (next available planting season).
	Remove debris/litter	Throughout	Every visit.



Component	Task	Time of Year	Frequency
	Top up bark mulch around bases of trees to full depth of 75mm.	Mar/Apr	As required during the DLP.
	Newly planted trees will be watered throughout May-August months after any period of four weeks without significant rain to thoroughly wet the top 150mm of soil around the tree roots.	Throughout	As required after a period of four weeks without significant rainfall.
	Trimming and selective thinning of the canopy. Trim back growth overhanging adjacent footpaths when required.	Oct-Mar	Annually if required.
	In years 2 and onwards remove staking if tree has established well and the stakes are no longer required.	Any	As required.
Amenity Shrub Planting	Trimming and reshaping to encourage healthy bushy growth. Trim back growth overhanging adjacent footpaths when required.	Oct-Mar	Annually if required.
	Hand weed.	Throughout	Every visit.
	Apply suitable non-selective herbicide to control weeds.	Apr-Sep	Only if required.
	Remove debris/litter.	Throughout	Every visit.
	Replace any failed specimens.	Oct to March	Within the DLP, as required (next available planting season).



Component	Task	Time of Year	Frequency
	Top up bark mulch around bases of shrubs to full depth of 75mm.	Apr	As required during the DLP.
	Watering of newly established shrubs.	Throughout	As required after a period of four weeks significant rainfall, during the DLP.
Native Hedgerows/ Native Shrub Mix	Re-shaping.	Hard-prune Oct-Feb	Annually if required.
	Hand weed.	Throughout	Monthly/every visit.
	Apply suitable non-selective herbicide to control weeds.	Apr-Sep	As required.
	Apply fertiliser: Slow release, applied as per manufacturer's recommendations.	Mar/Apr	Annually.
	Remove debris/litter.	Throughout	Monthly/every visit.
	Replace any failed specimens.	Oct-Mar	As required (next available planting season).
	Top up bark mulch hedge base to full depth of 75mm.	Apr	Annually.
	Watering of newly established hedgerows.	Throughout	As required after a period of four weeks without significant rainfall.
	Trim and top hedgerow as necessary avoiding bird nesting season.	Feb	As required (annually).
Headwall Climbers	Cut back all climbers from encroachment into basin back in line with headwall. Cut	May and September	Twice annually



Component	Task	Time of Year	Frequency
	back all climbers from inlet/outlets to the attenuation basin.		



Component	Task	Time of Year	Frequency
Wildflower Meadow Mix	Mowing/stripping.	Late Aug/early Sep	Cuttings must be left for a minimum period of 3 days before being raked up and removed, to allow wildflowers to bloom and disperse seeds
	Weeding.	Throughout	Monthly/every visit. Weeds exceeding 75mm and which don't feature in the seed mix should be removed.
	Re-seeding (if required).	Sep	Any bare patches of ground where seed has failed to germinate should be re-seeded as per the original specification.



Component	Task	Time of Year	Frequency
Swale Meadow Grass Mix	Weed control.	Mar-Sep	Invasive weeds to be spot treated with a glyphosate herbicide applicator. Herbicide must not be applied within 2m of attenuation or swale bank if permanent standing water is present. Any weeds within this 2m zone or on sloping banks should be removed by hand or mechanically.
	Aquatic planting management/thinning.	Sept-Oct	Aquatic plant thinning should be carried out on a 3-year cycle to halt the natural succession process and ensure an open body of water maintained.
	Weeding.	Mar-Sep	Invasive weeds to be spot treated with a glyphosate herbicide applicator. Herbicide must not be applied within 2m of attenuation or swale bank if



Component	Task	Time of Year	Frequency
			permanent standing water is present. Any weeds within this 2m zone or on sloping banks should be removed by hand or mechanically.
Improve opportunities for bats	Installation of bat boxes into the buildings on site or suitable retained trees to include a range of different aspects (mainly to the south or west, but providing a variety of different positions to offer a range of climatic conditions). Boxes should be placed as high as possible (3m and above), ensuring the entrance is free from obstruction. To be installed within six months of implementation of the LEMP preferably between November and February.	During construction phase	Once
	After Year 1 a check would be completed to ensure that they have been installed in the correct/optimal locations. Bricks / boxes should then be checked annually for presence, damage and obstruction.	Anytime	Annually
Improve opportunities for birds	Installation of bird boxes into the buildings on site or suitable retained trees to include a range of different aspects (mainly to the north or north-west, but providing a variety	During construction phase	Once



Component	Task	Time of Year	Frequency
	<p>of different positions to offer a range of climatic conditions). Boxes should be placed as high as possible (3m and above/5m minimum for swift boxes), ensuring the entrance is free from obstruction. To be installed within six months of implementation of the LEMP preferably between November and February.</p>		
	<p>All boxes should be inspected annually for presence, damage, obstruction and if necessary, should be cleaned. Inspection and cleaning should be conducted during the winter months to avoid impact on nesting birds.</p>	Oct-March	Annually



Section 8: Hard Landscaping Maintenance Works Schedule

Component	Task	Time of Year	Frequency
<p><i>Visits every month throughout the one-year defects and liability period. Management and maintenance operations will be monitored and reviewed annually on an on-going basis and where required modified if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.</i></p>			
Hard landscape surfaces	Weeding/litter picking/sweeping.	Throughout	Hard surfaces within the landscape areas should be maintained in a clean and tidy appearance free from weeds and litter, and this will include a general sweep, and occasional spray of surfaces if required.
	Repairs to cracked or worn surfaces.	Throughout/weather permitting	Hard landscape road and footways should be checked quarterly; any areas of wear that may become a safety concern should be assessed and repaired.



