Landscape Management Plan

Thurnscoe Bridge Lane, Barnsley
(4532-501)

Client: Avant Homes

Prepared by

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Landscape Management Plan

1.0 Introduction

1.1 General

TPM Landscape were commissioned by Avant Homes Ltd to produce a Landscape Management Plan for the proposed residential development of Thurnscoe Bridge Lane, Barnsley. This landscape management report has been produced to ensure that future management objectives are achieved for the longevity of the project following practical completion. This document will form part of the Reserved Matters Application submission and any future discharge of condition applications for the proposed development and once approved will provide guidance for the establishment, maintenance and future management of all external landscaped areas and planting around the site.

1.2 Aims of the report

This report has been developed to establish long-term management objectives and practices for all the 'public' external areas associated with the proposed residential development. The report presumes that all the external elements have been built in accordance with the latest approved planning drawings:

- Landscape Layout – 4532 101

The management report provides 12-month schedules, which are to be applied to 5-year guidance and actions. It is considered that these actions will continue beyond the 5-year period to a minimum of 15-year period unless identified within the text of the report.

A clear understanding of the design aims and intentions will help to ensure that the landscape reaches maturity in the form in which it has been designed.

1.3 Site Maintenance and Responsibility

The company responsible for maintaining the landscape, including the streetscape (shrubs and tree planting), areas of public open space and SuDS, will be responsible for inspecting the site and for keeping a logged record of inspections, faults, and rectified works. The management company is yet to be confirmed. Any issues noticed by residents to be reported directly to the management contractor representative on site.

The client is required to appoint a Landscape Contractor, whether that is the original installation contractor or a separate, competent, and appropriately certified contractor. It is recommended that the landscape contractor is BALI registered.

Objectives

The overall objectives for the maintenance of the landscape include the following;

- Maintain all grassed areas as healthy and neat lawns;
- Allow shrubs and flowers to reach their species potential to ensure that they produce flowers and seed heads and grow in their natural shape and form to provide texture and interest;
- Ensure that proposed trees maintain a healthy and safe condition and are allowed to reach their potential form and characteristics;

- Ensure that features are looked after and maintained in a good state of repair and safe condition so that they do not fail or have the potential to cause harm to user;

- Keep all hard surfaced areas and paths in a good state of repair and free from any potentially dangerous arisings that could cause a slip or trip hazard or reduce visual quality;

- Ensure the site is free from litter and deleterious material to maintain a clean and tidy appearance; and

- Ensure that SuDS features are looked after and maintained in a good condition.

2.0 General Description

2.1 Existing Context

The proposal site lies in Thurnscoe Bridge Lane which is an urban extension to the town of Barnsley. The main Thurnscoe settlement lies to the north of the site, with a large commercial area beyond the railway corridor to the east and south east. Thurnscoe Railway Station is located approximately 700 meters north of Thurnscoe Bridge Lane, on the eastern site boundary. Aside from the proposal site itself, the wider area is predominantly urban in character

The site has trees and native hedgerows present along all the boundaries.

2.2 Site Proposals

The site proposals are for the erection of 296 dwellings with associated infrastructure including vehicular access, hard and soft landscaping, open space areas, play equipment for children and Sustainable Drainage System (SuDS).

The private landscape associated with each individual plot will be the responsibility of the private property owners. All other areas will be managed and maintained by the management company.

The proposed public open space will offer the opportunity for wildflower meadow, native shrubs, and large trees. The proposed vegetation will provide year-round colour, texture, and seasonal interest. The proposed landscape, as well as providing an aesthetically pleasing public space for the development, will benefit the local wildlife by providing food and habitat for insects and birds.

The proposed SuDS features will be planted with a wildflower meadow suitable for wetland areas and marginal plants. As well as providing for sustainable drainage, SuDS will become a strong landscape feature, which will add to the visual amenity and encourage biodiversity, with a variety of species attracting insects, birds, and animals.

3.0 Health and Safety

The following potential hazards have been identified within the proposed development site, which may have implications for maintenance operations:

- Working in areas used by residents and visitors; on foot, on bicycles, in wheelchairs and vehicles; ensuring surfaces are always kept clear and potentially dangerous tools or machinery are not left lying around.
- The use of chemicals known to be hazardous to humans and animals;
- Working at elevated positions;
- Working adjacent to and on highways;
- Lifting heavy objects and working with heavy machinery;
- The use of chainsaws, working at height and with heavy objects during tree works;
- The possibility that hazardous material may be deposited in or inadvertently left in areas requiring cleaning (glass, etc.); and
- Working adjacent to or within water in and around the SuDS.

Methods for reducing the potential site risks are well established and are common practice of competent contractors. The contractor is expected to identify the hazards associated with any maintenance operations they proposed, together with an assessment of the risks involved and methods for reducing the risks. The Risk Assessment should be recorded and retained for reference in the future if necessary.

3.1 Site Operations

All operations on site are to be carried out by suitably qualified operatives with appropriate safety clothing and equipment. The maintenance contractor is to adhere to the latest guidance on safe working practice, including information from the recognised industry body, the local authority and the government Health and Safety Executive. The maintenance contractor is to carry out all operations regarding the safety and welfare of the general public, private and public property, domestic and native flora and fauna and Statutory Services.

3.2 Disposal of materials from site

All, rubbish, leaves, grass and general arisings removed from the site are to be deposited at a licensed tip and recycling facility in the appropriate section.

4.0 Hard Elements

Maintenance operations are to be carried out to provide a clean, inviting, and safe environment for all users of the site. For the purposes of this report, it is assumed that all the works required by the planning approval have been carried out in accordance with the approved drawings.

All paving, kerbs, edges, and walls should be fit for purpose, robust and in good condition. Any damage arising from the management and maintenance works must be reinstated to the original condition and in accordance with the relevant specification of the client.

All hard works to be installed under the recommendations of the manufacturer's instructions. Hard works should not be carried out in undesirable weather conditions.

