Ecological Design Strategy

124 Hartshead Lane, Liversedge

16th September 2024

Prepared by:

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1. Summary

1.1.1 This Ecological Design Strategy (EDS) for 124 Hartshead Lane development in Liversedge (Ordnance Survey Grid Reference: SE 18361 22511; Figure 1) was commissioned by the architect Steve Beatson of SDP-Architects on behalf of the client David Brown on 30th July 2024. The development comprises the construction of two new detached dwellings, gardens and associated infrastructure.

1.1.2 This document has been written to provide information intended to assist with the discharge of Planning Condition 7 of Appeal Decision APP/Z4718/W/23/3334872.

1.1.3 Precautionary working methods are prescribed in relation to nesting birds and the protection of two retained apple trees.

1.1.4 The habitats to be created are described in this document together with the aims and objectives of habitat management. The locations of habitats to be created are shown on the Landscape Masterplan, included in Appendix 1. The Landscape Masterplan includes guidance on the establishment of new habitats, with this EDS detailing appropriate long-term management.

1.1.5 New higher-value nature habitats included in the landscaping include species rich and single native species boundary hedgerows, together with new tree planting and the creation of meadow grassland at the southern end of each garden. A pond is to be created within new meadow at the southern end of Plot 1.

1.1.6 This EDS prescribes monitoring visits by a consultant ecologist in Years 1, 3, 7, 14 & 21 of the scheme.

1.1.7 Two new integrated bat boxes and two integrated swift boxes will also be installed across the two new dwellings, with the unit types and locations prescribed in this document.

1.1.8 The landowner David Brown will be ultimately responsible for the delivery of the measures identified in this document unless the responsibility is formally handed over to a management service.

2. Introduction

2.1.1 This Ecological Design Strategy for 124 Hartshead Lane development in Liversedge (Ordnance Survey Grid Reference: SE 18361 22511; Figure 1) was commissioned by the architect Steve Beatson of SDP-Architects on behalf of the client David Brown on 30th July 2024. The development comprises the construction of two new detached dwellings, gardens and associated infrastructure.

Figure 1. The site location, as indicated by red outline

2.1.2 This document has been written to provide information intended to assist with the discharge of Planning Condition 7 of Appeal Decision APP/Z4718/W/23/3334872. Planning Condition 7 states the following:

Development shall not commence until an Ecological Design Strategy (EDS) including details of the biodiversity units for habitats and hedgerows and roosting bat and nesting bird provision included in the submitted Ecological Impact Assessment dated 20 June 2023 (Report Reference MBE/ECO/2023/10/01) have been submitted to, and approved in writing by, the Local Planning Authority. The EDS shall include:

• Purpose and conservation objectives for the proposed works;
• Review of site potential and constraints;
• Detailed design(s) and/or working method(s) to achieve stated objectives;
•Extent and location/area of proposed works on appropriate scale maps and plans;
• Type and source of materials to be used where appropriate, e.g. native species of local provenance;
• Timetable for implementation demonstrating that works are aligned with the proposed phasing of development;
• Persons responsible for implementing the works;

• Details of initial aftercare and long-term maintenance;
• Details for monitoring and (where the results from monitoring show that conservation aims and objectives of the EDS are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers a measurable biodiversity net gain; and
• Details for disposal of any wastes arising from works.

The development shall be carried out in accordance with the approved EDS and the measures shall be retained thereafter.

2.1.3 This EDS is informed by ecological survey work undertaken in 2023 and reported in the associated Ecological Impact Assessment (MBE, 2023). Biodiversity calculations undertaken for the proposed scheme using Biodiversity Metric 4.0 showed that the proposed scheme can be expected to result in a net gain of 0.24 Habitat Units (a 23 % gain), with a 1.54 increase in Hedgerow Units (no existing hedgerows on site).

2.1.4 The site comprised a rectangular approximately 0.28 ha plot of land, located to the south of Hartshead Lane and immediately west of the 124 Hartshead Lane dwelling at the southern edge of the village of Hartshead, Liversedge.

3. Responsibilities

3.1.1 The landowner David Brown will be ultimately responsible for the delivery of the measures identified in this document unless the responsibility is formally handed over to a management service.

3.1.2 It is envisaged that the monitoring and identification of any remedial measures will be undertaken by an ecological consultant, to be employed by the client.

4. Precautionary Working Practices During Site Clearance

4.1 Birds

4.1.1 A range of bird species may nest within either the outbuilding, the dry-stone walls, or the encroaching bramble scrub. Were removal of these features to take place during the main bird nesting period (March to August inclusive), this could result in the destruction of active nests. If such removal works are required during the main bird nesting period, then they should be preceded by a nesting bird check.

4.2 Trees

4.2.1 Two semi-mature apple *Malus domestica* trees at the southern end of the garden of Plot 1 are to be retained. British Standard 5837 (2012): Trees in relation to design, demolition and construction, should be followed. These trees should be fenced off using Heras fencing prior to works commencing. This fencing should be positioned beyond the edge of the canopies of the two apple trees.

5. Newly Created Habitats and Their Management

5.1.1 During the ecological assessment process a range of new garden habitats were recommended by the ecologist and adopted by the landowner (MBE, 2023). These measures included the creation of four new higher-value wildlife habitats to be included either along site boundaries or at the southern end of the two gardens. These habitats comprised new native boundary hedgerows, meadow areas, a pond and new scattered tree planting. Each of these habitats, once established will appeal to a range of faunal species as well as being of intrinsic interest; taken together they are intended to help ensure the new development proves an attraction to a varied range of garden wildlife species. The location of the new higher value wildlife habitats has been selected to help aid connectivity for wildlife around the edges of the development.

5.1.2 The habitats to be created are described below, along with the aims and objectives of habitat management. The locations of habitats to be created are shown on the Landscape Masterplan, included in Appendix 1, which adhere to the proposed plan included in Appendix 7 of the Ecological Impact Assessment (MBE, 2021).

5.1.3 The Landscape Masterplan (Appendix 1) includes guidance on the establishment of new habitats, with this document detailing appropriate long-term management.

5.2 Hedgerow

Habitat creation

5.2.1 Approximately 109 m of new species rich native hedgerow is to be planted along the south and west boundaries in a double staggered row (Appendix 1).