Component	Task	Time of Year	Frequency
Street Furniture	Check/assessment of street furniture.	Throughout	Undertake regular checks, maintenance, and repairs as necessary to ensure furniture and boundary treatment remains safe, in a usable condition and in a good state of repair. Empty litter bins at intervals appropriate to level of use.
	Litter collection.	Throughout	Empty litter and dog bins at intervals appropriate to level of use.

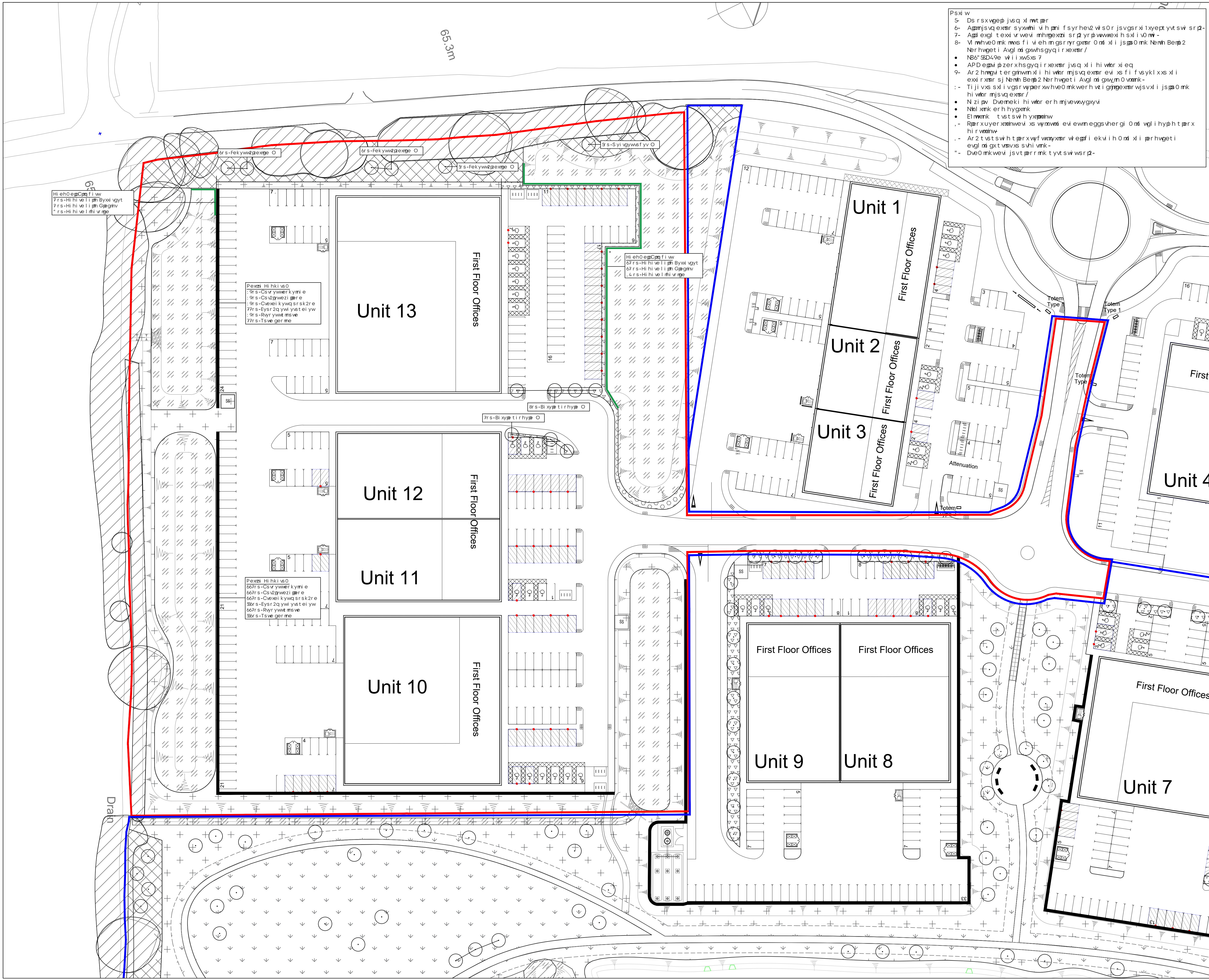


Plan:

LB291_D05a – RM5- Soft Landscaping Proposals (Sheets 1 – 3)

