



**‘Langford’
Horsemere Green Lane
Climping**

SuDS Operations & Maintenance Manual

Prepared by:
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KNC1933/SUDS

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Signed:



Date: 29th April 2020

Revision	Description	Date	Initials
O	Initial issue	April 2020	KHN
A	Manual revised through drainage revision	August 2020	KHN
B	Manufacturers & landscaping information added	19.09.20	KHN
C	Additional notes added	28.09.20	KHN

1.0 INTRODUCTION

1.1 The SuDS Philosophy

- 1.2 Sustainable Drainage Systems (SuDS) are a collection of water management practices that aim to align modern drainage systems with natural water processes. SuDS are designed to mimic the natural drainage regime of an area thus minimising impact on receiving watercourses. The SuDS philosophy has been applied to the proposed development to provide a natural approach to managing the surface water drainage from the site and preventing water pollution and flooding.

1.3 SuDS Maintenance

- 1.4 Regular inspection and maintenance is important for the effective operation of the SuDS drainage features across the development.
- 1.5 The following SuDS features have been designed into the development to control the surface water run-off created through the construction of roofs, parking areas and roads.
- Permeable Pavements (block paving)
 - Attenuation Storage including 'feature pond'
 - Flow Control Devices & Drainage Channel

Surface water discharge from roof areas discharges directly to the attenuation ditch/swale which has been designed to store the volume of flow. Surface water discharge from the drives and access road will discharge into the granular sub base construction which will then discharge into the ditch/swale through a flow control device at various locations. Surface water will then discharge into the feature pond and then through the 'Hydro Brake' flow control which limits the discharge to the agreed 'green field' run off with the final outfall into the ditch fronting the site in Horsemere Green Lane.

-
- 1.6 In order to ensure the continued effective operation of the SuDS features maintenance regimes have been provided for each of the above features.
- 1.7 This document has been prepared at the design stage and should be considered as part of an evolving process. Following construction as built information and drawings should be included. The post construction information should include drawings detailing the extent and location of SuDS features together with relevant manufacturer's details.
- 1.8 The following maintenance regimes should be amended/updated to suit specific manufacturer's requirements for the various components installed.
- 1.9 The following appendices have been included to allow for additional information and records to be included post construction.
- **Appendix A** As built Information
 - **Appendix B** Manufacturer's Information
 - **Appendix C** Inspection Records
 - **Appendix D** Maintenance Regime Monitoring and Amendments
- 1.10 It should also be recognised that for a maintenance regime to continue to be appropriate and fit for purpose a constant monitoring ethos should be adopted and any corrective measures implemented to ensure that the correct maintenance regimes going forward are in place. Inspection records should be kept and used as a basis for the determining the suitability of the maintenance regimes and the areas of the development requiring attention.
- 1.11 As a reputable developer MJH Executive Homes will set up a Maintenance Management Company for the site which will undertake the requirements and obligations to ensure that the SuDS facilities are adequately maintained. The obligations of the Management Company will be funded by an annual contribution from the residents of the development. This manual will form part of the brief

provided to the Management Company, who will use it to calculate fees which will be paid by residents.

- 1.12 At the end of the manufacturer's recommended design life for all SuDS components they shall be replaced at the Management Company expense to the satisfaction of the Planning Authority.

2.0 PERMEABLE PAVEMENTS

- 2.1 Permeable pavements have been provided around the development for parking areas and drives. These will infiltrate water down through to the granular sub base and linked to the granular sub base of the access road where it will be stored and discharged at a reduced rate into the ditch/swale through 'fin drains'. The system will not rely on any infiltration through the sub-strata, all discharge volumes being calculated to be contained in the sub-base.
- 2.2 Permeable pavements need to be regularly cleaned of silt and other sediments to preserve their infiltration capacity. Extensive experience suggests that sweeping once per year should be sufficient to maintain an acceptable infiltration rate on most sites.
- 2.3 A maintenance regime has been prepared for the development as indicated in Table 1 below.
- 2.4 Inspection reports should be kept and the maintenance regime for the pervious paving should be adjusted, if necessary, to suit ongoing site-specific circumstances as they arise.
- 2.5 A brush and suction cleaner (which can be a lorry-mounted device or a smaller precinct sweeper) should be used for regular sweeping. Care should be taken in adjusting vacuuming equipment to avoid removal of jointing material. Any lost material should be replaced. It is also possible to clean the surface using lightweight rotating brush cleaners combined with power spraying using hot water.
- 2.6 If the surface has clogged then a more specialist sweeper with water jetting and oscillating and rotating brushes may be required.

Table 1: Operation and Maintenance Requirements - Permeable Pavements

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance.	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
	Pervious surfaces; power wash	Once a year at the same time as the pervious paving is being cleaned.
Occasional maintenance.	Removal of weeds or management using glyphosate 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 to within 50 mm of the level of the paving.	As required – once per year on less frequently used pavements.
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	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).
Monitoring.	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, 48 hours after large storms in the first six months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor silt taps.	At same frequency of pervious paving inspections.

3.0 ATTENUATION STORAGE

3.1 Two forms of attenuation storage are provided.

- Storage in the open ditch/swale that runs alongside the access road.
- Storage in the granular sub base forming the access road and the parking court and driveways.

3.2 All discharge from roofs pass through a silt traps before being discharged directly into the ditch/swale. Surface water from the carriageway hardstanding areas discharges into the granular sub base either through the permeable paving or through trapped gullies that are connected to the sub base by means of 'diffusers'.

3.3 The granular storage will be wrapped in a permeable membrane which will allow the surface water to dissipate into the adjacent ground should it prove to have sufficient porosity..

3.4 A maintenance regime has been prepared for the ditch/swale, silt traps and granular storage drainage system as indicated in Tables 2 & 3 below.

Table 2: Operation and Maintenance Requirements – Granular Attenuation Storage and Silt Traps

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance.	Inspect and remove sediment from all discharge gullies	At six monthly intervals, Autumn and Spring
Remedial actions.	Inspect and clean out all silt trap manholes, sump units, channel drains and pipework.	At six monthly intervals, Autumn and Spring.
Regular maintenance.	Remove any sediment or deposits with vacuum suction.	At six monthly intervals, Autumn and Spring

Table 3: Operation and Maintenance Requirements – Ditch/Swale, Pond Area, Site Frontage Ditch and Culvert

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance. Including Horsemere Green Lane discharge ditch and culvert under access road. Read in conjunction with Lizard Landscape Management Plan contained in Appendix D	Remove litter and debris	Monthly.
	Cut grass – for spillways and access routes.	Monthly (during growing season), or as required.
	Cut grass – meadow grass in and around basin.	Half year (spring – before nesting season, and autumn).
	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 appropriate silt removal frequencies.	Monthly (for first year), then annually or as required.
	Check any penstocks and other mechanical devices.	Annually.
	Tidy all dead growth before start of growing season.	Annually.
	Remove sediment from inlets, outlet and forebay.	Annually (or as required).
Occasional maintenance. Read in conjunction with Lizard Landscape Management Plan contained in Appendix D	Reseed areas of poor vegetation growth.	As required.
	Prune and trim any trees and remove cuttings.	Every 2 years, or as required.
	Remove sediment from inlets, outlets, forebay and main basin when required.	Every 5 years, or as required
Remedial actions. Read in conjunction with Lizard Landscape Management Plan contained in Appendix D	Repair erosion or other damage by reseeding or re-turfing.	As required.
	Repair/rehabilitation of inlets, outlets and overflows.	As required.
	Relevel uneven surfaces and reinstate design levels.	As required.

4.0 FLOW CONTROL DEVICES AND DRAINAGE CHANNEL

4.1 The attenuation systems connect to flow control devices which limit the rate of discharge into the drainage network.

4.2 The flow control devices being used are:

- A vortex control, Hydro International '*Hydro-Brake*' or similar, fitted to the outfall structure from the ditch/pond which will limit the final flow from the site to 2.0 lits/sec
- A bespoke orifice control chamber, SEL Environmental '*Contraflow*' restrictor or similar, which will limit the discharge from the granular storage areas into the ditch network to 0.4 lits/sec.
- Manufactures details can be found in **Appendix B**

4.3 Just inside the site entrance there will be installed drainage channel that will prevent any surface water discharging onto the public highway.

4.4 A maintenance regime has been prepared for the flow control devices and drainage channel as indicated in Table 4 below.