5.2.2 This hedge will be planted using bare root plants, outside the growing season (October to March). The hedge plants will be sourced from UK grown stock. The Native Hedge Mix For Gardens from Habitat Aid (https://www.habitataid.co.uk/products/garden-hedge-mix), or similar, will be bought. The hedge mix selected will include a minimum of five native woody species, as specified on the Landscape Masterplan.

5.2.3 Hedgerow plants should be planted at 5-7 plants per metre in a staggered double row with different plant species grouped together in groups of three to five plants. Wood chip mulch to a depth of >3 cm around the new hedgerow whips is encouraged to suppress weeds during hedgerow establishment.

Plate 1. Native hedgerow coming into leaf in the third spring following planting as bare root whips

5.2.4 In addition to the species-rich hedge along the south and west boundaries, c.159 m of new beech *Fagus sylvatica* hedge will be planted between the two new properties and along the eastern edge of the development. This hedge will be planted using bare root plants, outside the growing season (October to March), with the plants to be sourced from UK grown stock and planted in a double-staggered row at a density of 5 plants per metre.

Habitat management aims and objectives

5.2.5 For the new hedgerows, the aims for management are to ensure:

- The hedgerow is at least 1.5 m wide.
- The hedgerow is at least 1.5 m tall.
- The hedgerow has dense bushy growth at its base.
- The hedgerow has no gaps along its length.
- The hedgerow has more than 1 m of undisturbed ground with perennial vegetation to the south.
- Species indicative of nutrient enrichment (i.e. nettles *Urtica dioica* and dock *Rumex* spp.) cover <20 % cover beneath hedge.
- The hedgerow supports no invasive non-native species.
- Ground beneath and within 1 m of hedge kept free of damage (i.e. excavation or fires).

Management prescriptions

5.2.6 The hedges should be trimmed once per year, in order to ensure their height is maintained and to encourage dense bushy growth. The hedges should be cut to allow a small expansion in width each year. After seven years it may be desirable to lay the species rich native hedgerows. Hedges should be trimmed outside of the main bird nesting season (March-August), preferably during January or February, to allow the berry crop to be foraged by wintering birds.

5.2.7 During Year 1 the hedges should be watered once per week during dry periods and mulch at the base of the hedge should be maintained in order to prevent weed establishment. At the end of Year 1 all dead or failing plants should be replaced.

5.3 Trees

5.3.1 A total of 26 new trees will be included within the new gardens (Appendix 1). The new trees will comprise a total of 10 trees of native species, 10 fruit trees and 6 non-native birch *Betula* trees.

Habitat management aims and objectives

5.3.2 The aim is for newly planted trees to achieve a moderate condition within a 30-year timeframe. In order to achieve a moderate condition, the trees should:

- Show little or no impact of vandalism or herbicide use;
- No evidence of regular pruning; and
- More than 20% of the tree canopy should oversail vegetation (rather than hard standing).

Management prescriptions

5.3.3 Planting prescriptions for new trees are detailed on the Landscape Masterplan (Appendix 1). These trees should be planted as bare root specimens outside the growing season (October to March), with trees to be sourced from UK grown stock. Sourcing from UK nurseries helps to prevent the spread of non-native tree diseases. Trees are to be staked and appropriately tied.

5.3.4 During Year 1 the trees should be watered once per week during dry periods and mulch at the base of the trees should be maintained in order to prevent weed establishment. At the end of Year 1 all dead or failing plants should be replaced.

5.3.5 After Year 1 the trees are not anticipated to require any regular maintenance within the subsequent 30 years, although annual pruning of fruit trees would promote an optimal fruiting regime, if harvesting is desired.

5.4 Meadow Grassland

5.4.1 No grassland is being retained on site away from the root protection areas of the two retained apple trees. Meadow grassland is to be established at the southern end of each garden, in the locations shown on Appendix 1.

Habitat management aims and objectives

5.4.2 The meadow grassland will be managed to bring it into moderate condition.

5.4.3 This will require:

- The development of grassland with a species composition targeted at the UK Habitat Classification grassland habitat type. In this case the aim is to create a grassland which imitates traditional lowland meadow.
- Management of grassland to ensure no more than 5% bare ground.
- Management of grassland to ensure an absence of non-native invasive species.
- Management of grassland to ensure a high number of species per meter square (more than 9).

Management prescriptions

5.4.4 Prescriptions for seeding of new meadow are detailed in the Landscape Masterplan (Appendix 1), with the seed supplier and mix specified (John Chamers Meadow Mix). It should be noted that meadow grassland is not to be sown on topsoil as per other plantings. Instead, subsoil taken from the site should be used to establish the tilth to be seeded, with sowing to be undertaken in autumn. The meadow areas should be watered once per week during dry weather in Year 1

5.4.5 During the first year the meadow should be cut once every 3-4 weeks to give wildlflowers the opportunity to concentrate on strong root growth. From Year 2 onward, the area of meadow grassland should be mown twice a year. The first cut to be completed in March - April, with the second cut undertaken in late July – August. If desirable, a regularly mown pathway could be created and maintained through the centre of each meadow area.

5.4.6 Undesirable weeds should be spot sprayed or hand pulled. As a minimum this should be completed during May in Years 1, 2, 3, and 5, with additional management undertaken as required. Once the meadow grassland has established, invasion by undesirable species (i.e. nettle *Urtica dioica* and broad leaved dock *Rumex obtusifolius*) will be less likely.

5.4.7 The arisings from all mowing will be collected and either disposed of with the council as green waste or composted in a set location. The arisings from the late July/August cut are to be left in situ for 5 to 7 days before being collected to allow seeds to fall. The reason for removing all arisings from the mown area is to prevent the buildup of fertility in these areas.

Plate 2. Example of meadow area established in a domestic lawn

5.5 Pond

Retained, enhanced, and newly created habitat

5.5.1 A new 5 m^2 pond, will be built in the garden of Plot 1 (Appendix 1). This pond will have an artificial liner (Ethylene Propylene Diene Monomer (known as EDPM)) and shelved edges with the centre to be at least 0.7 m deep. The pond will be largely unshaded. The pond will be fish free.