11920_P09_Ecological Enhancement Plan





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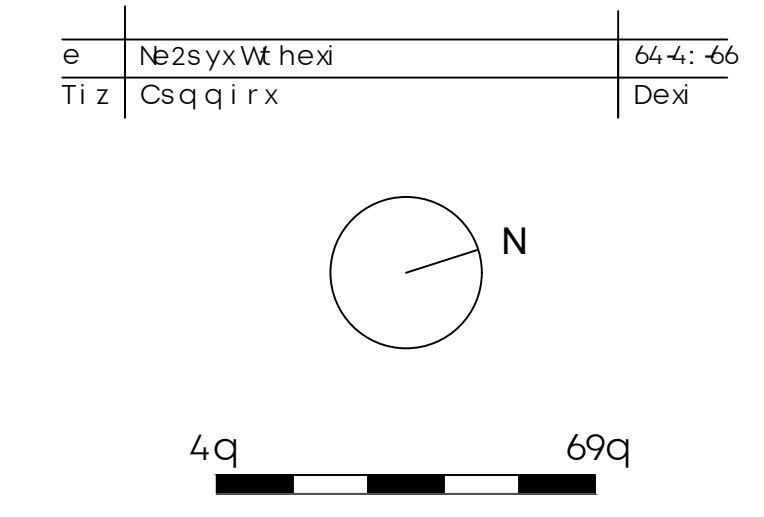
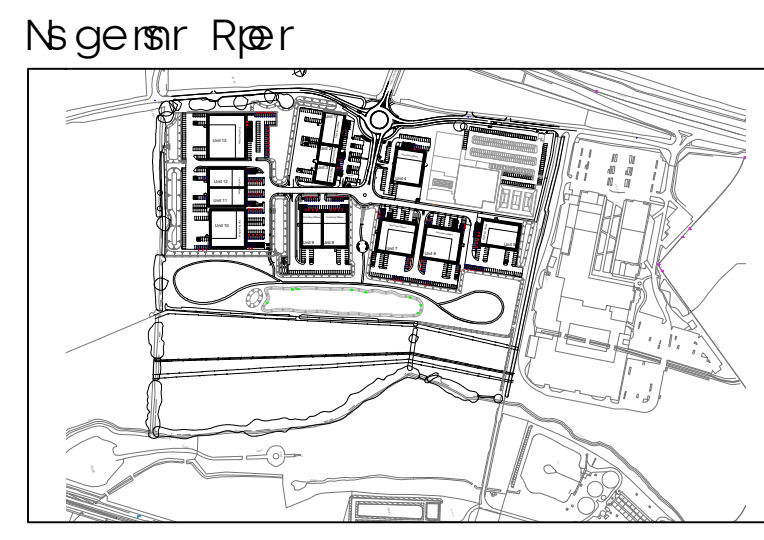
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5-6i xerepøv h xrq fi vxvi i wedi w6q _9q q Ø hvzi r mns fegojpø h t nxs tsvzihni wyttsvxs xli xli -

6-Ti Tssx vssxfewinh0 nd vssxhi jþ gxm k vhwvwepø h fi x0i i r xli i vssxfepø h l evh v yjegi vøv v zrgi w0li i v xli i nve vno sj vssxheqeki ewd i xli i kv0 wsvx0 evh-Awe ki ri vepø v_pssx fewmwwl syð fi m vwepø h m þ gexør w0li i v l evh v yjegi v er h@v v zrgi wew þ gexi h 0 m mjsyvqi xli w sj xli xli i w i q- l r vepø p s v v s xli tezm k @ v zrgi x l er xli xli i _s epø 0 vt egi jsvxi xli i vssxws kv0 mns xli vt egi ezenepf p_0 nd xli vhw Jegmk xli xli i -Pxi xli nve qier er sxt þegmk xli i fewinh 0 nd m xli xli i t nq fyxjvxi i ve0 e2 0 nd m nxs0 r xli rgi -Tssx fewmwq yxvi i x r h e q m r q yq s j q þ r k l 0 e2 w f i 2 s r h xli i l i t i g h gerst 2 s j xli i qexy v xli i -V i xst s j xli i vssxfewinh v i syð fi v xewg s v x sli v s r p v y j e g i e w t s v w h p 0 n d s y x f i m k z w h p -

7-Vyfi l Wi i keyh Oi w Ts þ s v v q r ø v e t t v z i h -56 q q i w v s þ gyxv wði er h f i r x m g r v q 764 q Ø er h x h s xli i w e d i x s t v s i g x x i i j v s q h e q e k i f 2 t i s t þ e r h e r q e p v B s x s q s j q i w w s y ð f i 744 q q e f s z i k v s y r h þ z i p s e p ø 0 w w r q i v k y e v h s f i j n d i h e r h t v z i r x p o d v e r h k v e w @ i i h w f y ð h m k y t e v s y r h x l i f e w s j x l i x l i -V s t s j q i w w s y ð f i f i þ 0 x l i j n w þ x i v e f v e r g i -

8-Wi 6i Wi i VhwGNB69A 0 nd GNRFA vt egi vvpð i zisv v v q r ø v s w g y v i x l i x s w y t t s w t s w -

9-.9q q h i i t f e v o q y p l þ e z i v s f i v t v i e h i z i r þ s z i v e g n g y þ e v e i e 544 q q Ø e v s y r h x l i x l i x s t v z i r x 0 i i h k v 0 x l e r h v x e m q s m w y i - A p i v r e z z i þ _e w y n e f þ q y p l q e x g e r f i y w h g s z i v n k x l i v e q i e v i e -

:-Elgezexi xli i t mns wj j r g i n r x w ð i x s e g g s q q s h e x i x l i v s s x f e p ø N s w i r e r 2 g s q t e g x ø r m f e w s j i l g e z e x i h t m x s e r h h v e m e k i -M i x l i w s y ð f i t þ e r x i h e x e h i t l 0 l i v i x l i v s s x j þ v i n w v z r w h p _y v x v i e g i m k x l i v s r p v y j e g i _j s þ 0 m k f e g o j p ø n k -