Table 4: Operation and Maintenance Requirements - Flow Control Devices, Trash Screen and Drainage Channel

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance Including trash Screen.	Inspect and identify any areas that are not operating correctly, take remedial action.	Monthly for 3 months, then annually.
	Remove any sediment and debris from flow control devices and trash screen	Annually (or as required).
Remedial actions.	Repair/rehabilitate inlets, outlet, overflows and vents.	As required.
Monitoring.	Inspect/check all inlets, outlet, and overflows to ensure that they are in good condition and operating as designed.	Annually

Appendix A

As Built Information

Appendix B

Manufacture's Information

Hydro International Warranty, Maintenance and COSHH Statement

This statement covers all Hydro International Hydro-Brake[®] Optimum, Hydro-Brake[®] and S-Type Vortex Flow Control units (hereafter referred to as "Flow Control").

Defects Liability Period Warranty

The standard Hydro International warranty covers products for one year from date of purchase and will only be considered for those defects or faults reported directly to Hydro International in writing. Warranties will not be considered for defects or faults caused by accident, acts of vandalism or unauthorised repair/rectification. Please Contact Hydro International for product specific details.

Maintenance

Normally, little maintenance is required as there are no moving parts within the Flow Control. Experience has shown that if blockages occur they do so at the intake, and the cause on such occasions has been due to a lack of attention to engineering detail such as approach velocities being too low, inadequate benching, or the use of units below the minimum recommended size. The Flow Control (where applicable) is fitted with a pivoting bypass door, which allows the manhole chamber to be drained down should blockage occur. The smaller conical units, below the minimum recommended size, are also supplied with rodding facilities or vortex suppressor pipes as standard.

Following installation of the Flow Control it is vitally important that any extraneous material ie. building materials are removed from the unit and the chamber. After the system is made live, and assuming that the chamber design is satisfactory, it is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. If problems are experienced, please do not hesitate to contact the company so that an investigation may be made.

All Flow Control units are typically manufactured from grade 304 Stainless Steel, and if required they can also be manufactured in grade 316 Stainless Steel. Both materials have an estimated life span in excess of the design life of drainage systems.

COSHH

Flow Control units are manufactured from Stainless Steel, which is not regarded as hazardous to health and exhibits no chemical hazard when used under normal circumstances for the stated applications.

Manual Handling

The handling of Flow Control units should be in accordance with the current legislation and regulations:

- The Health and Safety at Work Act 1972
- The Management of Health and Safety at Work Regulations 1999
- The Manual Handling Operations Regulations 1992. All published and printed by the Health and Safety Executive.

Technical Specification

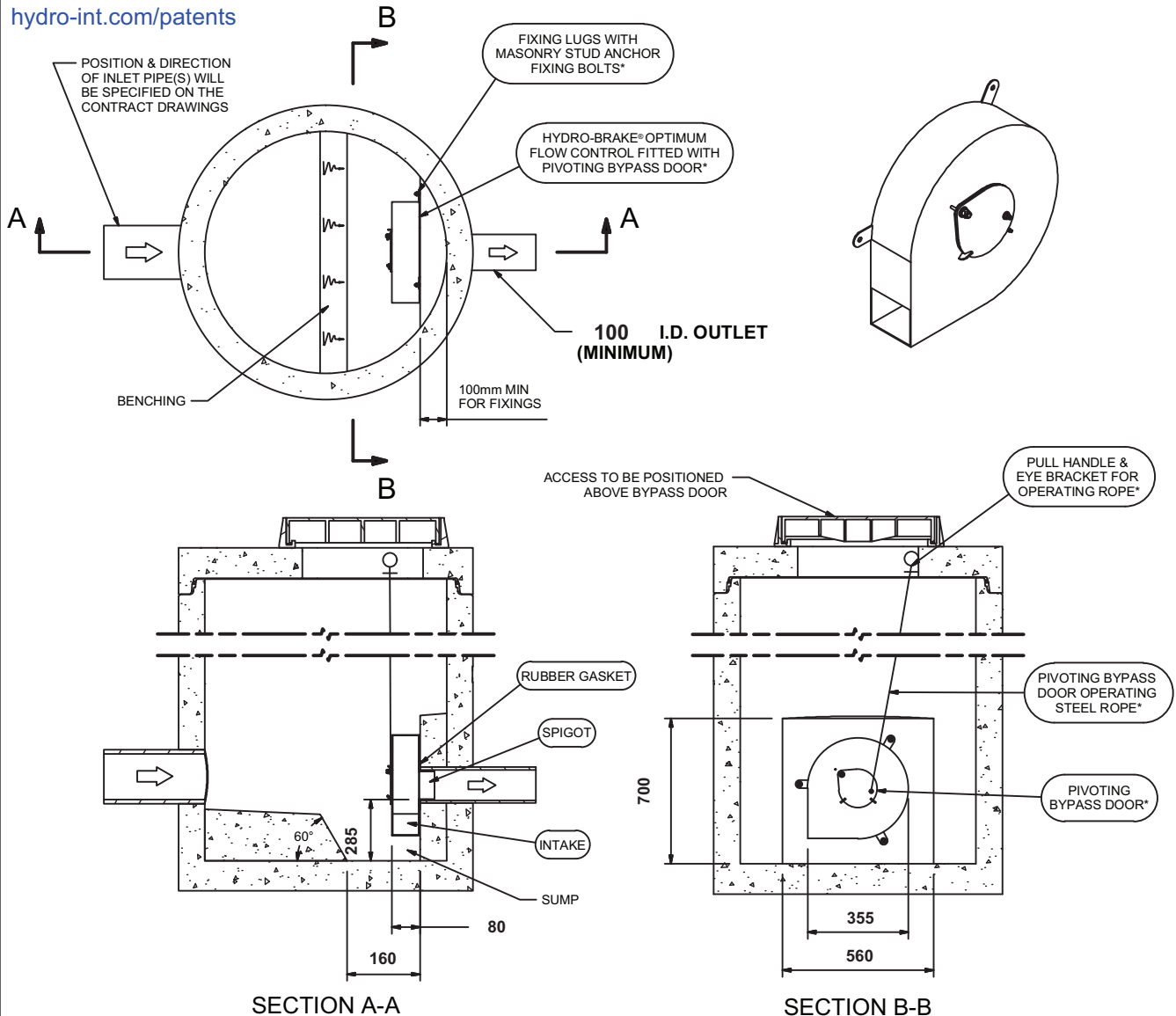
Control Point	Head (m)	Flow (l/s)
Primary Design	0.690	2.000
Flush-Flo™	0.207	2.004
Kick-Flo®	0.448	1.652
Mean Flow		1.746

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet



hydro-int.com/patents



IMPORTANT:

○ LIMIT OF HYDRO INTERNATIONAL SUPPLY

THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS

* WHERE SUPPLIED

HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

**DESIGN
ADVICE**



The head/flow characteristics of this SHE-0072-2000-0690-2000 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