4.1 Pedestrian Surfaces and Roads

Maintenance objective

Pedestrian surfaces and roads are to be maintained in a safe and clean condition free from any defects or debris that could potentially cause injury, inaccessibility, or damage to vehicles. Surfaces are to be level and free from trip or slip hazards.

Inspections

A formal visual inspection is to be carried out by the maintenance contractor at 6 monthly intervals or following reports from the client / public that surfaces require repairing, cleaning, or clearing following inclement weather. A report of the inspections and rectified works should always be logged.

An annual inspection of the paving jointing and overall uniformity should be carried out to ensure the stability of the footways is maintained.

Contractors Maintenance Operations

Surfaces are to be kept free of litter, mud, arisings, deleterious material, algae, hazardous obstructions and fly tipping. Surfaces are to be uniform in appearance, a level surface and constructed from a homogenous material, free from ruts, grooves, cracks, hollows and potholes (holes greater than 75mm in diameter and 10mm depth).

Paved areas and rights of way including those with a hoggin surface are to be repaired within 1 week of a reported fault, unless the potential hazard is severe (trip hazard) in which case the area is to be cordoned off and repaired at the earliest available opportunity.

All surfaces and foundations are to be repaired to the original specification, unless otherwise agreed with the service provider.

One operation per month (within month / months specified) - **1**
Two operations per month (within month / months specified) - **2**
Four operation per month (within month / months specified) - **4**
As required - **a/r**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Litter and Fly tipping													
Visual inspection of site				1						1			Carry out 6 monthly inspections, report to be logged; any faults reported should be rectified as required.
General Cleaning and clearance across site	1	1	1	1	1	1	1	1	1	1	1	1	Keep surfaces free of litter, leaves, mud, arisings and any hazardous objects. Sweep and remove any arisings.
Bin Emptying	1	1	1	2	2	2	4	4	1	1	1	1	Increased emptying of bins around the play areas during school holidays.

One operation per month (within month / months specified) - **1**
Two operations per month (within month / months specified) - **2**
Four operation per month (within month / months specified) - **4**
As required - **a/r**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Pedestrian Surfaces and Roads													
Visual inspection of footways, roadways and paving areas				1						1			Carry out 6 monthly inspections, report to be logged; any faults reported should be rectified as required.
General cleaning of paving	1	1	1	1	1	1	1	1	1	1	1	1	Keep surfaces free of litter, leaves, mud, arisings and any hazardous objects. Sweep and remove any arisings, keep all areas weed free. Any build up of moss or algae should be treated as required to ensure surfaces are not slippy or dangerous.
Clean paved areas annually by relevant washing techniques for varying materials e.g. granite/concrete						1							(acid and bleach should not be used)
Apply sealant to paving	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	(as required after cleaning)
Apply herbicide						1				1			Apply to weeds if appear between paving, when weeds have been suppressed hand hoe out and refill mortar joints

Repair	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	Repair surfaces when reported or inline with faults as identified in the inspections report. Repair to original specification. Check grouting to paving and reinstate where necessary
Ensure water is drained from footways to prevent pooling				1						1			When specified or as necessary after prolonged periods of wet weather
Clear snow from pathways and roads	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	Clear snow following adverse weather (a/r) and apply suitable grit to key vehicle and pedestrian access routes (avoid plant areas).

4.2 Edges - Kerbs, Edging and Walls

Maintenance objective
All 'Edges' should be maintained in a safe and clean condition and fit for purpose. All cladding, copings kerbs and steps should be secure and firmly in place.

Inspections
A formal visual inspection is to be carried out at 6 monthly intervals or following reports from the client / resident that a fault or damage has occurred. A report of the inspections and rectified works should always be logged.

Maintenance Operations

All 'Edges' are to be kept free of litter, deleterious material and hazardous protuberances. Surfaces are to be maintained uniform in appearance and with seamless levels vertically and horizontally for copings and cladding. Grout mortar between kerbs, cladding and copings to be inspected and topped up where necessary with matching colour. Metal and timber edging to be neat and secured firmly in place and aligned straight or follow smooth uniform curves. Loose edging to be reinstated and secured. Any damaged edging to be removed and replaced with same specification.

Faults are to be repaired within 1 month of a reported fault, unless the potential hazard is severe, in which case the area surrounding the fault should be cordoned off, the fault should be repaired at the earliest available opportunity.

These works will be the sole responsibility of the contractor and at all times the edges should be maintained in sound condition.

One operation per month (within month / months specified) - **1**
Two operations per month (within month / months specified) - **2**
Four operation per month (within month / months specified) - **4**
As required - **a/r**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Edges – Kerbs, Edging & Walls													
Visual inspection of edges				1						1			Carry out 6 monthly inspections, report to be logged; any faults reported should be rectified as required.
Clean edges						1							Carry out annually and remove detritus / chewing gum using a stiff brush and soapy water.
Apply anti-graffiti coating to raised edges if misuse becomes apparent						1							Carry out once a year or as necessary
Apply non residual herbicide				1						1			Apply herbicide to spot treat weed problems. Hand removal after herbicide has taken effect

5.0 Soft Elements

For the purposes of this report, it is assumed that all planting has been carried out inline with the approved planning drawings and any failed plants or trees replaced by the original contractor at the end of the 12 months Rectification Period.

5.1 Proposed Individual Trees

Objectives

Trees will play an important role in providing structure to the landscape proposals and will provide an asset to the site, provide screening, and contribute to the visual amenity of the local area. Therefore, it is important that they are given the best chance of successful establishment.

Inspections

Inspect on an annual basis when the trees are in full leaf to ensure that the trees are thriving, and record defects requiring remedial works.

Maintenance Operations

Newly planted trees take some time to establish, and until this occurs, they are subject to competition from weeds. Any weeds should be removed by hand from the base of each tree and 75mm deep mulch maintained around the trunk. For woodland areas, weed growth may be removed by applying a herbicide spray to the base of saplings during autumn or early spring before trees are in leaf.