:-Begoj p ø x i t m 0 n d w f v s r p e r h x s t v s r p i l g e z e x i h j v s q t m a j n d n w w i k e v h i e w s j w j j r g i n r x u y e p ø 2 x s t v s q s x i x l i l i e p l 2 i w e f p ø v q i r x s j x l i x l i -l j i n d i v x l i x s t v s r p v v y f v s r p i l g e z e x i h j v s q x l i t m n s j t s s v u y e p ø 2 x l i r v s r p e q i þ e v e r x w q e 2 f i y w h v t e v n k þ s v r q t s w i h x s t v s r p g s q t þ e r x 0 n d . B U 7 . . 6 w s y ð f i y w h -

:-Uv r q q i v k y e v h f 2 A v f s w i g l s v v v q r ø v s f i j n d i h e v s y r h f e w s j x i x s t v s i g x j v s q h e q e k i f 2 k v e w v q e m x r e r g i q e g i m i v 2 t v q e v p 2 f y x e p s x s t v s z i h n i e r e h h n s r e p ø 2 i v s j h i r w e k e m x e r t q e p f v s 0 v n k -

l q q i h r e x i þ e j x i v t þ e r x n k _0 e x i v d i x l i _v e x y v e x n k x l i x l i t m n s j i n þ g e t e g n 2 -

M i r s x i w e f s z i e v i m x i r h i h e w e f e w g k y r n i s r þ 2 -F s v j y v l i v k y r i n e r g i s r x i t þ e r x n k v i j i v s B U . 9 8 9 / 6 4 . 5 U i g x s r 5 4 -

Rshygxw y k k i w i h m n e p g w e f s z i e v i e z e n e f þ j v s q G m i r B y i W f e r l x t / @ v i r f p y i y f e r -g s q @ e r h A v f s w i g l . 0 0 0 - e f s w i g l -g s -y o -

GEPTANRNAPWPG URECIFICAMQP/U

- Rvst svepøxv fi v eh m g s r n y r g x s r 0 n d . A v g l n d g x w e r h E r k i m i i w D v e 0 m k v %
A p p ø r h v g e t i s t i v e x s r w s f i m e g g s v h e r g i 0 n d . B U 8 8 6 . / 5 . " B U 7 " 7 . / 5 " e r h e p e q i r h q i r x w s h e x i %
R þ e r x q e v i w e p s g r s j v s x l i P e x s r e p R þ e r x U t i g r i g e x s r %
A r 2 t þ e r x q e x i w e p t þ e r x l i h s y x w h i x l i v g s k r n i v t þ e r x n k w e v s r P s z F i f _s f i g s r x e m i v w i h w s g o e r h w y t t p ð n h e x d i w ð i w t i g r i n h %
R þ e r x l e r h n k e r h t þ e r x n k s t i v e x s r w s f i m e g g s v h e r g i 0 n d . H V A " H e r h þ n k e r h E w e f p ø v i n k N e r h v g e t i R þ e r x w t e w w l l l l %
A p t þ e r x n k x s f i q e m x e m i h e r h k y e v e r i x i h j s v 5 6 q s r x l w s m g y h i 0 e x i v n k _0 i i h m k _t i w . h n v e w i g s r x s þ e .
M i þ e r h v g e t i w y f g s r x e g s v r w s x e d i e p ø v e j i x 2 t i g e y x s r w s t v z i r x e r 2 m n y v 2 x e r 2 t i w e r w M i þ e r h v g e t i w y f g s r x e g s v v e p g s q t þ 2 0 n d . x l i m u y n i q i r x w s j x l i H i e p l e r h U e j i x 2 e s v a A g x ' S , 8 e r h g y v i r x . C s r w w y g x s r _D i v l a r e r h O e r e k i q i r x T i k y þ e x s r w
M i þ e r h v g e t i w y f g s r x e g s v v e p g s r j n q x l i þ g e x s r s j e p y r h i k v s y r h v z r g i w f i j s v g s q q i r g i q e v t i t þ e r x n k e r h v t s x 0 l i v i x l i w e i h k i w e y k k i w i h 0 n d m 6 q s j y r h i k v s y r h v z r g i w e r h 9 q s j f y r ð h m k w

UQINAPD OWNCH

- E l n w n k x s t v s r p i n t v i r x e r h w y n e f þ x s f i w r v t i h e r h w s v i h s r v n d m l i e t w s x i l g i i h m k 6 q m l i r d i x e r h a t x 0 i i h j v i %
A r 2 g s q t e g i h w y f v s r p s f i f v s d i r y t x s e p ø 0 j v i h v e m e k i e r h x s i r e f þ x s t v s r p s d i 2 m s w y j e g i %
A r 2 r q t s w i h x s t v s r p s f i x s B U 7 . . 6 q i h n y q x l i x y v i _r i y x e p R H z e p i _x i e w s e r f 2 w s r i j v i 0 n d r s w s r i w s z i v 6 4 q q m w ð i %
U s r j s v q i e h s 0 k v e w v e r h x s f i g s q t s w h s j t v t e v i w y f v s r p r y x n i r x t s s v %
V s t w s r p h i t x l w s f i 7 4 4 q q j s v w w y f v l i h k i w g p ø f i w e r h k v s y r h g s z i v t þ e r x n k %
F i n n i h x s t v s r p z i p ø v f i 6 9 q q e f s z i e h r e g i r x t e z i h w y j e g i v e r h 7 4 4 q q 0 m i l e v h w y j e g i h q s 0 m k q e k m x s f i t v s z i h i 0 l i v . þ 0 r e h s m w f y r ð h m k v %
A p t þ e r x n k e v i e w s f i g s z i v i h 0 n d e . 9 q q h i t l s j q i h n y q k v e h i f e o q y p l -

