

## **Brynheulog, St Clears**

## Landscape Ecological Management Plan (LEMP)

5 June 2023

Prepared on Behalf of Obsidian Homes



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## Document control

Document:	Landscape Ecological Management Plan (LEMP)
Project:	Brynheulog, St Clears
Client:	Obsidian Homes
Job Number:	TC22054

Revision:	2	Status:	Draft		
Date:	5 June 2023				
Prepared by: Emma Llewelyn CMLI		Checked by: Lee Morris CMLI	Approved By: Lee Morris CMLI		
Description of revision: First draft issue					



## Lansdowne Hospital

Landscape Ecological Management Plan (LEMP)



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## 1.0 Introduction

#### 1.1 Purpose

- 1.1.1 Tir Collective has been instructed by Obsidian Homes to prepare this Landscape Ecological Management Plan (LEMP) which relates to the proposed residential development on the agricultural land on the western side of St Clears, Carmarthenshire. The development of the site includes the construction of 66 residential dwellings comprised of a mix of houses within site. Proposals for the site also include the retention of trees and vegetation where possible; the planting of new trees, structure planting, hedgerows, and shrubs; proposals for formal (LAP) open space and informal areas of public open spaces, incorporating SUDS areas/ detention basins; a dark corridor along the northern boundary of the site.
- 1.1.2 The LEMP should be read alongside the Landscape proposal drawings and Ecological surveys that accompanied the planning application as follows:
  - Landscape Strategy (TC22003-01)
  - Landscape Proposals (west) (TC22003-02)
  - Landscape Proposals (east) (TC22003-02)
  - Preliminary Ecological Assessment for Landscape Adjacent to Brynheulog, Ste Clears (Habitat Matters Ltd, November 2021)

#### 1.2 Scope

1.2.1 A condition of the planning approval for the redevelopment of Land to the west of High Street, St Clears, Carmarthen requires that:

A Landscape and Ecological Management Plan (LEMP) must be submitted to the LPA prior to commencement of works. It shall include methods of implementation of all listed enhancements, exact mixes of species to be planted, plans for continued management of these features and who will be responsible for their ongoing maintenance.

Reason: In the interests of landscape and ecology in accordance with Policy GP1 of the LDP.

## 2.0 The site

### 2.1 Existing landscape and ecological features

2.1.1 The site covers two adjoining agricultural fields on the western side of St Clears, in between the town and an existing residential development. The site is within the LDP settlement boundary.

- 2.1.2 The site is mainly comprised of agricultural grassland. The land is gradually sloping towards the north and east and is bordered by the A40 dual carriageway and slip road to the north, separated by a steeply north sloping woodland belt that lies outside of the site boundary. The northern site boundary is formed by a wooden highways fence. A single-track road named Heol Goi runs along the southern edge of the site, bordered by hedgerow and linking nearby residential areas to the east on High Street and Cae Glad to the west. The western site boundary abuts Cae Glas and is marked by wire fencing. Two properties are located on Heol Goi and back on to the southern site boundary. The eastern site boundary abuts Brynheulog farm and properties on Heol Goi. The western part of the site is accessed from a gate off Heol Goi, and access on the eastern side is also available from a concrete track off High Street to the east. There is a derelict shed in the eastern part of the site, near the southern boundary.
- 2.1.3 Preliminary Ecological Appraisal (Habitat Matters Ltd, November 2021) indicates that the site is largely agriculturally-improved grassland. The southern site boundary is noted as a hedgeline which varies from native hedgerow to a managed garden hedge, with a small group of trees halfway along the southern edge and further trees at the south-eastern end of the hedgeline. Hedgebanks are included within the Farmland Habitats grouping of the Carmarthenshire Local Biodiversity Action Plan due to their importance for biodiversity, landscape and historical aspects. Additionally, the southern boundary hedge and trees are potentially suitable as a commuting corridor for bats, with links to foraging habitat in the wider landscape. The site itself does not provide suitable bat foraging habitat.
- 2.1.4 The southern boundary hedgerow and trees, along with the wooded bank along the A40 to the north provide suitable nesting and feeding habitat for birds. The shed on the site may also have potential as a nesting habitat for birds.