**Hydro
International**

DATE 8/11/2020 3:03 PM

SITE

DESIGNER Steven Waters

REF

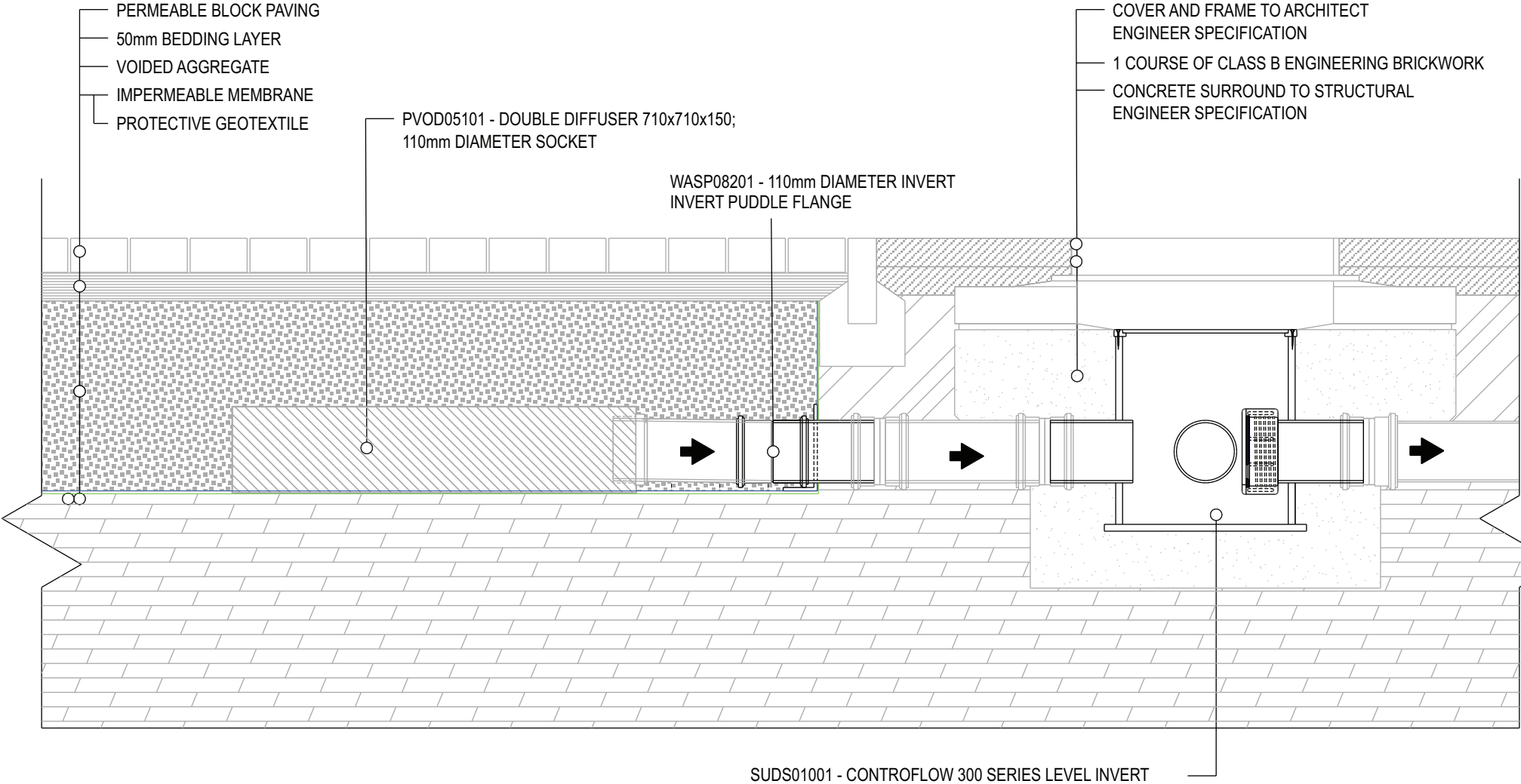
SHE-0072-2000-0690-2000

Hydro-Brake® Optimum

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SUDS01001 - CONTROFLOW 300 SERIES LEVEL INVERT GENERAL APPLICATION



Appendix C

Inspection Records

Appendix D

Maintenance Regime Monitoring & Amendments

Monitoring and Review Table

Revision	Revision Description	Date	Initials



Legend

- Site Boundary
- Existing Trees with RPAs
Existing mature trees to be retained and protected on site in accordance with BS 5837:2012 - 'Trees in Relation to Design, Demolition and Construction - Recommendations'. (Refer to LLD1762-ARB-DWG-002 - Tree Protection and Retention Plan)
- Proposed Native Trees
Proposed Native Species Trees to be Extra Heavy Standard; 16 - 18cm girth; 4.5 - 5.0m height; Min. 2.0m clear stem height; CG / RB stock.
- Proposed Feature Trees
Proposed Ornamental Trees to be Extra Heavy Standard; 14-16cm girth; 4.0 - 4.5m height; Min. 2.0m clear stem height; CG / RB stock.
- Proposed - Multi-Stem Tree Planting
Proposed Multi-stem Nursery Stock; 2.5 - 3.0m height; CG / RB stock.
- Proposed Native Mixed-Species Hedgerow
Proposed hedgerow to be native mixed species; Hedging Stock: 120-150cm, 80-100cm height; BR stock. Hedging to be 2 no. staggered rows set 400mm/ 500mm apart @500 mm centres.
- Proposed Ornamental Single-Species Hedgerow
Proposed hedgerow to be ornamental single species; Hedging stock: 40-60cm height; Hedging to be 2 no. staggered rows set 400mm apart @400 mm centres.
- Proposed Ornamental Planting
Proposed feature planting areas to include ornamental shrubs, grasses and herbaceous planting; Container grown stock.
- Proposed Native Wildflower Grassland
Attenuation ditch to be seeded with 'EM8 - Meadow Mixture for Wetlands' by Emorsgate.
- Proposed Native Wildflower Grassland
Wildflower grassland to be seeded with 'EH1 - Hedgerow Mixture' by Emorsgate.
- Proposed Shade Tolerant Turf to Lawned Areas
Proposed Lawns to be turfed with 'Shade Tolerant Turf' by Bourne Amenity.
- Proposed Decorative Gravel Aggregate
Proposed Gravel surface to be 'Dove Grey Derbyshire Peakstone 20mm' by Gravelmaster laid to a depth of 40mm; Colour: Grey; Angular aggregates.

Notes:

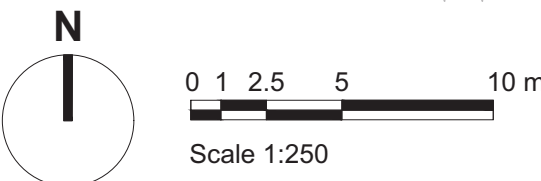
- Dimensions shall not be scaled.
- Drawing is to be read in conjunction with all relevant Landscape Architect's drawings and specification.
- All alternatives to proposed materials to be fit for purpose, of equal quality and subject to Landscape Architect's approval.
- For retention and removal of vegetation, refer to LLD1762-ARB-DWG-002 - Tree Protection and Retention Plan.
- For detailed soft landscape scheme proposals refer to LLD1762-LAN-DWG-201 - Soft Landscape Layout, LLD1762-LAN-DWG-202-203 - Infrastructure Planting Plan, LLD1762-LAN-DWG-204-205 - Ornamental Planting Plan, LLD1762-LAN-SCH-002 - Detailed Planting Schedule and Specification, LLD1762-LAN-SPE-001 - Soft Landscape Specification.
- Refer to LLD1762-LAN-DWG - Landscape Management Plan.

PLANNING ISSUE

Rev	Description	Date	Initials
02	Planning Issue	18.09.20	ML
01	Planning Issue	10.07.20	ML
00	Draft Issue	08.07.20	ML

LIZARD
Landscape Design and Ecology
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T. 01903 216033 E. lizardlandscape@btconnect.com W. lizardlandscape.co.uk

Client MJH Executive Homes Ltd			
Project Title and Location Langford Horsemere Green Lane, Climping			
Drawing Title Soft Landscape General Arrangement			
Scale 1:250@A1	Drawn ML	Approved JJ	Date 08.07.2020
Drawing No LLD1762-LAN-DWG-100			Revision 02



Soft Landscape General Arrangement Langford, Horsemere Green Lane, Climping



LIZARD

Landscape Design and Ecology

MJH EXECUTIVE HOMES LTD

LANGFORD

HORSEMERE GREEN LANE, CLIMPING

Landscape Management Plan

Prepared by	ML
Checked by	JJ
Document Reference	LLD1762-LAN-REP-001
Date	18 September 2020
Revision	00
Reason of Issue	Planning Issue

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1.0 INTRODUCTION

- 1.1 Lizard Landscape Design and Ecology has been commissioned to prepare Long Term Landscape Management Plan for the proposed development at Langford, Horsemere Green Lane, Climping, West Sussex (Grid Reference: SU 99746 02283 – hereafter referred to as ‘the site’). The report has been prepared by Mary Lannia – Assistant Landscape Architect - Lizard Landscape Design and Ecology, Worthing and has been reviewed by Joe Jackson; Principal Landscape Architect - Lizard Landscape Design and Ecology, Worthing.

The Site

- 1.2 The site is located to the south of Horsemere Green Lane in a semi-rural location within the Climping residential area and comprising an area of 0.4 Ha.
- 1.3 The site comprises an area of hard standing that leads up to and surrounds the existing Langford property which has large areas of amenity grassland to the north and south of the building, encompassed by areas of introduced shrub in the northern section of the site. The southern section of the site is formed of bare ground, woodchip and recently felled trees. The rear garden of the Langford property has a derelict static caravan on the western edge along with compost piles.
- 1.4 Soils on site are described as ‘*Freely draining slightly acidic loamy soils*’ through reference to the ‘Soilscapes’ map developed by Cranfield University sponsored by DEFRA.