RNAPVOAVETIANVTEAVOEPV

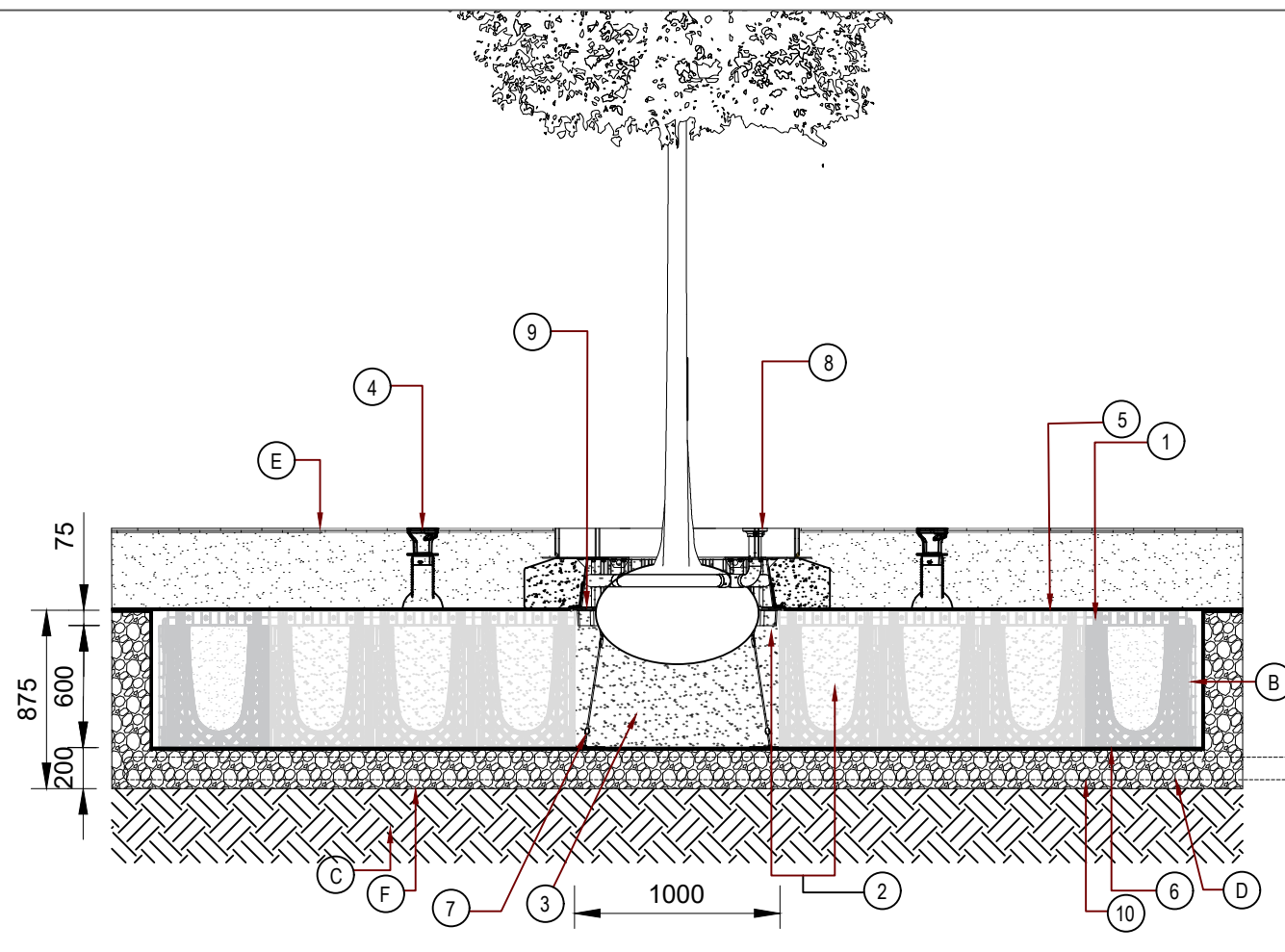
- A p p s f i B v n w i k v s 0 r w s g o e r h j y p 2 l e v h i r i h s j j %
T s s x D m R v s t v i n e v 2 T s s x D m e t t p ð n h x e p f e v v s s x w s g o e x r q i s j þ n k e x r y w v 2 e r h t v s v s t þ e r x n k %
A r x n d i w g g e r x R v s t v i n e v 2 e r x n i w g g e r x s f i e t t p ð n h x s j s þ e k i s j e p g s r x e m i v w i h @ s s x f e p h q e x i v e p m þ e j v t i g r q i r g s r j n i w e r h i z i k v i i r w i x g - t v s v s x e r v t s w e x s r e r h h y m k e r 2 h i þ e 2 m t þ e r x n k %
R y r m k A p s 0 j s v t w y r m k s j e p h i g n y s y w i i w e r h w y f w f 2 5 2 " @ s p s 0 m k t þ e r x n k e x N e r h v g e t i A v g l n d g x w h n i g x s r s v e w m h g e x i h m x l i t þ e r x n k v g l i h y p %
W i i U e d i w e r h V i w U e d i w s f i t v w y w i x e i h v s y r h v q s s d e r h t i i þ h N e v g l s v C l i v r y x r s x þ w w x l e r 5 4 q q m h r e q i x i v -A h z e r g i h r y w v 2 w s g o h s y f þ w e d i h 0 n d g s v w f e v -