## 3.0 The Proposed Development

- 3.1.1 The proposed development includes the construction of 66 residential dwellings, along with associated access infrastructure, private parking plots and gardens, sheds, refuse storage and bike shelters, along with other site infrastructure.
- 3.1.2 The landscape strategy for the site includes streetscene planting to property frontages, comprising feature tree planting including ornamental British native varieties, along with shrub planting including selected native species where possible. Streetscene planting also includes native boundary hedgerow planting to plot frontages on the main street. The main street is bordered by rain gardens as part of the SUDs strategy for the scheme, containing a mix of shrub, herbaceous and grass planting with native species.
- 3.1.3 The southern site boundary hedge and trees are an important ecological feature of the site and they have therefore been carefully considered within the landscape strategy. The southern boundary hedgeline is to be retained and fully protected during the construction of the scheme in accordance with BS 5837:2012: Trees in relation to design, demolition and



construction. The hedgeline is subsequently to be strengthened with additional shrub buffer planting, using mixed native species to provide new woodland habitat, improved wildlife linkages and enhancement/ protection of the existing boundary hedge. Along with additional visual amenity and biodiversity value, this treatment will help to maintain a dark corridor along the southern site boundary, as appropriate to ecology recommendations.

- 3.1.4 Similarly, a dark corridor is to be maintained along the northern site boundary and light management on both boundaries will ensure that no lights are directed onto boundary vegetation including woodland on the road embankment outside the site to the north.
- 3.1.5 There are three SUDs ponds within the scheme located in the west, south and east of the site. These will consistently hold some level of water and will provide natural water body/ wetland habitat and amenity value as part of the public open space within the site. The SUDs ponds will be seeded with a pollinator friendly, local provenance seed mix.
- 3.1.6 A Local Area for Play (LAP) open space is located on the southern site boundary, and is to include play facilities and equipment as required.
- 3.1.7 Plot boundaries are to be formed by close boarded fences, with masonry walls in key locations and 0.6m high knee rails to public open space.
- 3.1.8 Overall, the landscape scheme for the site will provide an overall positive impact on the biodiversity value of the site and the local area, through proposed planting and landscape treatments. Pollinator friendly plants will be included in the landscape planting for insects.

#### 3.2 Maintenance aims

- 3.2.1 Within the first 5 years of establishment of the landscape proposals, the general maintenance objectives are as follows:
  - Manage the retained and proposed trees and vegetation along the site boundaries in a healthy and safe environment with the aim of strengthening the wildlife corridors and visual amenity.
  - Establish new planting throughout the site in the first 12 months.
  - Ensure the landscape proposals are managed and maintained in a way that enhances the site's biodiversity and habitat value whilst maximising visual amenity.
- 3.2.2 The following paragraphs provide further details in relation to the existing/ proposed features/ habitats and their maintenance requirements.

### 3.3 Existing trees and hedgerows

3.3.1 Existing trees are being retained where practicable, which are located mainly along the southern and eastern boundary of the site as shown on Landscape Strategy (TC22003-01). A

small number of trees and a hedgerow will need to be removed to accommodate the development.

- 3.3.2 Retained trees will be protected in line with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. This will include the installation of protective fencing, such as a Heras fence, to reduce the potential for impacting the Root Protection Area (RPA). The protective fence will be installed prior to construction to ensure no impacts occur to the RPAs. No machinery, digging, or storage of materials, chemicals, cabins, or vehicles will be permitted within these RPAs during the construction phase. Signage will be put in place along the fence to warn the workforce against storing materials in this area.
- 3.3.3 Tree work may need to be undertaken. Tree growth and form will need to be monitored annually. Tree work should be undertaken in accordance with BS 3998:2010 Recommendations for Tree Work, including:
  - Removal of any dead, diseased or damaged wood where it is a Health and Safety risk;
  - Crown reduction to maintain clearance from buildings;
  - Crown raising to maintain enough clearance for vehicular and pedestrian routes; and
  - Removal of any crossing branches.

#### 3.4 Tree planting

- 3.4.1 Tree planting is proposed in publicly accessible spaces and along frontages of private properties. All new trees will be planted in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape recommendations.
- 3.4.2 **Creation:** refer to the landscape strategy plans for locations of the proposed trees and an implementation specification.
- 3.4.3 **Protection:** trees will be planted with an underground guying system to support them from falling over in the initial establishment period following implementation. The landscape plans provide details of the type of system proposed.
- 3.4.4 **Enhancement:** the tree planting across the site will offer structure, interest, and contribute towards amenity and biodiversity enhancements.
- 3.4.5 **Management and Maintenance:** trees are to be managed with the long-term aim of developing healthy, upright, clear stem, structural specimen trees. Maintenance commitments will be minimal after the initial establishment period although the following will need to be undertaken:
  - Watering, including during periods of drought;
  - Mulching once a year as necessary;



- Tree replacements if necessary;
- Selective pruning to improve health, free form and longevity;
- Selective thinning in the long term to allow space for the trees to develop; and
- Pest and disease control.
- 3.4.6 Pruning of any tree will not be undertaken between March to August inclusive to protect breeding birds. If this cannot be avoided, a nesting bird check will be undertaken within 48hrs of the works, or immediately prior by a suitably experienced ecologist, to identify nests and enforce suitable buffer zones (5-10m expected) until the young have fledged.