If the trees show signs of poor growth or reduced vigour an application of the appropriate fertiliser can be applied. If the trees do not respond to a treatment of fertiliser, further investigations should be carried out, including the ground conditions for signs of compaction, contamination, poor quality topsoil. Remediate any problems uncovered with the soil. Should the remediation works not resolve the problem a replacement tree may need to be planted to replace the dead/dying tree.

During establishment, trees will require regular watering particularly during prolonged dry periods. Mulch should also assist in retaining moisture within the soil. Water the trees minimum once a week during periods of limited rainfall over May-September (during the first full growing season) ensuring that the soil is fully saturated. Ensure all irrigation pipes are free from debris. Water shall be applied at 40litres per individual tree. Where water restrictions apply (hosepipe bans, drought orders) an alternative supply of water shall be used if possible.

Tree ties should be inspected twice annually as part of the general maintenance visits and adjusted accordingly. Damaged ties or stakes should be replaced. When the trees are established and can support themselves, the ties should be carefully removed, and the stakes cut down to ground level. This operation is likely to be required after 3 to 5 years dependant on establishment rates, stability and growing conditions. Underground tree guys, tree stakes and tree ties should be inspected twice annually as part of the general maintenance visits and adjusted accordingly. Damaged guys/ties should be replaced. Guys/ties will require adjusting as it is likely to take 3 to 5 years for the trees to establish dependant on stability and growing conditions.

Pruning of young trees should not generally be required unless they have dead or diseases branches. In such cases the tree branch should be pruned back (using a sharp clean knife) to an outward facing bud whilst maintaining the natural shape of the tree.

Once established, mature trees will be left unmanaged unless otherwise dictated for reasons of public safety. If some limb removal or complete removal is required then the cut limbs will be stacked as dead woodpiles, adjacent to hedgerows or woodland edges.

These works will be the sole responsibility of the contractor and at all times trees should be maintained in good health and in a safe condition.

One operation per month (within month / months specified) – **1**.
Four operation per month (within month / months specified) - **4**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Individual Trees													
Visual inspection of trees					1								Inspect trees for signs of disease, damage or as required following adverse weather. replant if necessary
Slow-release fertiliser					1								Only when necessary
Weeding/ mulch				1	1	1	1	1	1				Remove weeds and top up mulch (mulch topped up once annually) to retain a weed free around the base of each tree
Tree stakes and ties				1					1				Check and adjust, replace or remove as required until the tree has established. Check and re-adjust after strong winds. Remove in year 3-5 or as required.
Tree guying				1					1				Repair and adjustment. Check and re-adjust after strong winds
Watering					4	4	4	4	4				Water once a week during the growing season and as necessary in periods of drought only during the first 2 years until the trees have established.
Routine pruning		1							1				Should not be required for the first few years, after which pruning should only include the removal of dead or diseased branches.
Remove and dispose of accumulations of winter leaves											1	1	To be carried out to reduce risk of slipping and to maintain a tidy environment
Tree Replacements	1	1									1	1	Any trees that have failed should be replaced to the original specification and planted within the next planting season.

5.2 Proposed Native Hedgerow

Objectives

The proposed native hedge will define the edges of the site and create shelter belts. The hedgerow should be maintained to support strong early establishment and ongoing development to form a thriving hedgerow, which will provide important habitats for birds and mammals.

Inspections / Monitoring

Inspect the hedgerows twice annually when they are in full leaf to ensure that they are thriving and record gaps which need filling with additional plants or trimming to encourage growth to fill gaps. Record if there are any areas of significant failure to thrive which may require remedial works to the soil. Ensure the shelter guards are intact, installed correctly and are not restricting growth.

Short Term Management Operations (5 years)

Newly planted whips and bare rootstock take some time to establish, and until this occurs, they are subject to competition from weeds. To reduce competition, an area around the plants should be maintained with an area of bark mulch around the base and kept weed free. Herbicides should be avoided if possible unless grass and weeds are affecting the establishment of the plants. After 3-5 years or after the plants have established this should not be necessary. If they show signs of poor growth or reduced vigour an application of the appropriate fertiliser should be carried out.

Any failed shrubs should be replaced to the original specification; however, this should be carried out outside of the bird-nesting season.

During establishment, the evergreen hedgerow may require regular watering particularly during prolonged dry periods during the summer months. Watering should take place a minimum of once every two-week during periods of limited rainfall over May-September (during the first full growing season) ensuring that the soil is fully saturated.

Shelter guards, canes and ties should be inspected and adjusted accordingly to ensure they are not restricting growth. Damaged guards, canes or ties should be replaced. When the plants are established and can support themselves the guards, canes and ties should be removed to avoid constricting growth. This operation is likely to be required after 3 to 5 years dependent on establishment rates, stability and growing conditions. The guards should be checked after strong winds and reaffixed where necessary.

Trimming the top of the hedgerows should be avoided until the desired height of 1m has been reached. The sides of the hedgerow can be trimmed to encourage dense growth. Trim on an annual basis during the spring to promote bushy growth during years 1-4.

Long Term Management Operations (5+ years)

More regular / routine pruning of the hedgerow on establishment should only be carried out on the hedgerow to retain the desired height or if branches are obstructing publicly accessible areas/ lighting and they pose a potential safety risk. These operations should include the following operations:

Remove dead, diseased, damaged or dying branches where they pose a risk to the safety of the users of the site. (Dead wood is an important habitat for wildlife within a healthy woodland ecosystem and should not be removed unnecessarily).

After the hedges have established lightly, trim annually back to the desired height.

These works will be the sole responsibility of the contractor, the hedgerows should not be allowed to exceed the height as specified above to ensure visibility and safety across the site is not compromised.