5.5.2 The pond will be planted with a range of native aquatic species to comprise three specimens each of marsh marigold *Caltha palustris* and water mint *Mentha aquatica*, to be bought in 9 cm pots and planted into pond baskets using aquatic compost. In addition, three bunches each of common water starwort *Callitriche stagnalis* and spiked water milfoil *Myriophyllum spicatum* will be placed in the pond as submerged oxygenators. In addition, a dwarf white water lily *Nymphaea alba candida* will be planted in a pond basket in the centre of the pond to provide floating leaves and flowers in the centre of the pond. A ladder (i.e. a plank or gently sloping section of stones) will be included at the edge of the pond to allow any hedgehog that falls in, to escape. The pond could be created at any time of year but would best built in winter and planted in spring.

Plate 3. A small pond with an artificial liner located in a lawn. This pond has been planted with native aquatic species, with the exception of the water lily

Habitat management aims and objectives

5.5.3 This pond is expected to achieve at least moderate condition.

5.5.4 To achieve moderate condition (as assumed in pre-planning determination documentation), it will require:

- Pond to have good water quality.
- Pond will not be artificially connected to other waterbodies, such as agricultural ditches or artificial pipework.
- Pond levels will be able to fluctuate naturally throughout the year.
- Pond to have an absence of listed non-native plant and animal species.
- Pond not to be artificially stocked with fish.
- Pond to be no more than 50 % shaded by adjacent trees and shrubs.

Management prescriptions

5.5.5 Aquatic vegetation should be cleared to cover no more than 30 % of water surface once every two years, with clearance to take place during winter.

5.5.6 The pond should be allowed time for a balanced ecosystem to establish and it should be accepted that algae may be an issue in the first couple of years until a settled invertebrate population establishes.

5.6 Other Habitats on Site

5.6.1 The other habitats to be created on site comprise lawn and ornamental planting. Although of some benefit to wildlife these habitats are being created mainly for amenity purposes. They should be created and managed as specified in the Landscape Masterplan.

6. Management, Maintenance and Monitoring Work Schedule

6.1.1 The years during which regular maintenance and management work is required on site are indicated by asterisks in Table 1 below.

6.1.2 Years when monitoring visits should be undertaken by a suitably qualified ecologist are highlighted in green. These monitoring visits will comprise a single daytime inspection of the site, to be undertaken during the summer months (May to August). Following monitoring the management prescriptions in this EDS should be reviewed and updated to achieve the stated aims. Additional monitoring and revision of the management prescriptions in this EDS should be made as required.

Table 1. Timing of works

Habitat	Regular management and maintenance	Year																														Notes
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	
Hedgerows	Establishment of new hedge	*																														Plant new hedge between November and March avoiding very cold or wet weather. Failed plants should be replaced in first winter. To be planted as instructed on Landscape Masterplan.
	Watered (during dry weather) and mulch maintenance	*																														New hedge to be watered every week during spring and summer. Additional watering should be applied in long periods of hot and/or dry weather. Mulch at the base of hedge to be maintained/added to, in order to prevent weed encroachment.
	Hedge trimming	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Hedges should be lightly trimmed every year outside bird nesting period (ideally during January/February). Allow to expand in width and height a little each year.
Trees	Establishment	*																														Plant between November and March avoiding very cold or wet weather. Failed plants should be replaced in first winter.
	Watered (during dry weather) and mulch maintenance	*																														Watered every week during spring and summer. Additional watering should be applied in long periods of hot and/or dry weather.

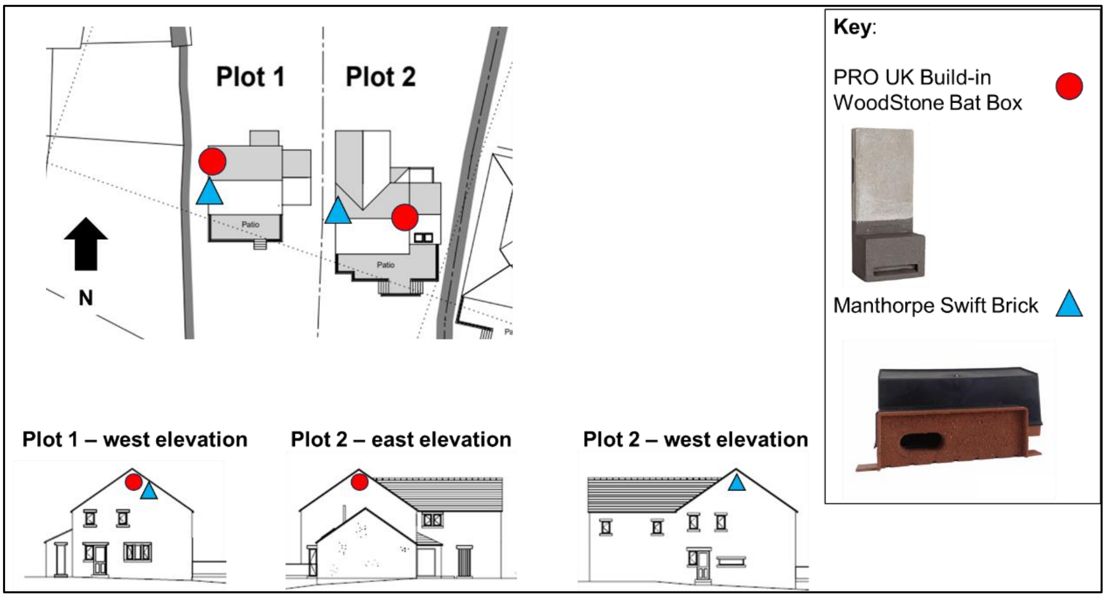
	Regular management and maintenance	Year																														Notes
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Meadow grassland	Establish new grassland areas	*																														Prepare and sow seed mixture in autumn into sub-soil, avoiding forecast heavy rain. Undertake first cut of newly sown areas once the grassland is sufficiently well established and very 3-4 weeks thereafter in Year 1.
	Mow areas of long grassland twice a year		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1st cut in March-April, Second cut in late July/August. Collect arisings immediately after April cut, collect arisings 5 to 7 days after July/August cut. All arisings to be moved offsite or to compost area.
	Watered during dry weather	*																														The meadow areas should be watered once per week during dry weather in Year 1
Pond	Establishment of pond	*																														Pond to be established in accordance with prescriptions in Section 5.5.1 with pond best built in winter and planted in spring.
	Clearance of pond vegetation	*		*		*		*		*		*		*		*		*		*		*		*		*		*		*		Aquatic vegetation should be cleared to cover no more than 30 % of water surface once every two years, with clearance to take place during winter.

