

Knowsley East Hub (4141-501)

Client: Redsun Projects

Prepared by



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Landscape Management Report

1.0 Introduction

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1.0 Introduction

1.1 General

TPM Landscape were commissioned by Redsuns Projects to produce a Landscape Management Plan for the proposed industrial development off South Boundary Road, Knowsley. 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 of the 'public' external areas associated with the proposed residential development. The report presumes that all of the external elements have been built in accordance with the approved planning drawings:

- 4141 201 Planting Plan

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 a 30-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 attenuation basin, 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;

- 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;
- Maintain wildflower meadow to support establishment and allow a diverse mix of flowers and grasses to thrive;

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

2.0 General Description

2.1 Existing Context

The proposal site lies at the gateway of Knowsley Business Park, at the junction of South Boundary Road and Gale Road which bind the south and west of the site respectively. The site currently comprises an area of unused grassland with a small area of existing parking located off South Boundary Road.

The surrounding area consists predominantly of industrial developments within Knowsley Business Park with Spinney woods located to the northwest of the development.

2.2 Site Proposals

The site proposal is for a 50,000 sq ft industrial hub with associated landscaping and parking. The site frontage along South Boundary Road consists of a small parking area which will be retained and enhanced by the introduction of various evergreen shrubs and native planting.

Opportunity for wildflower meadow, shrubs, and trees will be created along the site boundaries. Ornamental and native shrubs will be planted to help soften edges and native trees will be planted for structure, all of which will be managed and maintained by the management company. The proposed soft landscaping will provide year-round colour, texture, and seasonal interest. It will also benefit the local wildlife by providing food and habitat for insects and birds.

3.0 Health and Safety

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

- Contractors working on the site should make themselves aware of the location of underground services, defining the exact locations with the Statutory Authorities prior to commencing works below the surface;
- Working in areas used by residents and visitors; on foot, on bicycles, in wheelchairs and vehicles; ensuring surfaces are kept clear at all times 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; and
- The possibility that hazardous material may be deposited in or inadvertently left in areas requiring cleaning (glass, etc.).

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 with regard to 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 and edges 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 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**

Operations happen annually - ●

Operations apply - ✓

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
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**

Operations happen annually - ●

Operations apply - ✓

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
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 slippery 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	✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	(as required after cleaning)
Apply herbicide						1				1			✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	Apply to weeds if appear between paving, when weeds have been suppressed hand hoe out and refill mortar joints

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Pedestrian Surfaces and Roads																	
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	✓ (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			✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	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	✓ (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 Metal / Timber Structures - Gates, Fences

Maintenance objective

Gates and fences are to be maintained in a secure, safe and clean condition and in good working order.

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

Gates and fences are to be kept free of litter, deleterious material and hazardous protuberances. Surfaces and finishes are to be maintained uniform in appearance and coated in a homogenous paint, stain, enamel, or plastic coating in accordance with the original specification.

All items 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.

Repaint/stain railings and gates as required if the paint starts to flake off and look unsightly to the same specification as the original ensuring that any rust is removed and the surface prepared and primed before the paint is applied.

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

One operation per month (within month / months specified) - 1

As required - a/r

Operations happen annually - ●

Operations apply - ✓

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Metal / Timber Structures – Gates, Fences																	
Visual inspection of boundaries				1						1			●	●	●	●	Carry out 6 monthly inspections, report to be logged; any faults reported should be rectified as required. Repair if required.
Clean metalwork						1							●	●	●	●	Carry out annually, removing dust and dirt being careful to not remove or damage surface finish.
Re-paint / Re-stain	a/r	a/r	a/r	a/r	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 following inspection
Strip back and repaint metalwork to match existing	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	a/r	✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	Every 5 years or as required following inspection

4.3 Edges – Kerbs & Edging

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. 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

As required - a/r

Operations happen annually - ●

Operations apply - ✓

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Edges – Kerbs & Edging																	
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							✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	Carry out 6 monthly inspections, report to be logged; any faults reported should be rectified as required.
Strip back and repaint metalwork to match existing				1						1			✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	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 in line 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 Existing Trees

Objectives

Trees will play an important role in providing structure to the landscape proposals and will provide a valuable 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.

Ensure that the trees are maintained in a safe condition and do not cause any obstructions on site or pose any health and safety risk (same applies to the off-site trees overhanging into the site).

Retain all existing trees and hedgerows as indicated in the approved plan to preserve their contribution to the visual amenity and enclosure of areas. Ensure that the trees continue to thrive and to provide visual amenity to the area.

All tree works undertaken should comply with British Standard 3998:2010 and should therefore be carried out by skilled tree surgeons. It would be recommended that quotations for such work be obtained from Arboricultural Association Approved Contractors as this is the recognised authority for certification of tree work contractors.