One operation per month - 1
As required - a/r

First 5 years

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Native Hedgerow													
Visual inspection of hedgerow				1					1				Inspect hedgerow for signs of disease, damage or as required following adverse weather, replant if necessary
Inspect hedges after strong winds (as required)	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	Repair and adjustment. Check and re-adjust after strong winds and firm ground at base
Slow release fertiliser					1								Only when necessary
Weeding/ mulch				1	1	1	1	1	1				Remove weeds and top up mulch (mulch topped up once annually) to retain a weed free around the base of each tree. Report any non-native invasive species and carry out process for removal in accordance with national legislation.
Shelter guards, canes and ties				1					1				Check and adjust, replace or remove as required until the plants have established. Check and re-adjust after strong winds. Remove in year 3-5 or as required.

Watering					2	2	2	2	2				Water once every two weeks during the growing season and as necessary in periods of drought only during the first growing season until the vegetation has established
Routine pruning/ trimming		1							1				Pruning/trimming should only be carried out to maintain desired height or where in close proximity to public access, or where they pose a potential safety risk
Replacements	1	1									1	1	Any plants that have failed should be replaced to the original specification and planted within the next planting season
Remove and dispose of accumulations of winter leaves											1	1	To be carried out to reduce risk of slipping and to maintain a tidy environment
Weed control and tidying at base of hedgerow					1		1						Remove and dispose of weeds

5 + years

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Native Hedgerow													
Visual				1					1				Inspect shrubs for signs of disease, damage or as required following adverse weather, replant if necessary

Weeding/ tidying at base of hedgerow				1					1				Remove weeds (mulch should not be required). Report any non-native invasive species and carry out process for removal in accordance with national legislation
Routine pruning/trimming		1							1				Pruning/trimming should only be carried out to maintain desired height and where in close proximity to public access, or where they pose a potential safety risk
Deadwood		1							1				Large woody material (girth of over 10cm) should be collected to create log piles within the woodland areas. Other deadwood to be retained unless cause identified as being due to disease or if the deadwood poses a risk to public safety
Remove and dispose of accumulations of winter leaves											1	1	To be carried out to reduce risk of slipping and to maintain a tidy environment. To be applied to areas affecting public footpaths or roadways.

5.3 Proposed Native Shrub Mix

Inspections / Monitoring

Inspect the shrubs annually when they are in fully leaf to ensure that they are thriving and record defects requiring remedial works. Ensure the shelter guards are intact, installed correctly and are not restricting growth.

Management Operations

Newly planted bare rootstock takes some time to establish, and until this occurs, they are subject to competition from weeds. To reduce competition, an area around the plants should be maintained with an area of bark mulch around the base and kept weed free. Herbicides should be avoided if possible unless grass and weeds are affecting the establishment of the plants. After 3-5 years or after the plants have established this should not be necessary. If they show signs of poor growth or reduced vigour an application of the appropriate fertiliser should be carried out.

Any failed shrubs should be replaced to the original specification; however, this should be carried outside of the bird nesting season.

During establishment, shrubs may require regular watering particularly during prolonged dry periods during the summer months. These areas should be watered if there has been a period of dry weather between May to September.

Shelter guards should be inspected and adjusted accordingly to ensure they are not restricting growth. Damaged guards should be replaced. When the plants are established and can support themselves the guards should be removed to avoid constricting growth. This operation is likely to be required after 3 to 5 years dependent on establishment rates, stability, and growing conditions. The guards should be checked after strong winds and reaffixed where necessary.

One operation per month - 1
As required - a/r

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Native Shrub Mix													
Visual inspection of shrub mix				1					1				Inspect shrubs for signs of disease, damage or as required following adverse weather, replant if necessary
Slow release fertiliser					1								Only when necessary

Weeding/ mulch				1	1	1	1	1	1				Remove weeds and top up mulch (mulch topped up once annually) to retain a weed free around the base of each tree. Report any non-native invasive species and carry out process for removal in accordance with national legislation
Shrub guards				1					1				Check and adjust, replace or remove as required until the plants have established. Check and re-adjust after strong winds. Remove in year 3-5 or as required
Watering					2	2	2	2	2				Water once every two weeks during the growing season and as necessary in periods of drought only during the first growing season until the vegetation has established
Routine pruning		1							1				Pruning should only be carried out where shrubs are in close proximity to public access, or where they pose a potential safety risk.
Replacements	1	1									1	1	Any plants that have failed should be replaced to the original specification and planted within the next planting season

5.4 Proposed General Purpose Wildflower Meadow

Objectives

To create and maintain a biodiverse and balanced wildflower meadow that is free from invasive weeds for the benefit of wildlife and visual amenity. The proposed mix is Emorsgate – EM2 Standard General Purpose Meadow Mix

Management Operations

The condition of the meadow areas would be reviewed within 6 months of its original seeding and any areas that have failed to establish should be re-seeded. In order to encourage the growth of yellow rattle and development of the meadow, the area should not be cut until after yellow rattle has finished flowering in late July. All arisings would be removed within a 48-hour period.

First Year

Most sown meadow wildflower 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.

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 wildflowers.

Avoid cutting in the spring and early summer if the mixture has been sown with a nurse cover of cornfield annuals, or is autumn sown and contains Yellow Rattle. These sown annuals should be allowed to flower, then in mid-summer cut back and the cut vegetation removed. It is important to cut back cornfield annuals before they die back, set seed or collapse: this cut will reveal the developing meadow mixture and give it the space it needs to develop.

Carefully dig out or spot treat any residual perennial weeds such as docks.

Once Established

Following the initial year of its creation, the condition of grassland would be reviewed for the first 2 years for any areas of pernicious weeds (i.e. docks Rumex spp., thistles Cirsium spp. Or ragwort Senecio spp.), which would be controlled by the application of target herbicides.

In the second year and subsequent years, management to maintain the floristic diversity of the meadow grassland would entail an annual ‘hay cut’ using a scythe, petrol strimmer or tractor mower to a height of c.50mm, in August or September.

Following each mechanical cut of the meadow during its establishment or longer-term management, arisings would be raked off within a 7-day period, and deposited in a designated composting area or removed from the site.