7. Habitat Enhancements for Wildlife

7.1 Bats

7.1.1 Two building integrated PRO UK Build-In WoodStone Bat Boxes will be installed across the two new buildings. These boxes will be located as shown in Figure 2. One box is to be located on an east elevation, with the other box to face west. A selection of aspects has been selected in order to offer two different micro-climates for roosting bats. Boxes are to be installed close to the gable apexes, to give the maximum box heights possible. Being integrated, these boxes need to be fitted within walls when they are built and as such, they can be expected to be long-lasting. No maintenance of these units is needed. Boxes can be bought from the supplier NHBS.

Figure 2. Bat and bird box overview plan



7.1.2 New external lighting proposals for the site have yet to be finalised, however, it is strongly recommended that new external lighting is minimised. New external lighting should seek to minimise lighting operation times and levels of illuminance. In addition, uplighting of the buildings should be avoided. The use of passive infra-red sensor operated lights (on short timers) is strongly encouraged, to limit the times of operation. New lighting systems should be downward facing, directional and preferably low height avoiding light spill over adjacent tree and shrub vegetation. Lighting levels should be set at the minimum to allow safe usage of the site, with warm white colour (2700 kelvin or lower) temperatures preferred

7.2 Birds

7.2.1 Two new swift boxes are to be installed with one in each new dwelling. These units are to comprise the Manthorpe Swift Brick, which can be bought from NHBS. Both units are to be installed close to the western gable apex of each dwelling (Figure 1), with these locations selected in order to maximise the drop from box to the ground for emerging birds. Studies have shown that swift *Apus apus* boxes are used by the full range of nesting birds that utilise buildings; consequently, these boxes will also provide potential nesting space for house sparrow *Passer domesticus* and starlings *Sturnus vulgaris*.

7.2.2 Being integrated, these boxes need to be fitted within walls when they are built and as such, they can be expected to be long-lasting. No maintenance of these units is needed.

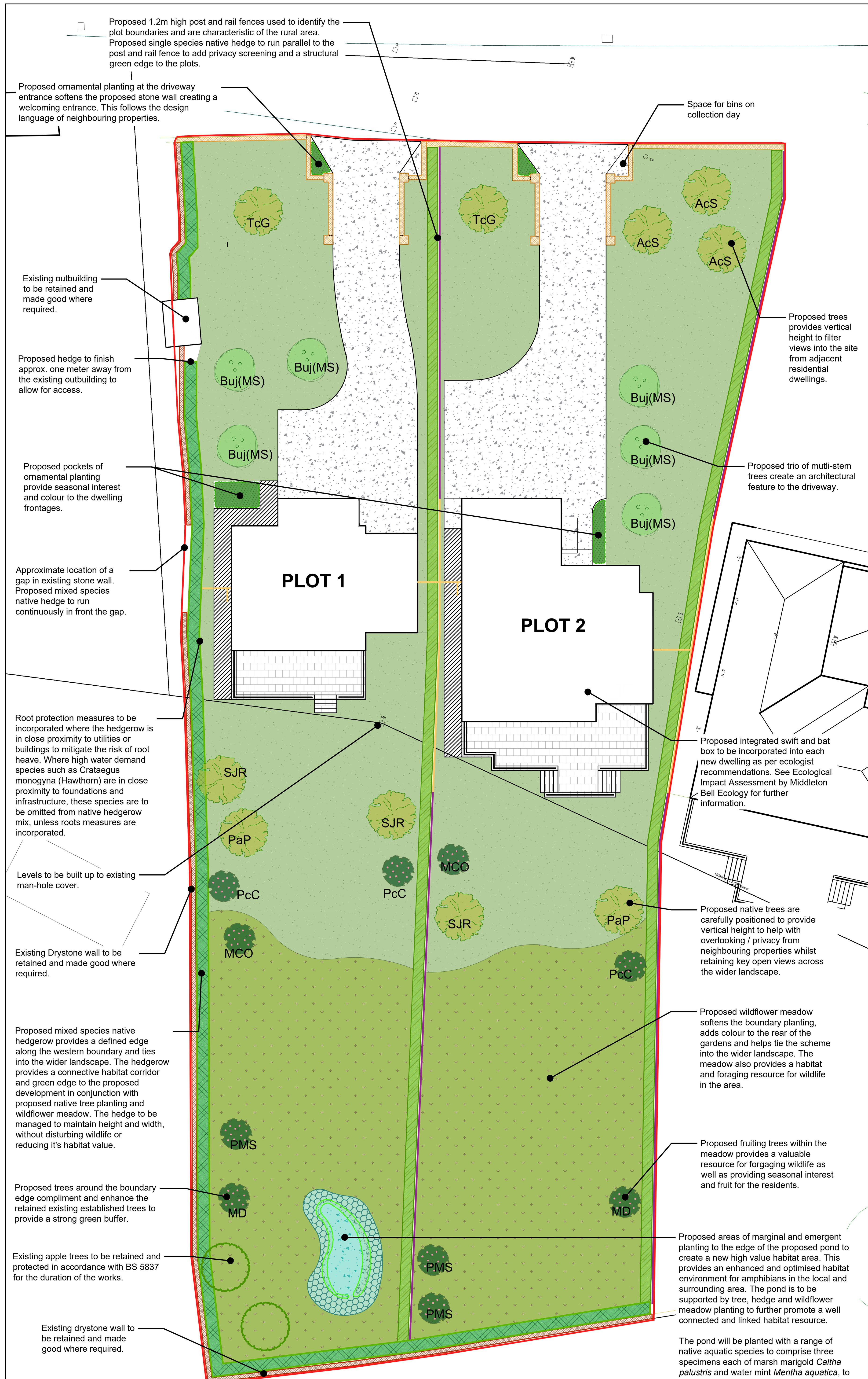
7.3 Hedgehog

7.3.1 The Ecological Impact Assessment report for the site (MBE, 2023) recommended the creation of hedgehog holes in site boundary fences. This is however not considered necessary. The reason for this decision is that the retained gaps within the western boundary wall, together with new post and rail fencing within sections of the central and eastern boundary fence, is considered sufficient to allow free passage of hedgehog across the site.