Surrounding Site

- 1.5 The site is bounded by Horsemere Green Lane to the north and west, and residential properties of Climping to its east and south. The site is centrally located within a pocket of residential development with arable farmland to the south, west and east. The wider landscape to the north of the site comprises Rudfield Industrial Estate. The town of Yapton is located 1.9km north west of the site.
- 1.6 The area surrounding the site is a mixture of scattered small pockets of deciduous woodland, and coastal and floodplain grazing marsh in an easterly direction towards the River Arun.

Existing Site Vegetation

- 1.7 A Maple (*Acer* sp.) is located adjacent to Horsemere Green Lane in the northeast corner of the site and 2 no. Sycamore (*Acer pseudoplatanus*) border the eastern boundary. Bramble (*Rubus fruticosus*) and common nettles patches border the southern end of the site. Amenity grassland is located to the north and south of the Langford property. Large laurel shrubs spread along the north-eastern boundary and stretching from the north western corner to the centre of the western aspect, interspersed with elder (*Sambucus nigra*) and buddleia (*Buddleia* sp.).

Proposed Development

- 1.8 The scheme proposals include the demolition of the existing building followed by the development of 9 no. new dwellings and associated gardens within the site boundary.

Proposed landscape Scheme

- 1.9 The landscape scheme would include native and ornamental tree planting along the driveways providing vertical interest and enhancing visual amenity across the site whilst also providing foraging and habitat opportunities for wildlife. Native mixed-species hedge planting would be proposed to soften and border the non-domestic landscape areas of the site.
- 1.10 Areas of ornamental shrub and hedge planting along the drives and to the frontages of buildings would enhance the quality of the site by adding colour, movement and texture to the landscape areas.
- 1.11 The attenuation pond would be seeded with a mix of native wildflower grassland seeds, thus enhancing biodiversity net gains along the site whilst being sympathetic with the drainage proposals. The attenuation ditch strip would be bordered with an ornamental shrub planting verge to deter access to the ditch.
- 1.12 Private gardens to the dwellings would be turfed with shade tolerant grass to enhance the visual amenity of the gardens.

Purpose of the Management Plan

- 1.13 The planting proposals comprising soft landscape elements which would require active management to ensure they deliver the anticipated levels of visual amenity and genuine landscape and biodiversity gains.
- 1.14 The purpose of the LMP is to provide detailed management prescriptions for the proposed soft landscape spaces within the scheme in terms of the works to be carried out; when specific tasks are to be undertaken; and the method of undertaking the prescribed tasks.
- 1.15 The LMP will additionally specify subsequent management and monitoring for the landscape areas. It is intended that the LMP functions as a 'living document', with a process for continually reviewing, monitoring, revising, editing and updating.

Management Responsibility

- 1.16 The LMP (together with *Soft Landscape General Arrangement Drawing, Detailed Planting Plans and Detailed Plant Schedule and Specification*) has also been produced to inform the Clients Managing Agent and aid the preparation of an annual management budget for the long-term landscape management of the scheme.

- Non-domestic Areas

- 1.17 The long-term management and maintenance of the external, non-domestic areas (*i.e. open spaces and landscape*) shall be undertaken by the Client appointed, fully insured landscape management contractor, with the skills, knowledge, experience and capability to do so. The management of these landscape elements shall be undertaken as set out and prescribed. Non-domestic areas would include infrastructure and ornamental planting along the drives.

- Domestic Area

- 1.18 Most of the landscape areas associated with houses would be in the control of the householders as their private gardens, by way of the division of ownerships across the scheme. Domestic areas would include frontages to dwellings and private gardens.

Report Structure

- 1.19 **Section 2** will introduce the landscape elements / prescriptions. **Section 3** will provide the method of implementation to each landscape element / prescription. **Section 4** will provide the long-term management for each landscape element / prescription. **Section 5** will provide information for monitoring existing and recently implemented landscape elements. **Appendix A** and **Appendix B** comprise Management Schedules.

Drawings and Reports

- 1.20 The Landscape Management Plan is accompanied by, and should be read alongside, the following documentation:
- *LLD1762-LAN-DWG-100 – Soft Landscape General Arrangement Drawing;*
 - *LLD1762-LAN-DWG-201 – Soft Landscape layout;*
 - *LLD1762-LAN-DWG-202 – Detailed Planting Plan - Infrastructure Planting;*
 - *LLD1762-LAN-DWG-203 – Detailed Planting Plan - Infrastructure Planting;*
 - *LLD1762-LAN-DWG-204 – Detailed Planting Plan - Ornamental Planting;*
 - *LLD1762-LAN-DWG-205 – Detailed Planting Plan - Ornamental Planting;*
 - *LLD1762-LAN-SCH-002 – Detailed Plant Schedule and Specification;*
 - *LLD1762-LAN-SPE-001 – Soft Landscape Specification.*

2.0 LANDSCAPE MANAGEMENT ELEMENTS / PRESCRIPTIONS

- 2.1 Each landscape element has been given a 'Prescription' (P1 – 7), addressing elements individually. Landscape management elements incorporated within the scheme are addressed within the following management prescriptions:

- P1 – Proposed Native and Ornamental Tree Planting;
- P2 – Proposed Native Mixed-Species Hedgerow Planting;
- P3 – Proposed Ornamental Hedgerow;
- P4 – Proposed Ornamental Planting;
- P5 – Proposed Native Wildflower Grassland;
- P6 – Proposed Amenity Grassland;
- P7 – Existing Mature Trees.

2.2 For the location of proposed soft landscape elements (*prescriptions P1 – 7*); refer to the following drawing:

- *LLD1762-LAN-DWG-201 – Soft Landscape layout;*
- *LLD1762-LAN-DWG-202 – Detailed Planting Plan - Infrastructure Planting;*
- *LLD1762-LAN-DWG-203 – Detailed Planting Plan - Infrastructure Planting;*
- *LLD1762-LAN-DWG-204 – Detailed Planting Plan - Ornamental Planting;*
- *LLD1762-LAN-DWG-205 – Detailed Planting Plan - Ornamental Planting.*

3.0 IMPLEMENTATION OF SOFT LANDSCAPE ELEMENTS

3.1 Within this section, the method by which the landscape elements should be implemented is described through prescriptions.

Generic information on soil preparation

3.2 Soil shall be tested and certified by a Soil Scientist, and advice sought on how the soil onsite may best be improved prior to and during planting.

P1 – PROPOSED NATIVE AND ORNAMENTAL TREE PLANTING – IMPLEMENTATION

3.3 Native and ornamental tree planting is proposed across the development along the access road and drives to provide enhanced levels of visual amenity and increase the habitat and foraging potential for birds and invertebrates.

Tree Planting Preparation

3.4 For trees planted in grassland; all grassed areas shall be cut before any pit preparation is undertaken to a maximum height of 75mm. All tree planting pits are to be cut by removing the existing grass or vegetation. Planting pits shall be dug by hand and any major existing tree or shrub roots found within the pits shall not be severed prior to seeking arboricultural advice (*in accordance with BS5837:2012*).

- 3.5 Refer to '*BS 8545: 2014 - Trees: from Nursery to Independence in the Landscape - Recommendations*' for details on tree planting. Any source of topsoil (*including soils to be retained on site*), whether natural or manufactured, should be investigated carefully with respect to its suitability for the intended use, and certified in accordance with *BS 3882:2015*.

Planting

- 3.6 Planting shall take place any time from mid-autumn until late winter, while the trees are without leaf. Planting is best undertaken when soil can be worked easily; delay planting if the ground is frozen or waterlogged.

Tree Planting Pits

- 3.7 Proposed specimen tree planting shall be in accordance with the following guidance:
- Planting pits should be excavated to the same depth as the tree root system with the root flare / root collar to be level with the surface of surrounding soil;
 - The planting pit shall have a slightly raised centre and be broken up to a depth of 150mm. The width of the tree pit should be excavated to be 150 - 300mm larger than the root ball or container;
 - If the tree pit sides are compacted, smooth or smeared they should be scarified to loosen the soil. During excavation the soil should be separated into topsoil and subsoil in order that during backfilling the soil can be replaced in the same order;
 - The trees root system should be lightly wetted prior to planting;
 - The tree should be planted at the correct depth ensuring the root flare is just visible above the soil level and allowance made for any settling of soil levels;
 - Backfilling should be added gradually in layers of 150mm ensuring the tree is held upright;
 - Each layer should be firmed down to remove air pockets within the soil and to aid tree stability but not to excessively compact the soil. The final layer of backfilling should not be consolidated, but should be of a sufficient depth to allow for settlement and mulching.