One operation per month (within month / months specified) – **1**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Wildflower Meadow													
Inspection of meadow				1									Carry out an inspection of the establishment of the sward to identify any damaged areas, excessive weed growth, poor cover etc. which may require remediation works over the coming year.
Cut year 1			1					1	1				Mow newly sown meadows regularly throughout the first year of establishment to a height of 40-60mm, removing cuttings if dense.
Cut once established			1						1				Once established. Annual cut 'hay cut' with a scythe, petrol strimmer or tractor mower to a height of *c.*50mm between August and September once yellow rattle has flowered, followed by an autumn or spring cut if required to a height of *c.*50mm. Cuttings to be deposited in a designated composting area or removed from the site following 1-7 day period.
Inspect for weed growth and hand weed where necessary				1		1		1					Hand hoe out any weeds and remove
Remove fallen leaves, debris and litter	1	1									1	1	Remove prior to cutting (do not blow or sweep into adjacent planting beds)

5.5 Proposed Wildflower Meadow for Wetland

Objectives

Wildflower mix suitable for wetland (EP1 Pond Edge Mixture for Wetlands by Emorsgate or similar approved) areas has been proposed within the attenuation areas and nearby. This area will provide a valuable habitat for aquatic insects, foraging birds and small mammals. A mix will include 20% native wild flowers and 80% slow growing grasses. The attenuation area should be well maintained at all times, ensuring any standing water is visible for safety and in a clean condition.

Inspections

The wildflower mix will require a specific maintenance regime in its first year to ensure that the swathe establishes without competition, please refer to year 1 maintenance operations for further details. Meadow Areas in general can be inspected as part of the regular maintenance operations.

Management

Remove litter before cutting. On an annual basis, ensure that all dead growth is removed before the start of the growing season and any sediment are removed from inlets/ outlets if required. The attenuation area may need to be re-seeded in areas of poor growth.

Operations should be restricted to when the attenuation area is not holding any water. Care should be taken when working on embankments.

First Year

Most sown meadow wildflower 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. These weeds can look unsightly, but they will offer shelter to the sown seedlings, are great for bugs, and they will die before the year is out. So resist cutting the annual weeds until mid to late summer, especially if the mixture contains Yellow Rattle, or has been sown with a nurse of cornfield annuals. Then cut, remove and compost. Early August is a good time. This will reveal the young meadow, which can then be kept short by grazing or mowing through to the end of March of the following year. It is important to cut back cornfield annuals before they die back, set seed or collapse: this cut will reveal the developing meadow mixture and give it the space it needs to develop.

Mow newly sown meadows from early August 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 wildflowers.

Carefully dig out or spot treat any residual perennial weeds such as docks.

Establishment on site may be patchy and may take several years to fully colonise as the area is prone to flooding.

Immediate management would require the removal of aquatic vegetation to ensure at least 70% of the water is maintained as open water, free from marginal and aquatic vegetation.

Autumn Sown (First Year)

March - Cut to 40-70mm if there is sufficient material (sward above 100mm).
May - Cut to 40-70mm.

August/September - Cut to 40mm after flowering. in all cases remove clippings.

Maintenance thereafter

April - Cut to 40-70mm.
August/September - Cut to 40mm after flowering. in all cases remove clippings.

Spring Sown (First Year)

6 weeks after sowing - Cut to 40-70mm if there is sufficient material (sward above 100mm).
May - Cut to 40-70mm if there is sufficient material (sward above 100mm).
August/September - Cut to 40mm after flowering. in all cases remove clippings.

Maintenance thereafter

April - Cut to 40-70mm.
August/September - Cut to 40mm after flowering. In all cases remove clippings.

Once Established

Following this, management will focus on maximising the nature conservation interest of the attenuation areas and require that the vegetation is cut back with removal short, wedge-like sections of vegetation every 2-3 years in rotation. Any dense stands of single species (e.g. yellow iris) will require selective thinning.

Aquatic and marginal vegetation should be checked annually and where necessary cleared to maintain 70% open water. Only 1/3 or less of marginal areas should be cleared annually on a rotational basis during autumn; arisings should be left next to the attenuation area for at least 7 days before taking to a designated composting area.

Any bankside vegetation will be strimmed annually to 150mm in 1/3 sections on rotation to maintain cover and shelter for fauna. Areas of pernicious weeds should be removed by hand only, and no fertiliser is to be applied to the banks in order to minimise the risk of algae blooms and risk of deoxygenating the water. Where the meadow areas are close to the paths maintain a minimum 1m wide regularly mown strip between the path and the meadow, incorporating this area into the amenity grass areas. Should it be too steep for the mower, then alternative grass-cutting methods need to be employed on the attenuation area.

These operations are the sole responsibility of the contractor and should be restricted to when the area is not holding any water. All inspections and maintenance tasks should comply with the all relevant Health and Safety information and include the development of risk assessments when working close to water or on an embankment.

One operation per month (within month / months specified) - **1**
Two operations per month (within month / months specified) - **2**
Four operation per month (within month / months specified) - **4**
As required - **a/r**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Wildflower Meadow – Suitable for Wetland													
Inspection of Meadow				1									Carry out an inspection of the establishment of the sward to identify any damaged areas, excessive weed growth, poor cover etc. which may require remediation works over the coming year.
In the first year, annual weed growth cut back				1		1		1					Annual weed growth shall be cut back to encourage the development of a good perennial ground cover. Hand hoe out any weeds and remove.
Cut back vegetation			1						1				Vegetation is cut back and removal of short wedge-like sections of vegetation on rotation every 2-3 years in rotation with long armed exactor.
Thinning of dense stands from year 2									1				Any dense stands of single species (e.g. yellow iris) will require selective thinning from the year 2.
Remove fallen leaves, debris and litter	1	1									1	1	Remove prior to cutting (do not blow or sweep into adjacent planting beds)

5.6 Proposed Ornamental Hedges

Objectives
The hedges will help to define spaces, create division between spaces and will offer definition and boundary treatments to individual properties, gardens, roadways, and streets.