8. References

MBE (2023) MBE/ECO/2023/10/01 Land Adjacent to 124 Hartshead Lane Liversedge – Ecological Impact Assessment. Middleton Bell Ecology.

Appendix 1. Landscape Masterplan and Specification



The pond will be planted with a range of native aquatic species to comprise three specimens each of marsh marigold *Caltha palustris* and water mint *Mentha aquatica*, to be bought in 9 cm pots and planted into pond baskets using aquatic compost. In addition three bunches each of common water starwort *Callitriche stagnalis* and spiked water milfoil *Myriophyllum spicatum* will be placed in the pond as submerged oxygenators. In addition, a dwarf white water lily *Nymphaea alba candida* will be planted in a pond basket in the centre of the pond to provide floating leaves and flowers in the centre of the pond.

The edges of the ponds are to be protected during the establishment phase. A gently sloping section of stones should be included at the edge of the pond to allow any hedgehog falling in to escape. See Ecological Impact Assessment by Middleton Bell Ecology for further details.

NOTES:

Trees & Services

- Where paths and hard surfacing is proposed within close proximity to trees all construction is to be in accordance with BS 5837: 2012
- Root barriers / root protection measures are to be incorporated where required in accordance with guidelines where existing and proposed trees and vegetation are within 2m of proposed building or trees are in close proximity to services (details to be agreed).

- Tree and shrub planting proposed within drainage easements to be approved by local water authority. Planting to incorporate root protection measures around services or planting pits to ensure the sewer system is resistant to tree root ingress in accordance with the current Code for Design.
- Contractor shall comply with NJUG publication, volume 4 'Guidelines For The Planning, Installation And Maintenance Of Utility Services In Proximity To Trees' together with BS 5837:2012 Trees in Relation to Construction. Where conflict arises refer to the Landscape Standard.

LANDSCAPE KEY

SOFT LANDSCAPE

- Existing trees to be retained in accordance with BS 5837
- Proposed native tree
- Proposed fruiting tree
- Proposed multi-stem tree
- Proposed mixed species native hedge
- Proposed single species native hedge
- Proposed ornamental planting
- Proposed wildflower meadow
- Proposed lawn
- Proposed pond water
- Proposed wet grass seed mix
- Proposed marginal planting

HARD LANDSCAPE & BOUNDARIES

Refer to architect's drawings for further details

- Existing drystone wall
- Proposed stone wall
- Proposed 1.2m high timber post and rail fence
- Proposed 1.5m high timber close boarded fence
- Proposed dwellings
- Proposed side path *To architect's details*
- Proposed driveway *To architect's details*
- Proposed elevated patio *To architect's details*
- Existing drainage infrastructure
- Red line boundary

PLANTING SCHEDULES:

Trees:

To be planted as per specification.

NATIVE TREES

Total	Abr.	Species	Height (cm)	Girth	Size	Spec.
3	AcS	Acer campestre 'Streetwise'	350-425	12-14	HS	RB, clear stem 175-200mm
3	SJR	Sorbus aucuparia 'Joseph Rock'	250-300	8-10	S	RB, clear stem 175-200mm
2	TcG	Tilia cordata 'Greenspire'	350-425	12-14	HS	RB, clear stem 175-200mm
2	PaP	Prunus avium 'Plena'	250-300	8-10	s	RB, clear stem 175-200mm

MULTI-STEM TREES

Total	Abr.	Species	Height (cm)	Stems	Size	Spec.
6	Buj(MS)	Betula utilis jacquemontii	200-250	2 or 3	MS	RB

FRUIT TREES

Total	Abr.	Species	Height (cm)	Size	Root Stock
2	MCO	Malus 'Cox's Orange Pippin' SS#3	120-150	Half Standard	MM106/St Julien A/Quince Stock
2	MD	Malus 'Discovery' Semi Dwarf			
3	PcC	Pyrus communis 'Conference' SF#			
3	PMS	Prunus domestica 'Majorie's Seedling'			

Hedges:

To be planted as per specification. Biodegradable plastic free tubes and cane supports to be provided to each plant, where required. All hedges to be mulched in accordance with specification.

Approx length = 109m

MIXED SPECIES NATIVE HEDGE

% of mix	Species	Size	Spec	Notes
40	Crataegus monogyna	40-60cm	BR	5-7 per linear metre in a double staggered row
20	Prunus spinosa	60-80cm	BR	
10	Corylus avellana	60-80cm	BR	
10	Fagus sylvatica	40-60cm	BR	
10	Viburnum opulus	60-80cm	BR	
5	Ilex aquifolium	2L	C	
5	Rosa canina	40-60cm	BR	

Approx length = 159m

SINGLE SPECIES NATIVE HEDGE

Species	Size	Spec	Notes
Fagus sylvatica	40-60cm	5L, C	5 per linear m in a double staggered row.

Seeding :

All grass and wildflower seeding is to be carried out in accordance with specification or similar approved by landscape architect. To be seeded on sub-soil.Wildflower meadow subject to a reduced mowing regime once established to minimise disturbance within the sward.

Approx area = 1035m²

LAWN
John Chambers Grass Seed Utility
Sowing rate @ 35g/m²
Amenity PRG, Slender Creeping Red Fescue, Strong Creeping Red Fescue, Browntop Bent, Amenity PRG

Approx area = 710m²

MEADOW
John Chambers Pro Basic 20% 80% Grass Wildflower Mix
Sowing rate @ 5g/m²
Low Maintenance Grass Seed, Lady's Bedstraw, Common Bird's Foot Trefoil, Salad Burnet, Meadow Buttercup, White Campion, Wild Carrot, Oxeye Daisy, Common Knapweed, Black Medick, Ribwort Plantain, Selfheal, Yellow-Rattle, Yarrow, Common Sorrel, Red Campion, Kidney Vetch

An appropriate seed mix for the wildlife pond and associate embankment to be chosen depending on anticipated water level within pond.