#### 3.5 Structure planting – native scrub buffer

- 3.5.1 Structure planting/ native scrub buffer is proposed along the northern and southern boundaries of the site, to form structural site boundaries and contribute to dark corridors. Structure planting will strengthen the existing hedgeline boundary to the south.
- 3.5.2 **Creation:** Refer to the landscape strategy plans for locations of the proposed structure planting/ native scrub buffer.
- 3.5.3 **Protection:** Structure planting/ native scrub buffer will be llex aquifolium (3L pot) and *Corylus avellana, Crataegus monogyna, Cornus sanguinea, Euonymus europaeus, Acer campestre, Lonicera periclymenum* and *Rosa canina*, all planted as 1+2 transplant sized shrubs, 80-100cm high from 'day 1' implementation. Plants will be planted at 1.25m centres. They will not need to be protected, unless there is risk of grazing by rabbits and other mammals. Spiral tree/shrub guards could be implemented if required.
- 3.5.4 **Enhancement:** the structure planting/ native scrub buffer will offer interest within and around the site and help increase biodiversity and form part of the dark corridor along the northern and southern site boundaries.
- 3.5.5 **Management and maintenance:** maintenance commitments for the structure planting/ native scrub buffer will be minimal after the initial establishment period although the following will need to be undertaken:
  - Watering, including during periods of drought;
  - Mulching once a year as necessary;
  - Plant replacements if necessary;
  - Litter removal; and
  - Pruning as necessary.

3.5.6 Once established, the structure planting/ native scrub buffer will require thinning and will be cut on a 10-year cycle ideally 1/5th every two years, to maintain vigour. Brash will be piled close to the structure planting/ native scrub buffer to provide habitat.

## 3.6 Proposed native hedges

- 3.6.1 Native hedges are proposed along street frontages, providing some screening, habitat value and linkages. The native hedges will comprise a mix of the following species:
  - Acer campestre 20% (1+2 Transplant 100-125cm high)
  - Corylus avellana 20% (1+2 Transplant 80-100cm high)
  - Ilex aquifolium 5% (Container grown, 3L 100-125cm high)
  - Viburnum opulus 20% (1+2 Transplant 100-125cm high)
  - *Ligustrum vulgare* 35% (Bushy 100-125cm high)
- 3.6.2 **Creation:** Refer to the landscape strategy plans for planting locations and an implementation specification
- 3.6.3 **Protection:** Hedge planting will not need to be protected during the establishment period because there is no livestock grazing within the site.
- 3.6.4 **Enhancement:** Native hedge planting will help create a diverse landscape proposal, increase biodiversity and combat climate change through storing greenhouse gasses. Native hedges will also produce a valuable food source for wildlife, provide changes in colour, and homes for wildlife.
- 3.6.5 **Management and maintenance:** maintenance commitments will be minimal after the initial establishment period although the following will need to be undertaken:
  - Watering, including during periods of drought;
  - Mulching once a year as necessary;
  - Plant replacements if necessary;
  - Checking tree and shrub guards and any canes following strong winds;
  - Litter removal; and
  - Pruning as necessary.
- 3.6.6 The following should be undertaken to benefit breeding and wintering birds, foraging and commuting bats, and invertebrates:
  - For the planting of trees and hedgerow transplants, the soil surface does not need to be broken up if it is already friable and uncompacted.



- Hedgerow transplants at 80-125cm high will be planted as a double staggered row 25cm apart. The selected species diversity is representative of the local area.
- Strimming of vegetation around transplants along the new hedge line to a total width of approximately 60cm will be undertaken during April, June and August.
- During the first winter the hedgerow will be lightly trimmed removing no more than 150mm from the tops of all young hedgerow plants, to encourage branching.
- During years 2-4, hedgerows will be allowed to develop naturally in height and width. It is advised that hedgerows are lightly cut back annually by 25% to encourage branching out.
- During years 5-20, these hedgerows will be allowed to develop to 3m high and 2m wide. At this stage 50% of each length of hedgerow will be cut annually on rotation between October-February inclusive, to 3m high and 2m wide. The habitats 1-2m either side of the hedgerow base can be cut to 100mm during the same period. Retained hedgerows will require trimming from year 1 onwards to achieve the specification above and to manage 50% of such hedgerows annually.