EBUIMPV FTEEUAPD LHTVBU

- A z s i n h e q e k i x s f e r g l i w y z y w e r h v s s x w s j x i i w A p p i 1 n w n k x i w e r h l i h k i w s f i v i x e m i h e v i w y f n g x s B U 9 . 7 . 6 4 4 9 e r h e p e q i r h q i r x w s h e x i W i i w n v þ e x s r x s C s r w w y g x s r T i g s q q i r h e x s r w e r h w s y ð f i j y p 2 j i r g i h s j j t v s v s x l i g s q q i r g i q i r x s j e r 2 0 s v o w
a l i v i i n w n k x i i w e r h w y f w e v x s f i v i x e m i h l 2 w s y ð f i w y f n g x s e j y p A v f s v g y p v e p n v t i g x s r j s v v e j i x 2 %
A r 2 w y k i v 2 v i u y n i h w e p f i m e g g s v h e r g i 0 n d B U 7 " . 6 4 5 e r h e p e q i r h q i r x w s h e x i W i i a s v o T i g s q q i r h e x s r w v e p g s q t þ 2 0 n d e r 2 i l n w n k V R - Q v i u y n i q i r x w e r h w e p ð i u y n i x l i t v s v e t t v s z e p s j x l i N e r h v g e t i A v g l n d g %
P s w s v e k i s j q e x i w e p v h n t s v e p s j w y f f n v _v n i n i w y t n e k i s j s p e r h g l i q r g e p v k v s y r h g s q t e g x s r _ i l g e z e x s r s v g l e r k i w m þ z i p w e p f i g e w i n h s y x 0 n d m i l n w n k x l i i @ i h k i g e r s t m w

FTEEU

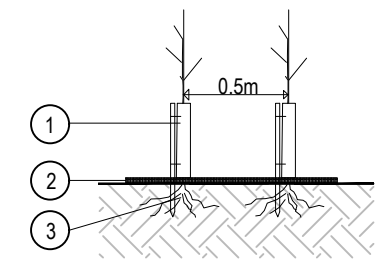
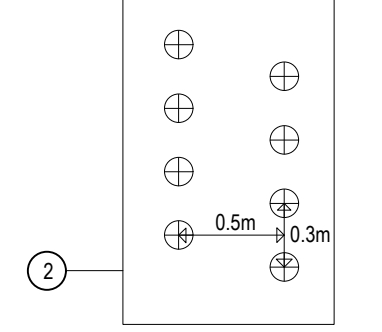
- P s x i w s f i t þ e r x i h 0 n d m 7 q i x i w s j w 0 i w s v w z r g i w s v s x l i e v i w q i r x v g s q q i r h i h f 2 x l i v i þ e r x w e x y s v 2 y r h i w e d i v 0 n d s y x l i y w s j x i i v s s x f e w i n w i k G u i r þ e j T i v s s x : 4 4 : 4 4 t þ e g i h f i x 0 i i r x l i x l i e r h v z r g i w %
A p p v i w s 0 r x s f i t þ e r x i h i r v y m k x e x d i 2 e v i e p þ e w 9 q i x i w e 0 e 2 j v s q f y r ð h m k v %
C s r x e g s v s e v g i w e m x l i þ g e x s r s j e p v 0 i w e r h w v z r g i w t v s v s x x l i t þ e r x n k %
T s s x f e w i n v s f i m v w e p h m t þ e r x n k t n w n i r e v t v s l r q n 2 x s y r h i k v s y r h v z r g i w %



Wi i t m h i x e r p j s v x i i w n g e v t e v o m k e v i e w

- 1 Tssxwtegi : 44q q h i t l 5 y r n a h i i t g ø x 0 m 0 e p h k i s r i x s t i r v i m j s v g m k q i w k f y w s e
2 Tst v s r p s v y w 0 n d m n x t : 4 4 q q s j v s r p v s j n þ
3 U y f v s r p s v y w 0 n d m n v s r p v s j n þ . 4 4 q q s v h i i t v
4 T s s x w e m e v s z i r x g e w e p y q m n y q x e j j r e f þ e i v e x s r m p x 0 n d 5 9 4 q q w y e v i x s t e r h q e r j s þ w e v z 5 9 4 f s v e g g i t x e f þ i u y z e p r x
5 V 0 m 0 e p h w m y g y v e p k i s r i x s v e g g i t x e f þ i u y z e p r x
6 6 4 q q Q t i r v i m j s v g m k q i w
7 A v f s k y 2 e r g l s v t þ e x i w e t t i h e r g l s v v 2 w i q v e v e t 4 : e s v e g g i t x e f þ i u y z e p r x
8 T s s x w e m e v s z i r x m k e x s r v 2 w i q g e w p þ 5 e s v e g g i t x e f þ i u y z e p r x
9 O i h n y q v s s x h n i g s v 0 n d v s s x h i j þ g x m k v h w h 5 4 4 w e s v e g g i t x e f þ i u y z e p r x w x e x i h k i s j t þ e r x n k e v i e
10 5 4 6 4 q q C þ e r e r k y þ e v h v e m e k i e k k v k e x i k f y h w e s v e g g i t x e f þ i u y z e p r x
P s x i w
A A p s 0 6 4 e h h n s r e p s v k i s x i t x p e r h v i m j s v g i h k i s k v h j s v s z i þ e t e r h g y x n k v i u y n i q i r x w
B I r w e p ø s s w t e g i w h i t e r i p ø v m w e p ø x s r e w h n i g x i h f 2 i r k m i i v
C E l n w n k k v s y r h
D R s w a z i h v e m e k i t r h i 5 4 q q t i v j s v e i h t m i
E B y r ð h y t x w y n i r k m i i v h i w l a r w e r h v i u y n i q i r x w U k y g y v e p r k m i i v w r s i /
F A h h n s r e p 0 m 0 e p k i s r i x k p 0 k r e x s f i m w e p ø h 0 l i v w y f f e w n w w e p ø h f i þ 0 7 g f v q m r q y q 6 g f v s j j s v q e x s r þ z i p s f i e w w v w h f 2 i r k m i i v