Tree Staking – Generally

- 3.8 Stakes are an aid to the successful establishment of new tree planting; ensuring the tree retains good root / soil contact, which might be otherwise compromised through lateral movement of the canopy normally caused by strong wind.

Staking for Standard / Extra Heavy Standard and Ornamental Tree Stock

- 3.9 Tree staking is to be Long Double Staking for Standard and Extra Heavy Standard with stakes driven vertically to a minimum of 300mm into bottom of pit on either side of tree position before planting. The stakes should be placed to allow the fixing of the cross bar to the windward side of the tree and as close to the stem as possible. Backfilling should seek to consolidate material around stakes. The stake shall extend above ground level to a maximum 600mm. The crossbar shall be no more than 40mm away from the stem of the planted tree and the tree shall be tied firmly but not rigidly to the cross bar with one adjustable tie plus spacer with 50mm of the top of the stake and secured in place with a 25mm long galvanised clout nail.

Tree Protection

- 3.10 Tree shelters shall be provided for all new tree plant material; to be 'Acorn Planting Products Shelterguard Plus for Shrubs' or equal and approved; Height; 600mm; Diameter; 130 - 200mm diameter circular in section; Colour; specially blended green; Material; UV stabilised polypropylene; Support; one hardwood stake; 1200mm x 25mm x 25mm, attached to the shelter with 1 no. nylon ratchet tie. Whip / tree shelters shall be carefully placed over the plant and the entire base pushed a minimum of 25mm into the ground.

Watering

- 3.11 A newly planted trees should be watered in when planted; apply 20 to 40 litres of water to the rootball area - depending on climatic / ground conditions (i.e. if rain is expected and ground conditions are moist, apply approx. 20 litres; if rain is not expected and ground conditions are dry, apply approx. 40 litres)

Mulching

- 3.12 Tree planting shall be planted within mulched planting beds, maintained at a consistent depth of 75mm.

P2 – PROPOSED NATIVE MIXED-SPECIES HEDGEROW PLANTING – IMPLEMENTATION

- 3.13 Mixed-species native hedgerow is proposed to the boundary along the non-domestic areas of the site to provide a soft visual screen to the border whilst also enhancing wildlife benefits across the site.

Preparation

- 3.14 Multi-branched hedging stock shall be planted in mulched beds; which should be kept clear of all weeds at the base of the plant material.

Planting

- 3.15 Planting shall take place any time from mid-autumn until late winter, while the plants are without leaf. Planting is best undertaken when soil can be worked easily; delay planting if the ground is frozen or waterlogged.
- 3.16 The contractor shall form a planting pit for bareroot stock to enough depth and width to allow roots to spread without cutting or bending. The hedging material is to be inserted into the planting pit, firming the soil by treading with the heel, ensuring that the plant material remains in an upright position.

Watering

- 3.17 Newly planted hedging plants should be watered in when planted; apply 5 to 10 litres of water per metre square depending on climatic / ground conditions (i.e. if rain is expected and ground conditions are moist, apply approx. 5 litres; if rain is not expected and ground conditions are dry, apply approx. 10 litres).

Mulching

- 3.18 Hedgerow plant material beds should be topped up with an ornamental bark mulch to assist with the suppression of weeds to these hedgerow planting areas. Mulch levels should be maintained at a consistent depth of 75mm.

P3 – PROPOSED ORNAMENTAL HEDGEROW – IMPLEMENTATION

- 3.19 Ornamental hedgerows are proposed to the frontage of properties to provide a soft and visually aesthetic transition element into the dwelling garden areas.

Preparation

- 3.20 Multi-branched hedging stock shall be planted in mulched beds which should be kept clear of all weeds at the base of the plant material.

Planting

- 3.21 Planting can be undertaken during any time of the year but preferably between October and April. Planting is best undertaken when soil can be worked easily; delay planting if the ground is frozen or waterlogged.
- 3.22 The contractor shall form a planting pit to sufficient depth and width. The plant material is to be inserted into the planting pit, backfilled with topsoil, firming the soil gently ensuring that the plant material remains in an upright position.

Watering

- 3.23 Newly planted hedging plants should be watered in when planted; apply 5 to 10 litres of water per metre square depending on climatic / ground conditions (i.e. if rain is expected and ground conditions are moist, apply approx. 5 litres; if rain is not expected and ground conditions are dry, apply approx. 10 litres).

Mulching

- 3.24 Hedgerow plant material beds should be topped up with an ornamental bark mulch to assist with the suppression of weeds to these hedgerow planting areas. Mulch levels should be maintained at a consistent depth of 75mm.

P4 – PROPOSED ORNAMENTAL PLANTING – IMPLEMENTATION

- 3.25 Ornamental planting is proposed to the frontages of dwellings and long the access road and drives. The planting would comprise flowering shrubs, grasses and herbaceous perennials that would enhance visual amenity across the site. Ornamental planting would also include plant species from the *RHS 'Plants for Pollinators'* list, thus adding to the biodiversity gains across the site.

Planting

- 3.26 Planting is best undertaken between October and April. Planting is best undertaken when soil can be worked easily; delay planting if the ground is frozen or waterlogged.
- 3.27 The contractor shall form a planting pit to sufficient depth and width. The plant material is to be inserted into the planting pit, backfilled with topsoil, firming the soil gently ensuring that the plant material remains in an upright position.

Watering

- 3.28 Newly planted ornamental shrubs should be watered in when planted; apply 5 to 10 litres of water per metre square (depending on climatic / ground conditions i.e. if rain is expected and ground conditions are moist, apply approx. 5 litres; if rain is not expected and ground conditions are dry, apply approx. 10 litres).

Mulching

- 3.29 Planting areas are to be mulched with an ornamental bark mulch, checked and maintained to a consistent depth of 75mm. The mulch cover should assist with suppressing weed growth and reduce evaporation from soil. Mulch layer should be checked and topped up annually in the Autumn.

P5 – PROPOSED NATIVE WILDFLOWER GRASSLAND – IMPLEMENTATION

- 3.30 Native wildflower grassland seed mix '*EM8 – Meadow Mixture for Wetlands*' by Emorsgate is proposed to the attenuation ditch and pond. The '*EH1 – Hedgerow Mixture*' would be seeded to the surrounds to the attenuation pond and layered below the existing trees. The grasslands would provide a rich nectar resource and foraging opportunities for insects, birds and bats.
- 3.31 Through reference to guidance provided on the Emorsgate Seeds website, information on soil preparation and sowing wildflower grassland seed are provided below.

EM8 – Meadow Mixture for Wetlands

Soil Preparation

- 3.32 Soils can usually be prepared for seeding in either the autumn or spring (*spring is preferred*).
- 3.33 Areas of ground proposed for wildflower grassland seeding should not be highly fertile. Additionally, the areas should be free of perennial weeds; good preparation is essential to success - aim to control weeds and produce a good quality seed bed before sowing. Use repeated cultivation or consider controlling weeds by the spot application of appropriate herbicides, in accordance with manufacturer's instructions and by a certified user if needed, to eradicate perennial weeds. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface. Do not dig too deep, cultivation close to established trees and shrubs can be damaging to their root systems, keeping disturbance to the minimum required to expose fresh soil.

Seed Sowing

- 3.34 Sowings on ground prone to winter flooding are safest either in the early autumn or in spring once the land has drained. Most plants need time to grow mature enough to withstand flooding.
- 3.35 The seed must be surface sown and can be applied by machine or broadcast by hand. To get an even distribution and avoid running out, divide the seed into two or more parts and sow in overlapping sections. Do not incorporate or cover the seed but firm in with a roll, or by treading, to give good soil/seed contact.

EH1 - Hedgerow Mixture

Soil Preparation

- 3.36 Soils can usually be prepared for seeding in either the autumn or spring (*spring is preferred*).
- 3.37 Areas of ground proposed for wildflower grassland seeding should not be highly fertile. Additionally, the areas should be free of perennial weeds; good preparation is essential to success - aim to control weeds and produce a good quality seed bed before sowing. Use repeated cultivation or consider controlling weeds by the spot application of appropriate herbicides, in accordance with manufacturer's instructions and by a certified user if needed, to eradicate perennial weeds. Do not dig too deep, cultivation close to established trees and shrubs can be damaging to their root systems, keeping disturbance to the minimum required to expose fresh soil.