### 3.7 Ornamental shrubs, hedges and herbaceous planting

- 3.7.1 **Creation:** Refer to the landscape strategy plans for planting locations and an implementation specification.
- 3.7.2 **Protection:** Planting will not need to be protected during the establishment period.
- 3.7.3 **Enhancement:** Shrubs are provided throughout the site to highlight street junctions and features, contribute towards the amenity value, and create a pleasant living environment for the residents as well as providing colour, texture, and interest. Shrub planting areas are to include the following:
  - *Caryopteris x clandonensis* (30-40cm high, 3L)
  - *Cistus x corbariensis* (40-60cm high, 5-7.5L)
  - Corylus avellana (40-60cm high, 5-7.5L)
  - Hebe salicifolia (30-40cm high, 3L)
  - Hedera helix (30-40cm, 3L)
  - Philadelphus 'Belle Etoile' (40-60cm high, 5-7.5L)
  - *Viburnum opulus 'Roseum'* (40-60cm high, 5-7.5L)
  - Rosa 'Fru Dagman Hastrum' (30-40cm high, 3L)
- 3.7.4 **Management and maintenance:** Shrubs are relatively maintenance free, but care should be taken to ensure that they establish successfully. Shrubs are a diverse group of plants with

many different requirements in terms of watering, pruning, feeding etc. and consequently, general good horticultural practice should be continually applied with regards to different species' requirements.

- 3.7.5 It will be necessary to undertake occasional formative pruning of certain ornamental shrubs (refer to **Appendix 3**); this should be done with respect to the overall form and shape of the shrub. Species selection and the location of planting should ensure that shrubs will not require severe pruning. It is not intended that the shrub planting will be cut back on a frequent basis.
- 3.7.6 Maintenance commitments for the ornamental shrubs will be minimal after the initial establishment period although the following will need to be undertaken:
  - Watering, including during periods of drought;
  - Mulching as necessary;
  - Plant replacements if necessary;
  - Litter removal; and
  - Pruning and pest and disease control as necessary.
- 3.7.7 Herbaceous plants will need to be cut annually and divided as required.
- 3.7.8 Spring flowering bulbs are proposed within short grass, planted randomly. Dead foliage will need to be cut a minimum of six weeks after the end of flowering. The foliage will need to be yellow and straw-like before cutting. Bulbs will also need to be watered until this time.

#### 3.8 Species-rich grass

- 3.8.1 Species rich grass areas/ grass areas with ecotone transition habitats and areas of wildflower, long grass will be provided within the public open spaces in the east, south and west of the site. Two products are proposed, one for dry areas and another for SuDS features (damp areas). These are:
  - Dry areas: Local seed mix focussed on pollinators supplied by Wyndrush Wild (https://wyndrushwild.co.uk/)
  - Damp areas/ detention basins: Local seed mix focussed on pollinators supplied by Wyndrush Wild (https://wyndrushwild.co.uk/)
- 3.8.2 **Creation:** Refer to the landscape strategy plans for the species-rich grass locations and an implementation specification.
- 3.8.3 Once bare (or near bare soil) is achieved through general development, the top 50mm of soil will be rotovated. This could be using a power harrow or pedestrian rotavator. If the existing grassland is still present, to avoid the release of soil carbon and to protect the current plant



species diversity present in this area (which was considered moderate at the site), the turf should be cut to 30mm and lightly harrowed to break up the vegetation mat and surface soil layer. This will ensure that native species are retained, and ultimately additional plant species added. Where root protection areas of trees are present, only a cut to 30mm should be undertaken and the area raked with a soil rake to break the vegetation mat and soil surface (thus protecting tree roots).