Approx area = 20m²

WILDLIFE POND MIX
John Chambers Pro Wet and Moist Soils 80% Grass Seed Wildflower Mix
Sowing rate @ 5g/m²
Low Maintenance Grass Seed, Greater Bird's Foot Trefoil, Meadow Buttercup, Meadowsweet, Purple Loosestrife, Ragged-Robin, Red Campion, Selfheal, Teasel, Water Avens, Yellow Iris, Gipsywort

Ornamental planting :

A mix of grasses, herbaceous and shrub planting. Species are to be selected from the schedule below. The schedule provides an indicative but not exhaustive list. Plant in naturalistic style, typically in groups of 3, 5, 7 & 9. Quantities to be based on the below densities and assume an approx. even % of each species listed.

Approx area = 11m²

ORNAMENTAL PLANTING MIX

Species	Pot Size	Spec.	Density
Aster 'Little Carlow'	3L	C	5/m2
Choisya ternata 'Oranage Blossom'	5-7.5L	C	2/m2
Cornus sanguinea 'Midwinter Fire'	5-7.5L	C	2/m2
Festuca glauca 'Elijah Blue'	3L	C	5/m2
Hebe 'Green Globe'	3L	C	4/m2
Lavandula angustifolia 'Hidcote'	3L	C	5/m2
Phormium cookianum 'Dark Delight'	3L	C	3/m2
Sesleria autumnalis	3L	C	4/m2
Stipa tenuissima	3L	C	3/m2
Vinca minor 'Purpurea'	3L	C	5/m2

Wetland edge planting (for wildlife pond) :

Species to be planted along the edge of permanent wet edges of pond. Locations to be determined on site and approved by Ecologist. Where feasible plants are to be sourced from local ponds. Species selected to be chosen from the list above where available/able to source. A mix of floating, submerged and emergent native species. Quantities to be based on the below densities and assume an approx. even % of each species planted on ground.

Approx area = 5.8m²

AQUATIC, MARGINAL & WATERS EDGE PLANTING

Name	Size/Specification	Density
Callitriche stagnalis	To be sourced from local ponds where possible and not from outside the local region. Where planting is not available species are to be grown in the UK and certified, to ensure the introduction of exotic or highly invasive species is avoided. Planting to be plugs/baskets where applicable	Between 2-5/m² species dependent
Caltha palustris		
Filipendula ulmaria		
Hydrocharis morsus-ranae		
Iris pseudacorus		
Lythrum salicaria		
Lychnis flos-cuculi		
Mentha aquatica		
Myosotis scorpioides		
Nymphaea alba		
Persicaria amphibia		
Ranunculus aquatilis		
Veronica beccabunga		

SOFTWORKS SPECIFICATION NOTES

The contractor is responsible to ensure that no products or practices are to be used that do not comply with relevant British Standards, Codes of Practice and Construction Regulations. Contractor to be fully satisfied with locations and off sets of services prior to excavations.

Site clearance generally: Where necessary remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil. Remove stones exceeding 75 mm. Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.

Retain and protect trees and vegetation in accordance with BS 5837 where necessary. Grub up any large roots and dispose of without undue disturbance of soil and adjacent areas. In order to comply with UK legislation in regard to the Wildlife and Countryside Act 1981 (as amended), any tree or vegetation removal and/or management must take place outside of the bird nesting season (March to September inclusive). Where this cannot be achieved, nesting bird checks must be undertaken by a suitably qualified ecologist within 24 hours of the works.

Works within the root protection area (RPA):There shall be no areas of storage, trafficking of machinery, cultivation, ripping or mechanical rotivation, or importing of top soil, within the root protection area (RPA) of the existing trees to be retained. Where paths and hard surfacing is proposed within the retained tree RPA's, a No Dig methodology is to be adopted. Underground reinforcement, such as Cell Web (or similar approved) to be utilised in these locations. No trenches shall be dug within the RPA of the existing trees. New hedging plants within the RPA of the existing trees shall be notch planted. All of the above must be in accordance with BS 5837.

SOIL
Site preparation: Where required all existing topsoil and subsoil shall be stripped and stored separately on site. Heaps must not exceed 3m in height and should be used within 12 months in accordance with BS 4425 (Code of practice for general landscape operations).

Soil Sampling - Existing topsoil and inert sub soils, shall be analysed in accordance with BS 3882 to determine available nutrients, texture, organic matter content and pH. Where require, existing soils are to be improved in accordance with BS 3882:2015
Cultivation - Flail existing ruderal vegetation to ground level and remove arisings prior to cultivation. All areas to receive final layers of topsoil are to be de-compacted prior to spreading. Earth works vehicles to be small scale and tracked (loose-tipping) to minimise compaction, however chosen method for decompaction will be site specific dependant on size and soil conditions. Additional care must be taken as to not damage soil structure. All objects and stones over 75mm brought to the surface during decompaction are to be removed from the prepared surface layer. If existing subsoil horizon is found to consist of heavy clay, all proposed seeded areas to be tine ripped to 200mm depth at 300mm centres to increase drainage. Areas to be seeded to be chain harrowed to a fine tilth and lightly rolled to provide firm seed bed. Remove all stones over 30mm dia in any direction. Imported soil material: Import as necessary to make up any deficiency of topsoil and/or subsoil existing on site to complete the work and mitigate deficiencies. All imported material must conform with industry standards BS 8601 (Subsoil), BS 3882 Topsoil) and CLEA limits on heavy metals. Topsoil to be General purpose, 10mm screened and locally sourced (unless otherwise stated)

Soil build up: Existing topsoil and subsoil to be retained and reused on site within the landscape scheme where possible. Prior to spreading all topsoil to be screened to remove large stones and other deleterious materials, such as plant roots, leaves and clay. Topsoil to be loose-tipped and spread over de-compacted subsoil/receiving area. The total minimum rooting depth for planting, after settlement, should be: Grass 450mm; Planted areas 600mm; Trees 900mm. Topsoil depths for these areas should not normally exceed 300mm with the following minimum depths for each area: Grass 150mm; Planted areas 300mm; Trees 300mm. Meadow & wildflower seeding to be sown directly onto prepared subsoil.

Finished level of topsoil after settlement: Above adjoining paving or kerbs: 25 mm; Below dpc of adjoining buildings: Not less than 150 mm; Shrub areas: Higher than adjoining grass areas by 50 mm; Within root spread of existing trees: Unchanged; Adjoining soil areas: Marry in; Thickness of turf or mulch: Included.)