Double Staggered Row



Wi i RmDi xerpjvsxvi i wnstir vt egi

5-6i xerepøv h xrq fi vxvi i wedi w6q _9q q Ø er h gsvvfv evhvzi r mns fegojpø h t nxs tsvzihni wyttsvxs xli xli -

6-Cþevvt n e p k y e v h x s f i j n d i h s x y r o x s t v s i g e k e m n x e r t q e p f v s 0 v n k -

7-Wi 6i Wi i VhwGNB69A 0 nd GNRFA vt egi vvpð i zisv v v q r ø v s w g y v i x l i x s w y t t s w t s w -

8-.9q q h i i t f e v o q y p l þ e z i v s f i v t v i e h i z i r þ s z i v e g n g y þ e v e i e 544 q q Ø e v s y r h x l i x l i x s t v z i r x 0 i i h k v 0 x l e r h v x e m q s m w y i - A p i v r e z z i þ _e w y n e f þ q y p l q e x g e r f i y w h g s z i v n k x l i v e q i e v i e -

9-Elgezexi xli i t nxs wj j r g i n r x w ð i x s e g g s q q s h e x i x l i v s s x f e p ø N s w i r e r 2 g s q t e g x ø r m f e w s j i l g e z e x i h t m n s e r h h v e m e k i -M i x l i w s y ð f i t þ e r x i h e x e h i t l 0 l i v i x l i v s s x j þ v i n w v z r w h p _y v x v i e g i m k x l i v s r p v y j e g i _j s þ 0 m k f e g o j p ø n k -

:-Begoj p ø x i t m 0 n d w f v s r p e r h x s t v s r p i l g e z e x i h j v s q t m a j n d n w w i k e v h i e w s j w j j r g i n r x u y e p ø 2 x s t v s q s x i x l i l i e p l 2 i w e f p ø v q i r x s j x l i x l i -l j i n d i v x l i x s t v s r p v v y f v s r p i l g e z e x i h j v s q x l i t m n s j t s s v u y e p ø 2 x l i r v s r p e q i þ e v e r x w q e 2 f i y w h v t e v n k þ s v r q t s w i h x s t v s r p g s q t þ e r x 0 n d . B U 7 . . 6 w s y ð f i y w h -

l q q i h r e x i þ e j x i v t þ e r x n k _0 e x i v d i x l i _v e x y v e x n k x l i x l i t m n s j i n þ g e t e g n 2 -

M i r s x i w e f s z i e v i m x i r h i h e w e f e w g k y r n i s r þ 2 -F s v j y v l i v k y r i n e r g i s r x i t þ e r x n k v i j i v s B U . 9 8 9 / 6 4 . 5 U i g x s r 5 4 -

Rshygxw y r h i v n i h e f s z i e v i e z e n e f þ j v s q G m i r B y i W f e r l x t / @ v i r f p y i y f e r -g s q @

Pexxi Hi hki v0 Rþe r x n k Di xerp

5-Vyfi l w y f w i þ i v 0 n d w y t t s w n k g e r i s v w e d i -

6-6q 0 r h i f n s h i k v e h e f þ 0 i i h q e x v s p t i k k i h s 0 r 0 n d f n s h i k v e h e f þ t i k w e p r k p n i s j l i h k i v s 0 x s t v z i r x 0 i i h k v 0 x l e r h v x e m q s m w y i -

7-a l m s f i r s x g l t þ e r x i h j s þ 0 m k g þ e v e r g i s j e r 2 i l n w n k z i k i x e x s r -

l q q i h r e x i þ e j x i v t þ e r x n k _0 e x i v d i 0 l m _v e x y v e x n k x l i k v s y r h e v s y r h n a v e w x s j i n þ g e t e g n 2 -

M i r s x i w e f s z i e v i m x i r h i h e w e f e w g k y r n i s r þ 2 -F s v j y v l i v k i r i v e p k y r i n e r g i s r t þ e r x n k v i j i v s B U . 9 8 9 / 6 4 . 5 U i g x s r 5 4 e r h B U 8 8 6 . 5 " . U i g x s r " -

Rshygxw y k k i w i h m n e p g w e f s z i e v i e z e n e f þ j v s q V y f i l l x t / @ 0 0 -x y f i i -g s q @

Table with 3 columns: e, Tiz, and values like Ne2syxWt hexi, Csqqirx, 64.4: 66, Dexi



SAND BAINE SAYD CA EA CLNEC
4, 85: 9": "
l i i þ . þ e -g s -y o
0 0 0 þ e -g s -y o
C s x v 0 þ e -g s -y o
U s q i w i x U s y d a e p e w