Inspections
Inspect the hedges annually when they are in fully leaf to ensure that they are thriving and record any gaps that need filling with additional plants or that require pruning to encourage growth. Record if there are any areas of significant failure to thrive which may require remedial works to the soil. Ensure the shelter guards are intact, installed correctly and are not restricting growth.

Maintenance Operations
For ornamental hedges within housing areas do not trim the top of the hedges until they have achieved the desired height of 120cm. Until the desired height has been achieved trim the sides of hedges to promote dense growth. Trim on an annual basis during the spring to promote bushy growth during year 1-4.

After the hedges have established lightly trim annually back to the desired height. To prevent weed growth maintain a 75mm depth of bark mulch at the base of the hedge until the hedge has established, fertiliser application should be avoided unless there are specific localised areas of poor growth.

During establishment, hedges will require regular watering particularly during prolonged dry periods. Water the hedge a minimum of once a week during periods of limited rainfall during May - September (the first full growing season) ensuring that the soil is fully saturated. Water from rain water harvesting systems should be used (when available) using a flexible hose and attachment.

Hedges should not be allowed to exceed the height specified above to ensure visibility and safety across the site is not compromised.

These works will be the sole responsibility of the management company.

One operation per month - 1
Four operations every month – 4
As required – a/r

Operation	**MONTHS**												**Notes**
	J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	
Proposed Ornamental Hedges													
Visual Inspection of hedges				1					1				Inspect hedges for signs of disease, damage or as required following adverse weather. Replant if necessary.

Inspect hedges after strong winds (as required)					4	4	4	4	4				Water once a week during the growing season and as necessary in periods of drought only during the first 2 years until the hedge has established.
Replace dead and dying hedge plants to original specification during the next planting season	1	1									1	1	Any hedge plants that have failed should be replaced to the original specification and planted within the next planting season.
Remove and dispose of accumulations of winter leaves.											1	1	To be carried out to reduce risk of slipping and to maintain a tidy environment.
Weed control and tidying at base of hedge					1		1						Remove and dispose of weeds.
Hedge trim				1					1				Should not be required for the first few years, after which pruning should only include the removal of dead or diseased branches.
Fertiliser	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	Apply an appropriate fertiliser as required to aid establishment if the hedge is showing signs of stress (i.e. defoliation, die back)

5.7 Proposed Ornamental Shrub Beds

Objectives

The shrub beds should have total vegetation cover with no gaps as they establish in order to minimise maintenance requirements, and to provide a neat and tidy appearance to the proposed landscape setting. The pruning operations should be carried out under guidance of a horticulturally qualified manager, with a view to allowing the shrubs and herbaceous plants to achieve their species potential in terms of form, flower and structure.

Inspections

Inspect the shrub beds annually and record gaps that need filling with additional plants, areas thinned, or pruning operations to encourage growth to fill gaps. Where there has been a significant failure of plants to thrive, carry out investigations to locate the source of the problem and consult the landscape architect prior to replacement planting.

Maintenance Operations

Newly planted areas take some time to establish. Until this occurs, young plants are subject to competition in their root zone from weeds. During this time, weeds should be removed by hand and the bark mulch should be maintained to the original specified depth (75mm) until the canopies meet. After which weed growth should be more suppressed and only localised weeding should be required.

During establishment, all the plants will require regular watering particularly during prolonged dry periods. Water the shrub beds min once a week during periods of limited rainfall over April-September (during the first full growing season) ensuring that the soil is fully saturated. Watering should be undertaken by low-pressure hose sprinkler or evenly sprayed over the whole area at a rate of 25litres/m2. Ensuring watering is not undertaken during the heat of the day to avoid scorching of the plants.

Routine annual pruning of shrubs should not be required within the first three years, although some of the herbaceous plants and flowering shrubs should be maintained in accordance with the list below to encourage new growth and longer flowering periods.

In years one to three, newly planted shrubs will be lightly trimmed to encourage dense growth. After three years, the shrubs will be maintained on a two-year cycle, cutting only half of the stock within the site annually to ensure that there is a continuous supply of fruit during the winter months for birds and small mammal species.

Shrubs that grow over paths or obscure sight lines should be pruned. Should individual species grow excessively during the first five years, pruning should consist of the removal of individual branches to maintain the natural shape of the plant or selective thinning.

Herbaceous Plants General; these are the plants which generally have soft stems and will die back in the winter months. Any dead stems and leaves should be tidied up in the spring when the threat of frost has gone. Old and dead vegetation can be cut with secateurs back to the base or gently pulled by hand, to encourage the new growth to push through, arisings should be disposed of in the green waste. Allow seed heads to remain on the plants for winter interest and insect habitats. Some herbaceous plants can be spilt and replanted if they start to become open or scruffy.

Some of the more prolific early summer flowering plants will benefit from a light prune after flowering to encourage a second flowering in early autumn, prune the plants back to young new leaf growth removing all of the old flower heads.

Specimen shrubs in planting beds; allow the shrubs to establish as individual specimens, in the case of the multi stemmed woody shrubs, clear leaves from the base to allow herbaceous vegetation and shrubs to establish underneath.

One operation per month (within month / months specified) - **1**
Two operations per month (within month / months specified) - **2**
Four operation per month (within month / months specified) - **4**
As required - **a/r**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Ornamental Shrub Beds													
Visual inspection of shrubs and perennials				1					1				Inspect Plants for signs of disease, damage or as required following adverse weather. replant if necessary
Hand weed				1	2	2	2	2	1				Hand weed beds upto once a fortnight during the summer months, remove weeds and tidy up the bark mulch surface. If necessary treat prolific weeds with a non-residual glyphosate based herbicide ensure that after the weeds have died, they are removed to prevent the bed from looking unsightly.
Watering					4	4	4	4	4				Water once a week during the growing season and as necessary in periods of drought only during the first two years until the shrubs have established.
Mulch				1									Top up mulch in the spring once the bed has been weeded, this should not be required after year 3-5 when the planting has established.
Plant replacement	1	1									1	1	Replace dead and dying plants to original specification during the next planting season
Remove dead foliage and old flower stems	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	Remove and dispose of foliage and stems. If diseased remove as necessary as soon as possible.