ADDITIVES
Compost to tree/shrub pits: To be as per BS PAS 100: well rotted sterilised spent mushroom compost max. pH 6.7 or Target Treestart compost. The contractor shall provide a Certificate of Analysis to show that the material being supplied complies with the above criteria. Incorporate spent mushroom compost or equivalent approved peat free compost into tree and planting pits at a rate of 3 parts topsoil to 1 part compost, thoroughly mixed together.

Fertiliser to ornamental shrub beds - Apply slow release fertiliser, Scotts 'Enmag' 4.19.10 NPK or equivalent approved at a rate of 50 gms/sq. metre over topsoil surface and fork into top 225mm spit.

PLANTING
Generally: Minimise trafficking of graded slopes. All plants to be preferably planted between Nov. - March. Nursery stock trees and shrubs to be in accordance with BS 3936 and BS 8545, to be supplied and planted in accordance with British Standards and the Horticultural Association's Plant Handling Guide. Container grown shrubs to be thoroughly watered before planting; trees and bare root shrubs watered after planting.

Times of year for planting: Deciduous Trees, hedges and shrubs: Late October to late March. Evergreen hedges and shrubs: September/ October or April/ May. Container grown plants: At any time if ground and weather conditions are favourable. Watering and weed control to be provided as necessary.

Shrub/Hedge planting pits: Timing: Excavate 1-2 days (maximum) before planting. Pit sizes: Wide enough to accommodate roots/toughs when fully spread and 75 mm deeper than root system. Pit bottom improvement Break up to a depth of 150 mm, incorporating 25g of slow-release fertiliser per planting pit. Where existing planting and roots are present plants are to be notch planted to minimise disruption/root damage. Backfilling material: Reuse excavated material. Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil. Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.

Tree pit sizes: Standard trees excavate a tree pit 1.2m x 1.2m x 900mm. Break up sides and bottom of pits to a depth of 100mm to ensure free drainage.Tree pit treatment: Soil ameliorant worked into pit bottoms. Pit sides to be scarified and backfilling material to be in accordance with topsoil and subsoil specification. Drainage Layer: Provide 200mm layer washed, clean gravel to base of pits to aid drainage (tree pit to be actively drained if poor draining soil or clay discovered by contractor).

Tree Accessories: Typically trees in soft landscape to be staked unless stated otherwise by the Landscape Architect. Underground guying is recommended for semi mature trees or trees within hard landscape and in public areas. Trees to be staked using 1m long x 75mm dia. round timber stakes (size of stakes to be adjusted to suit size of tree). Cross member to be installed 75mm x 25mm (larger trees will need large cross members). Locate proprietary Hessian ties on cross member to secure tree and prevent rubbing. Short stakes (<1.0m high) with biodegradable Hessian ties are recommended to encourage wind tolerance and prevent rubbing. Tree pit accessories by Green Tech or similar: Underground guying and perforated plastic irrigation/ ventilation pipe to landscape architects approval.

Root Barriers: To be used wherever the installed rootball will be within 2m of a building foundation or within proximity to underground utilities (distance at which root barrier is required is as per utility providers standards and should be confirmed prior to installation). Root barrier by Green Tech or similar to be installed vertically in accordance with supplier recommendations.

Protective fencing/guards: Newly planted areas or individual plants are to include rabbit/deer proof fencing. Either perimeter mesh fencing or individual biodegradable plastic free spiral guards/shelters/tubes are to be installed around all planting where required. Where areas are fenced, mesh to be 1m min above ground and buried 300mm below ground.

Mulching: Approved medium course chipped tree bark composted for at least 4 weeks. Particle size 25-75mm dia, max. 20% fines, pests and disease free and free of Methyl Bromide contamination. Clear any weeds, ensure soil is thoroughly moistened prior to applying mulch. All planting areas inc. trees, hedges and planting beds should receive an even 75mm depth of bark mulch, adjoining edge of mulch to be 15mm min. below adjacent hardstanding to avoid spillage. 50mm depth of mulch is only suitable for higher quality ornamental bark (<5% fines, 5-35mm size etc.). All bark should be FSC certified. Option to use biodegradable mulch mats to control moisture, soil temperature, erosion and weeds. All trees within grass are to have a 1.5m diameter mulch circle.

Seeding and making good existing grass areas: Steep embankments to be hydroseeded where required. After cultivating, grading and fertilizing prepare seed bed to fine, firm tilth with good crumb structure (Depth: 25 mm). Rake to a true, even surface, friable and lightly firmed but not over compacted. Remove surface stones/earth clods. Extend cultivation into existing adjacent amenity grassed areas sufficient to ensure full marrying in of levels where required. Evenly distribute seeds at an application rate of 35g/m² or as per supplier recommendations. Establish good seed contact with the root zone to promote healthy, consistent growth. Lightly harrow or rake to cover seed. Thoroughly water completed seeding until germination as necessary to keep the surface damp and soil most but not water logged.

Cutting In: Where cutting planting beds into existing grassed areas, the surrounding grass shall be protected and made good as necessary. These areas to be made good by preparing and re-seeding area. Seed mixes: John Chambers Lawn/Meadow seed or similar approved.

Turf Preparation - Lay turf with minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist. Do not lift turf in frosty weather or if ground waterlogged. Arrange phased delivery timescales to avoid need for excessive stacking. Stacking height 1m (max). Do not use dried out or deteriorated turf. After cultivating, grading and fertilizing prepare seed bed to fine, firm tilth with good crumb structure (Depth: 25 mm). Rake to a true, even surface, friable and lightly firmed but not over compacted. Remove surface stones/earth clods. Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

Turf Implementation - Turf to be laid in Spring and summer within 18 hours of delivery; and Autumn and winter within 24 hours of delivery. Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry. Planks to be laid on previously laid turf. Do not walk on prepared bed or newly laid turf. Turf laid along contours with staggered, close butted joints. Do not stretch turf. At the edges, whole turfs to overlap line, trimmed to a true line. Remove high spots and fill hollows with fine soil to adjust levels Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers. Dress turf with Sharp sand at a rate of 2kg/m2 and brushed in to completely fill joints. Thoroughly water completed turf immediately after laying. Check that water has penetrated into the soil below. Use hardy low maintenance amenity turf suitable for use in shade (To BS 3969).