- 3.8.4 **Protection:** Species-rich grass areas will not need to be protected during the establishment period.
- 3.8.5 **Enhancement:** The species-rich grass for both dry and wet areas shall contains local seed mixes focussed on pollinators, supplied by experienced grassland ecologists. The mixes will create pollinator habitat with pollen, nectar and leafy vegetation for all stages of life cycle.
- 3.8.6 **Management and maintenance:** The areas should be maintained with the long-term objective of developing a diverse meadow, enhancing biodiversity and providing visual amenity.
- 3.8.7 **Species rich grass (damp areas/ detention basins):** Species rich grass, shown within SuDS features, shall be sown at a rate to be agreed with the supplier with a suitable seed mix that contains local seed, focussed on pollinators. Ensure that the ground is not highly fertile prior to sowing. Establish and cut in accordance with manufacturer's recommendations.
- 3.8.8 <u>Ground preparation</u>: Endeavor to select ground that is not highly fertile and does not have a problem with perennial weeds. Good preparation is essential to success so aim to control weeds and produce a good quality seed bed before sowing.
- 3.8.9 To prepare a seed bed first remove weeds using repeated cultivation. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface. (more on preparation)
- 3.8.10 <u>Sowing:</u> Sowings on ground prone to winter flooding are safest either in the early autumn or in spring once the land has drained. Most plants need time to grow mature enough to withstand flooding.
- 3.8.11 The seed must be surface sown and can be applied by machine or broadcast by hand. To get an even distribution and avoid running out, divide the seed into two or more parts and sow in overlapping sections. Do not incorporate or cover the seed but firm in with a roll, or by treading, to give good soil/seed contact.
- 3.8.12 <u>Aftercare First year management:</u> Most of the sown meadow species are perennial and are slow to establish. Soon after sowing there will be a flush of annual weeds, arising from the soil seed bank. These weeds can look unsightly, but they will offer shelter to the sown seedlings, are great for bugs, and they will die before the year is out. Resist cutting the annual weeds until mid to late summer, especially if the mixture contains Yellow Rattle, or has been sown

with a nurse of cornfield annuals. Then cut, remove and compost. Early August is a good time. This will reveal the young meadow, which can then be kept short by mowing through to the end of March of the following year.

- 3.8.13 Dig out any residual perennial weeds such as docks.
- 3.8.14 <u>Management once established:</u> In the second and subsequent years species rich grassland to damp areas/ detention basins can be managed in a number of ways which, in association with soil fertility, will determine the character of the grassland. The best results are usually obtained by traditional meadow management based around a main summer hay cut in combination with autumn and possibly spring mowing.
- 3.8.15 Meadow grassland is not cut from spring through to late July/August to give the sown species an opportunity to flower.
- 3.8.16 After flowering in July or August take a 'hay cut': cut back with a scythe, petrol strimmer or tractor mower to c 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site.
- 3.8.17 Mow the re-growth through to late autumn/winter to c 50mm and again in spring if needed.
- 3.8.18 Wetland habitats are characteristically quite variable in composition, reflecting local drainage and management. Conditions can vary, for instance, between the highs and lows in ridge and furrow grassland. Localised differences may require a targeted approach. For example, boggy areas which remain waterlogged for much of the year may be best sown with appropriate pond edge mixtures.
- 3.8.19 **Species-rich grass (dry areas):** Species rich grass to be sown at a rate to be agreed with the supplier with a suitable seed mix that contains local seed, focussed on pollinators.
- 3.8.20 <u>Ground preparation</u>: Endeavour to select ground that is not highly fertile and does not have a problem with perennial weeds. Good preparation is essential to success so aim to control weeds and produce a good quality seed bed before sowing.
- 3.8.21 To prepare a seed bed first remove weeds using repeated cultivation. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll, or tread, to produce a firm surface.
- 3.8.22 <u>Sowing:</u> Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. The seed must be surface sown and can be applied by machine or broadcast by hand. To get an even distribution and avoid running out divide the seed into two or more parts and sow in overlapping sections. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.
- 3.8.23 <u>Aftercare first year management:</u> Most of the sown meadow species are perennial and are slow to establish. Soon after sowing there will be a flush of annual weeds, arising from the soil seed bank. These weeds can look unsightly, but they will offer shelter to the sown seedlings,



are great for bugs, and they will die before the year is out. Resist cutting the annual weeds until mid to late summer, especially if the mixture contains Yellow Rattle, or has been sown with a nurse of cornfield annuals. Then cut, remove and compost. Early August is a good time. This will reveal the young meadow, which can then be kept short by mowing through to the end of March of the following year. Dig out any residual perennial weeds such as docks.