Apply slow release fertiliser				1									Only if plants have shown signs of poor health in the previous season. Apply a slow-release fertiliser or well-rotted manure in the spring.
General pruning				1									Should not be required in the first 1-3 years, however, remove any branches that are obstructing paths, growing into the grassed areas or taking over other plants in the bed.
Selective thinning				1									In year 5 when the plants have established, thin out plants if overcrowded in the bed.
Plant specific maintenance				1									For maintenance of Cornus and Viburnum carry out specific maintenance operations as fully described in item 5.5
Clear snow	a/r	a/r	a/r	a/r						a/r	a/r	a/r	Remove snow from foliage after excessive fall if weight of accumulation may cause damage

5.8 Proposed Amenity Grassland in Public Open Space

Objectives
A mixture designed to create a species rich lawn that can be kept trimmed or left longer to flower. The mix to be WFG20 Eco Species Rich Lawn.

Grass areas should be well maintained at all times as overgrown and patchy grass can be unsightly.

Inspections
Grassed areas can be inspected as part of the regular maintenance operations, although they should be formally inspected annually to assess requirements in terms of topdressing, over seeding etc.

Maintenance Operations
Remove any litter or leaves before cutting. Arising's should be removed from site.

To provide the formal appearance desired, following the initial year of its creation, the amenity grassland would be cut regularly to 70-100mm through the growing season which may require fortnightly cuts during some months. All arisings would be removed within a 48-hour period.

A fertiliser application to be applied only as required, either as a spring feed for shoot growth or as an autumn feed for root growth using the appropriate feed application.

In addition, these applications should compensate for any areas of poor growth or excessive wear. An application of selective herbicide should be made during early summer to prevent any weed species from having a detrimental affect to the appearance of the sward and to prevent any infestation becoming severe.

In periods of dry weather conditions, it may be required to water the lawn at a rate of 15litres/m2. Ensuring watering is not undertaken during the heat of the day to avoid scorching of the grass.

Other maintenance applications, which will be required from time to time, include the following: topdressing, overseeding, scarifying, spiking etc to alleviate common problems such as thatch, compaction, poor drainage, malnourishment etc. These items should be addressed in the annual check.

These works will be the sole responsibility of the contractor.

One operation per month (within month / months specified) - **1**
Two operations per month (within month / months specified) - **2**
Four operation per month (within month / months specified) - **4**
As required - **a/r**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Amenity Grassland													
Inspection				1									Carry out an inspection of the establishment of the grass sward to identify any damaged areas, excessive weed growth, poor grass cover etc which may require remediation works over the coming year.
Grass cut in northwest parcel					1			1					Grass in the northwest parcel to be left to grow long and strimmed just twice in a season in May and late August.
Cut - First Year					1	2	2	2	2	1			Mow grassland when it reaches 100mm and regularly within the first year. Cut to 70-100mm to encourage tillering of new plants, repeat as desired. Regular topping back will encourage vegetative growth of the perennial species but will stop the sward from flowering. Once mowing or strimming ceases the plants will grow to the point of flowering. Cutting to be removed from the site following 48-hour period.
Cut- Once Established						1	1	2	2	1			Once established, cut as required to 70-100mm.
Cut edges				1	2	2	2	2	2	1			Edges to paths and shrub beds to be cut with a neat edge avoiding damage to the shrubs and tree trunks and the arisings removed from the beds or swept off the paths and disposed of in a licensed tip.

Reform edges				1				1					Twice a year the soft grass edges should be redefined with a half moon spade to form neat straight edges and any grass encroaching onto footpaths taken back
Apply fertiliser application in year 1 -2				1						1			Once in the spring and once in the summer as required
Topdressing, over seeding, scarifying, spiking	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	As required if identified in the annual inspection
Remove fallen leaves, debris and litter	1	1	1	1	1	1	1	1	1	1	1	1	Remove prior to cutting (do not blow or sweep into adjacent planting beds)

5.9 Proposed Scrub/ Marginal Planting

Objectives

Marginal vegetation has been proposed to the edge of wildlife ponds and attenuation areas and should be maintained for establishment and ongoing longevity of the planting. This area will provide a valuable habitat for aquatic insects, foraging birds and small mammals.

Inspections / Monitoring

Inspect the scrub and marginal planting twice annually when they are in full leaf to ensure that they are thriving and record defects requiring remedial works. Assess the vegetation in terms of density, weed growth and coverage to determine maintenance requirements. Where there has been a significant failure of plants to thrive, carry out investigations to locate the source of the problem and consult the landscape architect prior to replacement planting.

Management Operations

Newly planted areas take some time to establish. Until this occurs, young plants are subject to competition in their root zone from weeds. During this time, weeds should be removed by hand and the bark mulch should be maintained to the original specified depth (75mm) until established. After which weed growth should be more suppressed and only localised weeding should be required.

During establishment, all the plants will require regular watering particularly during prolonged dry periods. Water the shrub beds a minimum of once a week during periods of limited rainfall over May-September (during two full growing seasons) ensuring that the soil is fully saturated.

Watering is required in the first two years after planting, which will be the responsibility of the developer before handover to the management company.

Routine pruning of the scrub and marginal planting should only be carried out on the plants which are close to publicly accessible areas or are causing an obstruction and pose a potential safety risk.

These operations are the sole responsibility of the contractor and should be restricted to when the area is not holding any water. All inspections and maintenance tasks should comply with the all relevant Health and Safety information and include the development of risk assessments when working close to water or on an embankment.

One operation per month (within month / months specified) - **1**
As required - **a/r**

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Scrub/ Marginal Planting													
Monitoring of newly established scrub planting	1	1	1	1	1	1	1	1	1	1	1	1	New scrub planting should be monitored monthly for the first 2 years to check for signs of poor growth.
Watering of newly established scrub planting			2	2	4	4	4	4	2	2			Water new scrub planting regularly during the first 2 years of establishment, particularly during prolonged dry periods.