Seed Sowing

- 3.38 Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. August-September and March-April usually produce the best conditions for sowing meadow wildflower and grass species.
- 3.39 The seed must be surface sown. The seed shall be applied by machine or broadcast by hand. The seed must not be incorporated within the soil, or covered by the soil, but should be firmed in with a roller. This will result in optimum soil / seed contact.

P6 – AMENITY GRASSLAND - IMPLEMENTATION

- 3.40 Private residential gardens would be lawned with '*Shade Tolerant Turf*' by *Bourne Amenity* to increase visual amenity to the development.

Turfing

Soil Preparation

- 3.41 The soil shall be dug over thoroughly to a depth of 150mm. All waste material shall be cleared from the area to be turfed, including all construction debris, either by hand or machine. If weeds, particularly pernicious weeds such as docks encompass the area to be turfed, a total non-residual herbicide should be applied by a suitably qualified landscape contractor, to manufacturer's recommendations. The area should be raked to produce a smooth, level surface. The area should then be trodden lightly to reveal any soft patches which can then be raked level. This process should be repeated until the area is firm and level.

Laying

- 3.42 One strip of turf shall be unrolled at the perimeter of the lawn. Small pieces of turf should not be used at the edges, as these are likely to dry out and perish. The underside of turf should be in full contact with the soil below. The next strip of turf should be laid along the longest straight edge. Edges should be butt joined. This process should be repeated across the lawn, strip by strip, producing a brick bond type pattern. Overlapping pieces and ends of rows shall be cut cleanly using a sharp knife or a half-moon lawn edger.

Watering

- 3.43 Water application should be enough to enable rooting. The amount of watering will be dependent on the time of year that the turf is laid, with much more water needed during the summer period.

P7 - EXISTING MATURE TREES

- 3.44 Mature trees along the boundaries of the site are proposed to be retained and protected through the development proposals.

4.0 MANAGEMENT PRESCRIPTIONS

- 4.1 A range of management prescriptions are to be employed within the site aimed at successfully delivering the landscape scheme, as set out in the previous section. Management prescriptions include all measures required for the management and aftercare period of 1-5 years with respect to landscape planting, newly created habitats and management, aimed at maximising the landscape and biodiversity value of the scheme.
- 4.2 Monitoring of the soft landscape elements would be undertaken on an annual basis by a suitably qualified landscape professional to ensure that the new planting throughout the areas of the scheme have established successfully, and that the tree, shrub, hedgerow, bulb and wildflower grassland plantings are in a good state. The results of the annual monitoring would be used to inform any necessary changes to the management which would be incorporated into subsequent versions of the LMP.

P1 – PROPOSED NATIVE AND ORNAMENTAL TREE PLANTING – MANAGEMENT

Water

- 4.3 In order to ensure successful establishment, the newly planted trees must be watered for a minimum of three years following planting. Watering should occur weekly throughout the early to late summer period; May / June / July / August / September with 20 litres applied at each watering visit. Thereafter, water as deemed necessary only where natural precipitation levels are insufficient in order to maintain healthy dense growth.

Tree Works

- 4.4 The trees are to be inspected every year during the spring for dead, dying, or damaged branches; including any diseased wood or wounds. Any dead, dying, or damaged branches should be removed from the tree trunk by a Qualified Tree Surgeon, removing all dead wood back to the tree trunk; the works shall be conducted in accordance with *BS3998: 2010 Tree Work – Recommendations*.

Tree Ties

- 4.5 All rubber tree ties should be checked bi-annually; Spring / Autumn. Tree ties should accommodate the tree girth and should not draw the tree stake into the trunk of the tree, potentially causing abrasion. Tree ties should be fitted so that the tree trunk and tree stake are located comfortably side by side and aligned. Replace and refit rubber tree ties / tree stakes and tree guards if necessary.

Pruning

- 4.6 Trees should be checked bi-annually for shape, form and should be formatively pruned accordingly during the Spring and Autumn, whilst they are still in leaf. Pruning tools should be clean and sterile to prevent potential spread of disease between specimens; and carried out in such a manner as to avoid excessive damage / wounding which would be detrimental to the health and vigour of the tree.

Weeding

- 4.7 A 500 - 700mm diameter weed / grass-free zone should be achieved by either hand-weeding or application of a non-residual herbicide. This should be undertaken bi-annually; Spring / Autumn. The use of a suitable mulch may additionally assist.

Mulching

- 4.8 Tree planting may be located within mulched planting beds. Beds should be topped up with a bark mulch to assist with the suppression of weeds to these planting areas. A mulch top-up should be undertaken and checked annually in the autumn. Mulch levels should be maintained at a consistent depth of 75mm.

Tree Stake Removal

- 4.9 The tree stakes should be removed following successful establishment, whereby the roots have extended within the surrounding soils and the tree is self-supporting. This usually takes eighteen months to three years but may take longer for larger Stock Size trees.
- 4.10 Failure to remove the tree stakes may lead to stem abrasion and potential failure. Once the roots are well established, it is important to allow the tree to move freely in the wind. This encourages a natural strengthening of the tree trunk so it can support the weight of the branches as they begin to grow and spread out.

1 – 3 year check

- 4.11 Tree planting shall be checked at least twice a year by a landscape contractor during years 1 – 3. The visit would be aimed at ensuring successful establishment and to monitor the developing structure of the vegetation.

Defects

- 4.12 Replace all failures: irrecoverably damaged, diseased / dead trees within the next planting season with stock of similar size and species.

Litter Collection

- 4.13 Planting areas should be checked on a fortnightly basis for litter and leaf collection. All planting areas should be maintained clear of litter.

- 4.14 P1 – Proposed Tree Planting Management Prescriptions:

- Watering: Water Tree Planting weekly throughout May / June / July / August / September; and as deemed necessary after the establishment period, only where natural precipitation levels are insufficient; provide 20 ltr / tree / visit;
- Tree Stakes and Tree Ties: Check position and fitting of tree stakes and rubber tree ties; check bi-annually in Spring / Autumn and after strong winds; remedy and replace where necessary;
- Pruning: Prune dead and damaged branches bi-annually; Spring and Autumn whilst the trees are still in leaf;
- Weeding: Maintain a weed / grass free zone at the base of the tree; weeding should be undertaken bi-annually; Spring / Autumn;
- Mulching: Trees should be maintained with a mulch zone 500 – 700mm diameter to the base of the trees. Mulch layer to be checked annually; maintained at a consistent depth of 75mm;
- Tre Stake Removal: Stakes should be removed following successful establishment, whereby the roots have extended within the surrounding soils and the tree is self-supporting.
- 1 -3-year check: Tree planting shall be checked at least twice a year by a landscape contractor during years 1 – 3. The visit would be aimed at ensuring successful establishment and to monitor the developing structure of the vegetation.
- Defects: Replace failed / dead / and irrecoverably damaged trees.

P2 – PROPOSED NATIVE MIXED-SPECIES HEDGEROW PLANTING – MANAGEMENT

Mulching

- 4.15 Hedgerow plant material beds should be topped up with an ornamental bark mulch to assist with the suppression of weeds to these hedgerow planting areas. A mulch top-up should be undertaken and checked annually in the Autumn. Mulch levels should be maintained at a consistent depth of 75mm.

Watering

- 4.16 To ensure establishment, the plants should be watered fortnightly throughout the summer season in the first two years of establishment during May / June / July / August / September. Quantity of water to be 10 litres per metre square during each visit. Thereafter, water as necessary where natural precipitation levels are insufficient in order to maintain healthy dense growth.

Trimming / Pruning

- 4.17 Hedge planting should be lightly trimmed to maintain shape and form. Light trimming shall encourage vigorous and dense growth. Formative trimming during the first three years of establishment should be undertaken annually during the late Winter (early February to mid-March). Long-term maintenance pruning should be carried at the same time of the year to avoid bird nesting season and enable successful flowering and fruit formation to encourage local wildlife.
- 4.18 Maintain hedgerows to site boundary at 1.8m height.

Weeding

- 4.19 Hedge planting areas should be kept clear of all weeds at the base of the plant material. The hedge planting should be kept weed free by hand weeding twice a year in the Spring and Autumn.

Long-Term Management

- 4.20 Where the hedgerow is a newly established feature the management objective for the hedgerow planting should be to achieve the a dense hedgerow of approximately 1.8 metres height.

1 – 3 year check

- 4.21 Hedgerow planting shall be checked at least twice a year by a landscape contractor during years 1 – 3. The visit would be aimed at ensuring successful establishment and to monitor the developing structure of the vegetation.

Defects

- 4.22 Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.