All vegetation and, particularly, woody vegetation proposed for clearance should be removed outside of the bird-breeding season (March - August inclusive) as all birds are protected under the Wildlife and Countryside Act, 1981 (as amended) whilst on the nest. Where this is not possible, vegetation should be checked for the presence of nesting birds prior to removal by an experienced ecologist. No ground works or storage of materials should take place within these areas.

Inspections

All retained trees should be subjected to sound arboricultural management as recommended within section 8.8.3 of BS5837 *Post Development Management of Existing Trees*, where there is a potential for public access in order to satisfy the landowner's duty of care. Additionally, inspections annually and following major storms should be carried out by an experienced arboriculturalist or arborist to identify any potential public safety risks and to agree remedial works as required.

Maintenance Operations

Any tree works should be carried out between September-February to avoid the bird nesting season. It is the contractor's responsibility to ascertain if any trees are covered by Tree Preservation Orders, and if so to gain the appropriate consent from the local authority.

If a TPO is present - Where a Tree Preservation Order (TPO) is in place, lopping, topping, felling, uprooting or wilful damage caused to a tree is prohibited and such actions may be prosecuted and incur an unlimited fine. Works to TPO protected trees must only be undertaken with the written consent of the local authority.

One operation per month – 1

Operations apply - ✓

Operations happen annually - ●

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Existing Trees																	
Visual inspection of trees									1				●	●	●	●	Annual. Inspect for signs of disease, damage or as required following adverse weather. Replant if necessary.
Remove dead, diseased or damaged limbs to promote a healthy shape to the trees.											1		●	●	●	●	Avoid bird nesting season. Wood under 250 mm diameter collected from thinning, pruning, brashing and vegetation clearance will, wherever possible, be chipped and used sustainably on site for mulching. Wood greater than 250 mm in diameter will be logged and used to create deadwood piles in suitable woodland locations.
Remove and dispose of accumulation of winter leaves.											1	1	●	●	●	●	Check leaves for mammals before disposal as mammals may be in hibernation.

5.2 Proposed Individual Trees

Objectives

Trees will play an important role in providing structure to the landscape proposals and will provide a valuable 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.

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 diseased 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.

Retain all coarse woody debris over 5cm in diameter and use in GCN compensation areas to create habitat piles/woodpiles.

All works are to be carried out by a suitably qualified arboriculturalist to the best arboricultural standards, considering all safety implications (working within areas accessible by the public) and working in accordance with BS 3998 2010 and in accordance with good practice for the protection of bats or nesting birds or bats which could potentially be using the site.

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

As required - a/r

Operations remain the same as the first year - ✓

Operations do not apply – X

Operations happen annually - ●

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
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								●	X	X	X	Only when necessary, after year 5 when trees are mature
Weeding/ mulch				1	1	1	1	1	1				●	● (Top up mulch should not be required.)	● (Top up mulch should not be required.)	● (Top up mulch should not be required.)	Remove weeds and top up mulch (mulch topped up once annually) to retain a weed free around the base of each tree. Top up mulch should not be required after year 3-5 when the planting has established.
Tree stakes and ties				1					1				✓ (a/r)	X	X	X	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				✓ (a/r)	X	X	X	Repair and adjustment. Check and re-adjust after strong winds
Watering					4	4	4	4	4				✓ (Once a week during the growing season)	X	X	X	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.

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Proposed Individual Trees																	
Routine pruning		1								1			✓ (a/r)	✓ (a/r)	X	X	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	✓ (a/r)	X	X	X	Any trees that have failed should be replaced to the original specification and planted within the next planting season.
Removal of dead wood and dangerous branches or structure	a / r	a / r	a / r	a / r	a / r	a / r	a / r	a / r	a / r	a / r	a / r	a / r	✓ (a/r)	✓ (a/r)	X	X	To be carried out to reduce risk of slipping and to maintain a tidy environment.
Routine pruning		1								1			●	●	X	X	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	✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	To be carried out to reduce risk of slipping and to maintain a tidy environment

5.3 Proposed Native Hedgerow Planting

Objectives

The native 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 weeks 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 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

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed Native Hedgerow													
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.
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

Adjust shelter guards, canes and ties to ensure growth is not restricted. Remove after 3-5 years													Remove once plants have established and can support themselves – after approx. 3-5 years
Replacements	1	1									1	1	Any plants that have failed or are damaged, dying or missing 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 - 30 years

Operation	MONTHS												Notes
	J	F	M	A	M	J	J	A	S	O	N	D	
Proposed 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.