Seed Preparation and Implementation for Wildflower Areas: No addition of nutrient to soil required. To be seeded on sub-soil. Method to suit soil type, proposed usage, location and weather conditions during and after sowing. A friable firm seed bed required, weed free, alleviation of compaction to a depth of 100-200mm, sowed on a firm and fine tilth. Seed bed preparation to be conducted in dry conditions, close to the time of sowing Remove surface stones/earth clods. Marry in with adjacent levels where required. Evenly distribute seeds at the manufacturers recommended application rate. Establish good seed contact with the root zone to promote healthy, consistent growth. Lightly harrow or rake to cover seed. Thoroughly water completed seeding.

MAINTENANCE
1 year Defects Liability Period applies. All dead or failing plants to be replaced the following growing season. Maintain a weedfree bare earth area 600mm dia minimum around individual trees and shrubs. Herbicide shall only be used where necessary and if use is required it should be a non-residual translocated herbicide and spot applied/applied with spray guard. Application and use to be in accordance with EA guidance. Prior to spraying ensure all spirals are tight to ground level and leaves within spray range are fully enclosed. Arisings: Remove. Trim all edges. Weed control: Substantially free of broad leaved weeds. Method: Application of a suitable selective herbicide. Remove any stones 25 mm in any dimension brought to the surface. Watering: To ensure establishment.

NOTE: Works to be carried out in accordance with the most up to date and current British Standards referenced within this specification.

LANDSCAPE MANAGEMENT PRINCIPLES

Implementing the correct maintenance procedures for any landscape design project is vitally important to ensure the longevity and appearance of a scheme is upheld. It is important that wherever possible the landscape management principles promote the enhancement of biodiversity within the site. This can be achieved through reduced maintenance interventions to the landscape where possible, promoting habitat enhancement and 'rewilding' of appropriate areas.

The following aims set out a framework for guiding the management and maintenance operations of the site.

- *Aim 1: to enhance the aesthetic quality of the landscape.*
- *Aim 2: to be sensitive to the setting and create an attractive environment.*
- *Aim 3: to manage the site in an ecologically sensitive and sustainable manner.*

The following provides an overview of detailed management prescriptions required for the ongoing management of the site.

Generally, maintenance to all planting must take into account:

- Watering in drought periods, including frequency and method of application.
- Weed controls, primarily carried out by hand with the use of chemical methods of removal, such as residual and spray herbicide applications, to be avoided and kept to a bare minimum (NOTE: strimmers to be avoided due to damage to plants)
- Thorough regular inspections, including making good losses with replacement planting stock
- Firming-in and possible pruning of wind-rocked plants
- Inspection for pests, vermin and plant diseases, including proposed remedial actions

Trees

- Maintenance of all 1m dia. mulched surrounds to trees planted in grass areas and to be topped up frequently through the year, as and when required.
- Incorporating slow-release fertiliser or residual herbicide applications where appropriate to tree pits
- Young trees will require formative pruning to maintain a desirable shape as well as to maintain health and vigour. Crown pruning will also be required.
- Formative tree works are to be undertaken during the winter months, preferably January and February and outside of the bird-breeding season (1st March -31st July).
- Adjustment checks of tree ties, stakes and guards, protective fencing and their timed removal to ensure ongoing health of trees

Hedges

- Hedges to be cut once a year to a neat shape with vertical sides and horizontal top and generally to a height of 1.5m high. To be cut outside of the bird nesting period (outside March - August).

Ornamental Planting

- Approach should focus on maintaining a neat and tidy appearance, which will also encourage 'free form' (naturalistic) plant growth.
- For the first five years of establishment, mulch should be laid around the base of all young plants and be maintained to a minimum depth of 50mm.
- Fertiliser to be applied in March of each year.
- Pruning of ornamental shrubs to be undertaken in order to clear deadwood and promote healthy growth.

Hardwearing amenity grass

- Grass to be mowed without appropriate machines to maintain a height of between 75-100mm on a regular basis. This is anticipated fortnightly during the growing season. Grass clippings should be removed from site immediately.

Wildflower Meadow

- Seeds to be sown in Autumn
- To be cut back every 3-4 weeks to around 75-100mm in Year 1, to keep grasses under control and to give wildflower the opportunity to concentrate on strong root growth. Arisings to be collected and removed after each cut. Final cut in September / October.
- After year 1, the whole sward can be allowed to grow unchecked throughout the growing season, as the wildflowers should now be strong enough to cope with some competition from grasses. Can have a 'tidying' cut in early-Spring but isn't a necessary action. In July / August, final cut of the year should be undertaken to a height of 100mm. Arisings to be left in situ for a few days before collecting, to allow any final seeds to fall. Repeat each year.

Marginal planting & Wet Grass Seed

- Edges of the pond to be protected during the establishment phase.
- Too much intervention can upset the pond's natural balance and deter wildlife. Maintenance should only be carried out when deemed necessary.
- Pond to be cleared of litter, leaves and any other build up such as floating weeds and pond algae. Remove dead, tatty or fading leaves of marginal planting so they don't decompose in the water.
- Ensure the water is well oxygenated to help deter blue-green algae.
- Cut back vigorous plant growth, aiming to keep half the surface clear. Consider cleaning out, if very overgrown and / or silted up.

Project: Hartshead Lane, Liversedge	**Client:** David Brown
Title: Outline Landscape Masterplan & Specification	**Drawn:** JMo **Chk'd:** CP **App'd** LW
Drawing Number: PWP 904 001 **Revision:** 02	**Drawing Scale:** 1:200 @ A1

Rev	Date	Detail	Made	Chk'd	App'd
02	13/09/24	Coordinated with Ecologist	JMo	CP	LW
01	03/09/24	Minor amendment - roadside hedge removed	CP	CP	LW
00	30/08/24	For planning purposes only.	JMo	CP	LW

Notes:
1. Not for construction all dimensions to be confirmed on site.
2. Based on Layout Drawing - 17-017-SP02-3 rev D by SBP Architects.
3. Refer to architects/engineers drawing for hard landscape, boundary treatments, site levels, drainage, retaining walls.
4. Build ups/footings to engineers specification.
5. Contractor to be fully satisfied with locations of services prior to excavations.
6. All existing trees to be protected to BS 5837.

Scale 1:200
0 5 10 20

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