Litter Collection

- 4.23 Planting areas should be checked on a fortnightly basis for litter and leaf collection. All planting areas should be maintained clear of litter.

- 4.24 P2 - Proposed Hedgerow Planting Management Prescriptions:

- Mulching: Maintain mulching to hedge planting areas at a consistent depth of 75mm. Mulch layer to be checked annually; Autumn;
- Watering: Water fortnightly during May / June / July / August / September for the first two years of establishment; and as deemed necessary after the establishment period, only where natural precipitation levels are insufficient; provide 10 ltr/ m2/ visit;
- Pruning: Carry out formative pruning annually; February to mid-March; Height of boundary hedgerows to be 1.8m.
- Weeding: Maintain hedge planting areas as weed free; check and weed bi-annually, Spring / Autumn;
- 1 -3-year check: Hedgerow planting shall be checked at least twice a year by a landscape contractor during years 1 – 3. The visit would be aimed at ensuring successful establishment and to monitor the developing structure of the vegetation;
- Defects; Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis;
Long-term Management: Maintain hedgerow at 1.8m height; check annually;
Prune February to mid-March.

P3 – PROPOSED ORNAMENTAL HEDGEROW – MANAGEMENT

Mulching

- 4.25 Hedgerow plant material beds should be topped up with an ornamental bark mulch to assist with the suppression of weeds to these hedgerow planting areas. A mulch top–up should be undertaken and checked annually in the Autumn. Mulch levels should be maintained at a consistent depth of 75mm.

Watering

- 4.26 To ensure establishment, the plants should be watered fortnightly throughout the summer season in the first two years of establishment during May / June / July / August / September. Quantity of water to be 10 litres per metre square during each visit. Thereafter, water as necessary where natural precipitation levels are insufficient in order to maintain healthy dense growth.

Trimming / Pruning

- 4.27 Hedge planting should be lightly trimmed to maintain shape and form. Light trimming shall encourage vigorous and dense growth. Formative trimming during the first three years of establishment should be undertaken annually. Long-term maintenance pruning should be carried out to avoid bird nesting season and enable successful flowering and fruit formation to encourage local wildlife.
- 4.28 Pruning and trimming should be undertaken according to individual species requirements. Refer to guidance provided by the Royal Horticultural Society (RHS) to ensure horticultural best practice is adhered to.

Weeding

- 4.29 Hedge planting areas should be kept clear of all weeds at the base of the plant material. The hedge planting should be kept weed free by hand weeding twice a year in the Spring and Autumn.

Long-Term Management

- 4.30 Where the hedgerow is a newly established feature the management objective for the hedgerow planting should be to achieve a dense hedgerow of approximately 0.6 metres height.

1 – 3 year check

- 4.31 Hedgerow planting shall be checked at least twice a year by a landscape contractor during years 1 – 3. The visit would be aimed at ensuring successful establishment and to monitor the developing structure of the vegetation.

Defects

- 4.32 Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.

Litter Collection

- 4.33 Planting areas should be checked on a fortnightly basis for litter and leaf collection. All planting areas should be maintained clear of litter.

- 4.34 P3 - Proposed Hedgerow Planting Management Prescriptions:

- Mulching: Maintain mulching to hedge planting areas at a consistent depth of 75mm. Mulch layer to be checked annually; Autumn;
- Watering: Water fortnightly during May / June / July / August / September for the first two years of establishment; and as deemed necessary after the establishment period, only where natural precipitation levels are insufficient; provide 10 ltr/ m2/ visit;
- Trimming / Pruning: Hedge to be lightly trimmed to keep shape and encourage dense growth. Formative trimming during the first three years of establishment should be undertaken annually. Long-term maintenance pruning should be carried out to avoid bird nesting season and enable successful flowering and fruit formation. Pruning and trimming should be undertaken according to individual species requirements by following guidance provided by the Royal Horticultural Society (RHS).
- 1 -3-year check: Hedgerow planting shall be checked at least twice a year by a landscape contractor during years 1 – 3. The visit would be aimed at ensuring successful establishment and to monitor the developing structure of the vegetation;
- Defects; Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis;
Long-term Management: Maintain hedgerow at 0.6m height; check annually;
Carry out long term maintenance pruning in accordance with RHS guidance

P4 – PROPOSED ORNAMENTAL PLANTING – MANAGEMENT

Watering

- 4.35 To ensure establishment, the planting material should be watered fortnightly throughout the summer season in the first two years of establishment during May / June / July / August / September; 10 litres per metre square should be applied fortnightly throughout the summer season at each maintenance visit. Thereafter, water as required necessary, only where natural precipitation levels are insufficient to maintain healthy dense growth.

Pruning

- 4.36 Pruning should be undertaken according to individual species requirements. Refer to guidance provided by the Royal Horticultural Society (RHS) to ensure horticultural best practice is adhered to.

Weeding

- 4.37 Planting areas should be maintained weed free throughout the maintenance period. It is recommended that planting areas should be cleared of all weed growth by hand weeding. Maintain planting areas weed free from Spring to Autumn; March / April / May / June / July / August / September / October.

1 – 3 year check

- 4.38 Planting shall be checked at least twice a year by a landscape contractor during years 1 – 3. The visit would be aimed at ensuring successful establishment and to monitor the developing structure of the vegetation.

Defects

- 4.39 Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.

Litter Collection

- 4.40 Ornamental planting areas should be checked on a fortnightly basis for litter and leaf collection. All planting areas should be maintained clear of litter.

4.41 P4 – Ornamental Planting Management Prescriptions

- Watering: Water all plant material fortnightly during the summer season for the first year of establishment and as deemed necessary after the establishment period where natural precipitation levels are insufficient; provide 10 ltr/ m2/ visit;
- Pruning should be undertaken in accordance with guidance provided by the Royal Horticultural Society (RHS) to ensure horticultural best practice is adhered to.
- Weeding: Maintain planting areas weed free; Spring to Autumn. Hand-weed throughout the Spring / Summer; March / April / May / June / July / August / September / October; repeat where necessary;
- Mulching: Mulch Top Up; Maintain mulch to all planting areas; check annually; Autumn;
- Defects: Replace all dead / dying plant material. Replacement planting should be undertaken on an annual basis.
- Litter collection: All planting areas should be maintained clear of litter and checked on a fortnightly basis.

P5 – PROPOSED NATIVE WILDFLOWER GRASSLAND – MANAGEMENT

- 4.42 Through reference to guidance provided on the *Emorsgate Seeds* website, information on management of wildflower grassland is provided below.

EM8 – Meadow Mixture for Wetlands

First Year Management

- 4.43 Most sown meadow wild flower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed growth is easily controlled by topping or mowing.
- 4.44 Mow newly sown meadows 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.
- 4.45 Carefully dig out or spot treat any residual perennial weeds such as docks.

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Management Once Established

- 4.46 In the second and subsequent years EM8 sowings can be managed in a number of ways which, in association with soil fertility, will determine the character of the grassland. The best results are usually obtained by traditional meadow management based around a main summer hay cut in combination with autumn and possibly spring mowing or grazing.
- 4.47 Meadow grassland should not be cut or grazed from spring through to late July/August to give the sown species an opportunity to flower. After flowering in July or August carry out a 'hay cut' : cut back with a scythe, petrol trimmer or tractor mower to c 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site.
- 4.48 Mow or graze the re-growth through to late autumn/winter to c 50mm and again in spring if needed.

EH1 – Hedgerow Mixture

First Year Management

- 4.49 Most sown meadow wild flower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. Topping or mowing is required to control annual weed growth.
- 4.50 Mow newly sown meadows 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.
- 4.51 Carefully dig out or spot treat any residual perennial weeds such as docks.

Management Once Established

- 4.52 Zoned management of hedgerow margins frequently produces the best diversity of habitat structure: areas closest to the hedge and those which are more shaded shall be left uncut in most years. Areas that are further from the margin and more open shall be managed as grassland habitat. For example in a 6 metre sown margin the 2-3

metres against the boundary could be left uncut, the next 3-4 metres cut once or twice a year.

4.53 Hedgerow vegetation in corner grassland areas shall not be mown or grazed each year to become rough and "tussocky" in character. It can form useful refuge habitat on corners and margins of a site. To control scrub and bramble development these tussocky areas may need cutting every 2-3 years between October and February. For wildlife this cutting is best done on a rotational basis so that no more than half the area is cut in any one year leaving part as a undisturbed refuge.