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.
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5.4 Native Shrub Mix

Objectives

The native shrubs should be maintained to ensure strong early establish and ongoing development to form a buffer. They will also provide important habitats for birds and mammals.

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 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 outside of the bird nesting season (March – September).

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

Operations remain the same as the first year - ✓

Operations do not apply – X

Operations happen annually - ●

	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Proposed Native Shrub Mix																	
Visual inspection of native shrub mix				1					1				●	●	●	●	Inspect shrubs for signs of disease, damage or as required following adverse weather, replant if necessary
Weeding/ mulch				1	1	1	1	1	1				●	✓ Remove weeds. Top up mulch shouldn't be required much after year 5.	✓ Remove weeds. Top up mulch shouldn't be required much after year 5.	✓ Remove weeds. Top up mulch shouldn't be required much after year 5.	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				✓ (a/r)	When established, the guards should be removed to avoid constricting growth	When established, the guards should be removed to avoid constricting growth	When established, the guards should be removed to avoid constricting growth	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				●	X	X	X	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

	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Proposed Native Shrub Mix																	
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	✓ (a/r)	X	X	X	Any plants that have failed should be replaced to the original specification and planted within the next planting season

5.5 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.

Grasses: Seed heads on the grasses should be allowed to remain on the plants throughout the winter for visual interest. In the spring for deciduous grasses cut back old seed heads and any dead vegetation to encourage new growth.

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.

Cornus: the shrubs should be reduced in height to 300mm every three years in the spring to encourage strong stem colour and vigour

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**

Operations remain the same as the first year - **✓**

Operations do not apply - **X**

Operations happen annually - **●**

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
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

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Proposed Ornamental Shrub Beds																	
Hand weed				1	2	2	2	2	1				●	✓ After establishments which weed growth should be more suppressed and only localised weeding should be required.	✓ After establishments which weed growth should be more suppressed and only localised weeding should be required.	✓ After establishments which weed growth should be more suppressed and only localised weeding should be required.	Hand weed beds up to 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				●	X	X	X	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										✓ (a/r)	X	X	X	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	✓ (a/r)	X	X	X	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	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										✓ (a/r)	X	X	X	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.

Operation	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Proposed Ornamental Shrub Beds																	
General pruning				1									✓ (a/r)	✓ After three years, cutting only half of the stock annually to provide a continuous winter fruit supply for birds and small mammals. Pruning for shrubs over paths or obstructing sight lines is necessary	✓ After three years, cutting only half of the stock annually to provide a continuous winter fruit supply for birds and small mammals. Pruning for shrubs over paths or obstructing sight lines is necessary.	✓ After three years, cutting only half of the stock annually to provide a continuous winter fruit supply for birds and small mammals. Pruning for shrubs over paths or obstructing sight lines is necessary.	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									✓ (a/r)	X	X	X	In year 5 when the plants have established, thin out plants if overcrowded in the bed.

Plant specific maintenance				1										✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	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		✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	Remove snow from foliage after excessive fall if weight of accumulation may cause damage

5.6 Proposed Wildflower Meadow

Proposed to be sown with Emorsgate EM2 Standard General Purpose Meadow Mix or similar approved.

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 mix will include 20% flowers and 80% grasses.

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

In the first year, annual weed growth shall be cut back to encourage the development of a good perennial ground cover. Establishment on site may be patchy and may take several years to fully colonise as the area is prone to flooding.

Autumn Sown (First Year)

March/April - Cut to 70mm if there is sufficient material (sward above 100mm) no later than mid April

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

Maintenance thereafter

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

Spring Sown (First Year)

August/September - Cut to 70mm after flowering. In all cases remove clippings (Note: a late Spring sowing will result in late flowering).

Maintenance thereafter

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

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 should 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
As required - a/r

Operations remain the same as the first year - ✓

Operations do not apply – X

Operations happen annually - ●

<u>Operation</u>	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
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.

<u>Operation</u>	MONTHS												YEARS				Notes
	J	F	M	A	M	J	J	A	S	O	N	D	Year (1-5)	Year (5-10)	Year (10-15)	Year (15-30)	
Proposed Wildflower Meadow																	
Cut year 1			1					1	1				X	X	X	X	Mow newly sown meadows regularly throughout the first year of establishment to a height of 70mm removing cuttings if dense.

Cut once established			1						1				●	●	●	●	Once established. Annual cut 'hay cut' with a scythe, petrol trimmer or tractor mower to a height of 70mm between August and September once yellow rattle has flowered, followed by an autumn or spring cut if required to a height of 70mm. 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					✓ (a/r)	✓ (a/r)	✓ (a/r)	✓ (a/r)	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)

6.0 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 clear documented record of works will be required.