Visual Inspection of scrub/marginal planting				1					1				After year 2. Inspect planting for signs of disease, damage or as required following adverse weather, replant if necessary
Weeding				1					1				Remove weeds. Report any non-native invasive species and carry out process for removal in accordance with National legislation.
Routine pruning				1					1				Pruning should only be carried out where planting is in close proximity to public access, or where they pose a potential safety risk.
Mulch				1									Top up mulch in the spring once the bed has been weeded, this should not be required after year 3-5 when the planting has established.
Plant replacement	1	1									1	1	Replace dead and dying plants to original specification during the next planting season

6.0 SuDS

This document outlines the maintenance schedule to be carried out upon completion of construction to ensure the continued working operation of the SuDS. Drainage system to be maintained in line with drainage engineer's guidance.

For guidance on vegetation management within the attenuation area please see section **5.4 Proposed Wildflower Meadow – Wetland Seed Mix and 5.9 Proposed Scrub/ Marginal Planting.**

Objectives

The proposed SuDS features (detention basin, wetland area and swales) are designed to assist managing water run-off on site and will have varying levels of water throughout the year, and may be dry, or boggy during the summer months. Nevertheless, they should be maintained as an attractive feature with a clean and tidy appearance.

SuDS with water or partial water represent a potential hazard to residents, children, and pets, and should be monitored regularly to check they are performing as originally intended, not being subject to vandalism or tipping, and do not represent a hazard through lack of maintenance. The SuDS should be well always maintained, ensuring it is clear of any litter or debris to ensure free drainage.

Inspections

The SuDS will be inspected as part of the regular maintenance operations, (particularly during the period of vegetation establishment and after significant storm events). They should be inspected monthly as part of routine inspections to assess requirements in terms of litter/debris removal, grass cutting, clearing of inlet/outlets and repair of eroded or damaged areas. An annual inspection should be carried out by a Specialist Engineer to check the control structures are functioning correctly. A record of each inspection should be logged.

Maintenance Operations

The SuDS should be managed to ensure that they are functioning as the original design intended. The following operations should be carried out to ensure this:

- Litter / debris removal
- Meadow grass cutting
- Inlet and outlet clearing/ check covers are secure.
- Repair of eroded/ damaged areas

A safe and acceptable system of clearance should be developed to deal with the blockages or build-up of any litter, debris, weeds, or sediment that is beginning to establish. This system should be developed and/or refined over time to ensure the flow is not impeded during normal operating conditions.

Invasive Typha will not be permitted to encroach over the SuDS. Plant removal to be conducted in winter (i.e., October to February inclusive). Removed plants to be left alongside the basin for two days to allow aquatic invertebrates to re-enter basin.

Removal of Litter and Other Debris:

The SuDS is to be cleared of debris and kept free of litter, deleterious material and hazardous protuberances. All debris/litter to be disposed of appropriately.

Meadow Grass Cutting:

A cutting regime is to be implemented in line with section 5.4 Allow the arising to settle (for insects to disperse) before removing the arising off site in a licensed tip (green waste).

Inlet and Outlet Maintenance:
Take appropriate safety measures to remove deleterious or dangerous material and ensure the inlets and outlets are free-flowing and their covers are secure. Record types and number of debris removed, frequency of cleaning and problems experienced.

Drainage inlets and outlets are to be cleaned regularly and checked for signs of erosion or damage. Inlets and/ or outlets in need of repair are to be cordoned off and repaired by the manufacturer within 1 month, unless the potential hazard is severe, in which case the area surrounding the fault should be cordoned off and the fault repaired at the earliest available opportunity.

The build-up of sediment should be monitored annually and removed on a 5-year rotational period unless the potential build-up is severe, in which case the area surrounding the build-up should be cordoned off and the build-up removed at the earliest available opportunity.

Repair of Eroded or Damaged Areas:
All eroded or damaged areas are to be repaired within 1 month of a reported fault, unless the potential hazard is severe, in which case the area surrounding the fault should be cordoned off and the boundary made secure, the fault should be repaired at the earliest available opportunity.

One operation per month (within month / months specified) – **1.**
As required – **a/r**

Operation	**MONTHS**												**Notes**
	J	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	
SuDS													
Routine inspection of to check that they are functioning as originally designed	1	1	1	1	1	1	1	1	1	1	1	1	Carry out monthly routine inspections of SuDS report to be logged; any faults reported should be rectified as required. Check for: • Litter / debris removal • Grass cutting • Inlet and outlet clearing/ check covers are secure • Repair of eroded/ damaged areas
Inspection for litter and debris removal	1	1	1	1	1	1	1	1	1	1	1	1	Monthly inspection or following a significant storm event. Remove and dispose of appropriately.
Clear inlets and outlets	a/ r	a/ r	a/ r	a/ r	a/ r	a/ r	a/ r	a/ r	a/ r	a/ r	a/ r	a/ r	Remove and dispose of arising's appropriately.

Cut meadow grass	Refer to Section 5.4												
Removal of excess sediment	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	Remove and dispose of appropriately.
Annual inspection by Specialist Engineer						1							Control structures of SuDS to be inspected annually by a specialist to ensure they are functioning as the original design intended
Repair of eroded or damaged areas	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	Area to be repaired within one month or cordoned off and the boundary made secure, the fault should be repaired at the earliest available opportunity.
Removal of Typha										1			Plant removal to be conducted in winter (i.e. October to February inclusive). Removed plants to be left alongside the SuDS for two days to allow aquatic invertebrates to re-enter SuDS.

7.0 Handover Procedures

The maintenance period will run concurrently with the rectification period so it may be prevalent to have the same contractor for both the construction side of the operations and the Maintenance Contractor, to help avoid disputes. After the rectification period, the management and maintenance objections need to remain in place for the following operational years of the development site.

To ensure a smooth handover between management contractor companies a clearly documented record of works will be required.