4.54 P5 – Wildflower Meadow Management Prescriptions:

- EH1 Hedgerow Mixture/EM8 Meadow Mixture for Wetlands; Management Year 1; Control annual weed growth by topping or mowing;
- EH1 Hedgerow Mixture/EM8 Meadow Mixture for Wetlands; Management Year 1; Newly sown meadows shall be mown regularly throughout the first year of establishment to a height of 40-60mm;
- EH1 Hedgerow Mixture/EM8 Meadow Mixture for Wetlands; Management Year 1; Carefully dig out or spot treat any residual perennial weeds;
- EM8 Meadow Mixture for Wetlands; Management once established; Carry out a main summer hay cut in combination with autumn and possibly spring mowing or grazing;
- EM8 Meadow Mixture for Wetlands; Management once established; Do not cut or graze from spring through to late July/ August. After flowering season, carry out a hay cut to c 50mm. Leave hay to dry and shed seed for 1-7 days before removal;
- EM8 Meadow Mixture for Wetlands; Management once established; Mow or graze the re-growth through to late autumn/winter to c 50mm and again in spring if needed.
- EH1 Meadow Mixture; Management Year 1; Areas more shaded closest to hedge should be left uncut in most years whereas areas further from the margin and more open shall be managed as grassland habitat;
- EH1 Meadow Mixture; Management Year 1; Hedgerow vegetation in corner grassland areas shall be mown only every 2-3 years between October and February to create a "tussocky" grassland. This is to be done on a rotational basis so that no more than half the area is cut in any one year.

P6 – AMENITY GRASSLAND – MANAGEMENT

First Lawn Cut of Newly Laid Turf

- 4.55 Newly laid turf grass can be pulled up slightly at the edge of one roll, to test if rooting has occurred; this may be within 10 to 14 days of laying in warmer temperatures. Mowing shall take place once the roots of the turf grass have begun to grow into the topsoil it was laid onto.

Grass Cutting Specification – General

- 4.56 The landscape contractor shall cut the grass at their discretion if the grass does not grow due to drought or grows faster than normal due to wet and warm conditions. It would be the contractor's responsibility to determine the time to start and finish cutting depending on each season.

P7 – EXISTING MATURE TREES – MANAGEMENT

- 4.57 There should be an annual inspection and monitoring of the health of existing trees in order to identify any dead or dying branches within the existing canopy or any areas of significant die-back. Changes in vegetation structure and condition should be monitored and recorded, and appropriate action taken by a suitably qualified landscape / arboricultural contractor if required.
- 4.58 For areas of trees where no active management has been specified, changes should still be monitored to ensure 'benign neglect' does not become 'decline through neglect'.

5.0 MONITORING

5.1 Monitoring shall be undertaken on an annual basis to ensure that new planting and new habitats are in a state of good condition and have successfully established.

5.2 The results of monitoring would be used to adjust and adapt the management and aftercare as required and would be incorporated fully into subsequent versions of the LMP. Monitoring would comprise the following:

- Tree, hedgerow, shrub, and wildflower planting to be checked at least twice a year by a landscape contractor during years 1 - 3 aimed at ensuring successful establishment. These checks would be undertaken at the same time as weed control measures and replacement of failures;
- Monitoring of existing tree and hedgerow species is to be undertaken once a year to check the condition of the existing mature trees to the development site boundaries, in order to identify any dead or dying branches within the existing canopy or any areas of significant die-back.

APPENDIX A – MANAGEMENT SCHEDULE

Provisional Management Tasks Implementation

Operation	Frequency	Implementation Stage												Year 2	Year 3	Year 4	Year 5
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
P1 - PROPOSED NATIVE AND ORNAMENTAL TREE PLANTING – Implementation																	
Tree planting – including: preparation / staking / protective shelters / initial watering / mulching	Once during implementation of soft landscape scheme	✕	✕									✕	✕				
P2 – PROPOSED NATIVE MIXED-SPECIES HEDGEROW PLANTING - Implementation																	
Hedge planting – including: preparation / initial watering / mulching	Once during implementation of soft landscape scheme	✕	✕								✕	✕	✕				
P3 – PROPOSED ORNAMENTAL HEDGEROW - Implementation																	
Hedge planting – including: preparation / initial watering / mulching	Once during implementation of soft landscape scheme. Planting undertaken during any time of the year but preferably between October and April	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕				
P4 – PROPOSED ORNAMENTAL PLANTING - Implementation																	
Ornamental planting – including: preparation / watering etc	Once during implementation of soft landscape scheme	✕	✕	✕	✕						✕	✕	✕				

P5 – PROPOSED NATIVE WILDFLOWER GRASSLAND - Implementation																	
Preparation of the Seed Bed	Once before Sowing (either autumn or spring)				X (preferred timing)						X						
Sow wildflower mix	Once (either autumn or spring)				X						X						
P6 – AMENITY GRASSLAND – Implementation																	
Turfing Preparation of the Turf Bed	Once (mid-autumn to late winter)	X									X	X	X				
Turfing Laying the turf	Once (mid-autumn to late winter)	X									X	X	X				

APPENDIX B - MANAGEMENT FOR AFTERCARE PERIOD 1 - 5 YEAR PERIOD

Operation	Frequency	Year 1												Year 2	Year 3	Year 4	Year 5
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
P1 - PROPOSED NATIVE AND ORNAMENTAL TREE PLANTING – Management																	
Watering	1 x every week					✕	✕	✕	✕	✕				✕	✕	As demanded	As demanded
Weeding	2 x year				✕						✕			✕	✕	✕	✕
Mulching	1 x year										✕			✕	✕	✕	✕
Checking Tree Ties / Stakes	2 x year				✕						✕			✕	✕	✕	✕
Pruning native trees: dead or damaged branches	2 x year				✕						✕			✕	✕	✕	✕
Removal of Tree Stakes	Once (between 18 months and 3 years after planting (may take longer for larger stock size trees)).				✕										✕		
Monitoring visit / check	2 x year				✕						✕			✕	✕		
Litter Collection	1 x every 2 weeks	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕

P2 – PROPOSED NATIVE MIXED-SPECIES HEDGEROW PLANTING - Management																	
Watering	1 x every 2 weeks					✕	✕	✕	✕	✕				✕	As demanded	As demanded	As demanded
Weeding	2 x year				✕						✕			✕	✕	✕	✕
Mulching	1 x year										✕			✕	✕	✕	✕
Pruning	1 x year		✕											✕	✕	Maintain 1.8m height to boundary hedgerows.	
Monitoring visit / check	2 x year				✕						✕			✕	✕		
Litter Collection	1 x every 2 weeks	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕
P3 – PROPOSED ORNAMENTAL HEDGEROW PLANTING - Management																	
Watering	1 x every 2 weeks					✕	✕	✕	✕	✕				✕	As demanded	As demanded	As demanded
Weeding	2 x year			✕							✕			✕	✕	✕	✕
Mulching	1 x year		✕									✕		✕	✕	✕	✕
Pruning	1 x year		✕											✕	✕	Maintain to 0.6m height.	
Monitoring visit / check	2 x year				✕						✕			✕	✕		
Litter Collection	1 x every 2 weeks	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕

P4 – PROPOSED ORNAMENTAL PLANTING – Management																	
Watering	1 x every 2 weeks					✕	✕	✕	✕	✕				✕	As demanded	As demanded	As demanded
Weeding	2 x year			✕	✕	✕	✕	✕	✕	✕	✕			✕	✕	✕	✕
Trimming / Pruning (in accordance with RHS Guidance)	2 x year		✕									✕		✕	✕	✕	✕
Selective Thinning			✕														✕
Monitoring visit / check	2 x year				✕						✕			✕	✕		
Litter Collection	1 x every 2 weeks	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕
P5 – PROPOSED NATIVE WILDFLOWER GRASSLAND – Management																	
'Em8 – Meadow Mixture for Wetlands' Year 1	Cut regularly in Year 1					✕	✕	✕	✕	✕	✕			✕	✕	✕	✕
'Em8 – Meadow Mixture for Wetlands' Once Established	Cut 1 x a Year								✕								
'EH1 – Hedgerow Mixture' Year 1	Cut regularly in Year 1					✕	✕	✕	✕	✕	✕			✕	✕	✕	✕
'EH1 – Hedgerow Mixture' Once Established	Follow zoned management cutting tussocky areas every 2 – 3 years between October and February.	✕										✕					
Litter Collection	1 x every 2 weeks	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕
P7 - EXISTING MATURE TREES – Management																	
Monitoring of existing trees	1 x year				✕									✕	✕	✕	✕



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