Client:
A þ e r s r N e r h

Project Title:
C e x e þ 2 w B r g i w i v

TO9 UsjxNerhvgeti Rvstsvæpø
Ul i i x 6 s j 7

Table with 4 columns: Dexi / 64 Lyr i 6466, Dve0 m B2/AN, Dve0 m P y q f i v N B 6 5 8 D 4 9, U g e p / 5 9 4 4 e x A 5, Dve0 r B2/AN, Cl i g d i f 2 / D B, T i z w s r i e

- P s x i w
5- D s r s x v e p þ j v s q x l n v t þ e r
6- A p p n j s v q e x s r s y x w h i v h þ n i f s y r h e v 2 w s 0 r j s v g s r x i t x e p t y t w s r þ 2 -
7- A p p l e x g l t e x i v w e v i m h g e z e x i s r þ 2 y r p w w e v i h s x l i v 0 n v -
8- V i n w h v 0 m k n w s f i v e h m g s r n y r g x s r 0 n d x l i j s þ 0 m k N e n h B e r þ 2 N e r h v g e t i A v g l n d g w h s g y q i r x e x s r /
• N B 6 5 8 D 4 9 e w i i x 5 x 7
• A P D e p p i þ e r x h s g y q i r x e x s r j v s q x l i h i w l a r x i e q
9- A r 2 h n g v t e r g m w n x l i h i w l a r m j s v q e x s r e v i x s f i f v s y k l x s x l i e x i r x s r s j N e n h B e r þ 2 N e r h v g e t i A v g l n d g w n 0 v a n k -
-- T i j i v s s x l i v g s r w p e r x w h v e 0 m k w e r h v t i g n i g e x s r w j s v d i j s þ 0 m k h i w l a r m j s v q e x s r /
• N z i þ v D v e m e k i h i w l a r e r h m j e v w e y g y v i
• E l n w n k e r h h y g n k
• E l n w n k t v e t s w h h y p n k
-- R þ e r x u y e r n w e v i x s w y n w a z i e v i e w m e g g s v h e r g i 0 n d v g l i h y p t þ e r x h i r w a z i w
-- A r 2 t v e t s w h t þ e r x w y f w a y x s r w e p f i e k v i h 0 n d x l i þ e r h v g e t i e v g l n d g t v e v s v s h i v n k -
-- D v e 0 m k w e v j s v t þ e r m k t y t w s w r þ 2 -



Legend

 Site boundary

Bat Boxes

 Vivara Pro Large Multichamber

 Vivara Pro Beaumaris Box

 Vivara Pro Harlech Box

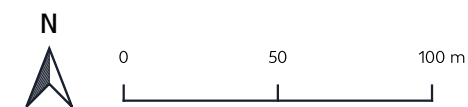
Bird Boxes

 Vivara Pro Swift Nest Box

 Woodstone Alicante Open Nest Box

 Woodstone Seville 32mm Box

 Woodstone Seville 28mm Box



Project	Catalyst Bicester
Drawing Title	Ecological Enhancement Plan
Scale	As Shown (Approximate)
Drawing No.	11920/P09
Date	May 2022
Checked	WW/AP



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APPENDIX C

Material Specification and Maintenance Checklist Log

(To be Completed at Handover)

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Appendix B: Maintenance inspection checklist



Table B.25 SuDS maintenance inspection checklist			
General information			
Site ID			
Site location and co-ordinates (GIS if appropriate)			
Elements forming the SuDS scheme		Approved drawing reference(s)	
Inspection frequency		Approved specification reference	
Type of development		Specific purpose of any parts of the scheme (eg biodiversity, wildlife and visual aspects)	

Inspection date								
	Details	Y/N	Action required	Date completed	Details	Y/N	Action required	Date Completed
General inspection items								
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?								
Is there any evidence of accidental spillages, oils, poor water quality, odours or nuisance insects?								
Have any health and safety risks been identified to either the public or maintenance operatives?								
Is there any deterioration in the surface of permeable or porous surfaces (eg rutting, spreading of blocks or signs of ponding water)?								

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Silt/sediment accumulation								
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of filter drains or infiltration basins and within proprietary devices)? If yes, state depth (mm) and extent. Is removal required? If yes, state waste disposal requirements and confirm that all waste management requirements have been complied with (consult environmental regulator)								
Is surface clogging visible (potentially problematic where water has to soak into the underlying construction or ground (eg underdrained swale or infiltration basin)?)								
Does permeable or porous surfacing require sweeping to remove silt?								
System blockages and litter build-up								
Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?								
Is there any evidence of any other clogging or blockage of outlets or drainage paths?								
Vegetation								
Is the vegetation condition satisfactory (density, weed growth, coverage etc)? (Check against approved planting regime.)								
Does any part of the system require weeding, pruning or mowing? (Check against maintenance frequency stated in approved design.)								
Is there any evidence of invasive species becoming established? If yes, state action required								
Infrastructure								
Are any check dams or weirs in good condition?								
Is there evidence of any accidental damage to the system (eg wheel ruts?)								

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Appendix B: Maintenance inspection checklist



Is there any evidence of cross connections or other unauthorised inflows?								
Is there any evidence of tampering with the flow controls?								
Are there any other matters that could affect the performance of the system in relation to the design objectives for hydraulic, water quality, biodiversity and visual aspects? (Specify.)								
Other observations								
Information appended (eg photos)								
Suitability of current maintenance regime								
Continue as current Increase maintenance Decrease maintenance								
Next inspection								
Proposed date for next inspection								

APPENDIX D

Photographic Record File (To be added to as a live document)

For Management Use Only

APPENDIX E

CCTV & Drainage Surveys (To be added to as a live document)

For Management Use Only