- 3.8.24 <u>Management once established:</u> In the second and subsequent years species rich grassland to dry areas can be managed in a number of ways which, in association with soil fertility, will determine the character of the grassland. The best results are usually obtained by traditional meadow management based around a main summer hay cut in combination with autumn and possibly spring mowing.
- 3.8.25 Meadow grassland is not cut from spring through to late July/August to give the sown species an opportunity to flower.
- 3.8.26 After flowering in July or August take a 'hay cut': cut back with a scythe, petrol strimmer or tractor mower to c 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site.
- 3.8.27 Mow the re-growth through to late autumn/winter to c 50mm and again in spring if needed.

#### 3.9 Proposed SuDS features

- 3.9.1 The SuDS proposal includes three detention basins and rain gardens.
- 3.9.2 **Detention basins** are depressions in the ground where water is stored and treated.
- 3.9.3 **Rain gardens** areas are planted areas where the filter media / engineered soils allow water to infiltrate into a filter drain or ground. The composition of the filter media is defined by the Drainage Engineer. It will be suitable for the proposed planting, typically comprising clay and silt (< 0.063 mm) < 5%, fine sand (0.063-0.2 mm) <20%, medium sand (0.2–0.6 mm) 35% to 65%, coarse sand (0.60–2.0 mm) 50% to 60% and fine gravel (2.0-6.0 mm) <10%.
- 3.9.4 Rain gardens features are within the main streets and are planted with species that will tolerate dry conditions and occasional inundation. The proposed plants will include an appropriate non-native component to cope with extreme environmental conditions, but with a steer towards providing pollinator resources. Due to the native components elsewhere within the development, the planting proposal for the rain gardens is considered appropriate. Species within rain gardens are as follows:

#### <u>Shrubs</u>

- *Caryopteris x clandonensis* (to be used on upper slopes of rain garden, 30-40cm high, 3L)
- Lavandula angustifolia 'Hidcote' (30-40cm high, 7.5L)
- Viburnum opulus (to be used on upper slopes of rain garden, 30-40cm high, 7.5L)

#### <u>Herbaceous</u>

- Nepeta 'Six Hills Giant' 2L container
- Schizostylis coccinea 'Major' 2L container
- Eupatorium cannabunum 3L container
- *Geranium x oxonianum 'Rose Clair'* 3L container
- Rudbeckia birta 3L container
- Helleborus foetidus 3L container

<u>Grasses</u>

- Acorus gramineus 'Ogon' 5L container
- Carex pendula 3L container
- Pennisetum alopecuroides 'Hamelin' 5L container
- 3.9.5 The detention basins are in the west, south and east of the site, south of the retained green corridor, and will be seeded with a species-rich damp grass mix (as detailed in Section 3.8 above) and will be bordered by drier areas of transition habitat and areas of wildflower with long grass.
- 3.9.6 The SuDS features will need to be inspected and maintained appropriately to ensure that their systems function correctly and as designed. Inspections and maintenance will be required during the establishment of the vegetation and in the long term.
- 3.9.7 Sediment removal is necessary to ensure that sediment control measures continue to function as designed, together with the anticipated frequency and appropriate means of sediment removal and disposal. Maintenance activities should ideally be undertaken monthly (and no less than three monthly), at the same time as other routine maintenance activities. Maintenance activities would include:
  - Mowing amenity grass and species-rich grass
  - Cutting/pruning vegetation
  - Removing silt
  - Inspecting inlets and outlets jetting pipes, removing accumulated grass and blockages
  - Remedial work if required
  - Weeding
  - Removing tree stakes and ties
  - Replacement planting



## 3.10 Proposed ecological features

- 3.10.1 The following ecological enhancements are proposed by the project Ecologist and detailed in the Preliminary Ecological Appraisal for the site (Habitat Matters Ltd, November 2021).
- 3.10.2 With the aim of providing enhanced biodiversity value through new bat roosts for crevice dwelling bats, during the construction of the development, integrated bat boxes are to be installed on 50% of houses with one on each of the houses on the southern boundary. Boxes are to be positioned close to eaves and away from light (e.g. windows) and at least 4m above ground. Such boxes will require no further maintenance.
- 3.10.3 To enhance biodiversity value through providing new bird nesting sites for species such as house sparrows, during construction a bird nesting block will be provided on 50% of properties, located at a minimum 2m above ground level. Bird nesting blocks will be incorporated in eaves/ verge and nesting facility within north or east facing walls. Such block will require no further maintenance.
- 3.10.4 During construction a house martin nesting site will be provided on all properties, to enhance biodiversity value through providing new bird nesting sites for species such as house martins. Nesting sites to be located on northern or eastern gable under overhanging eaves, at a minimum 2m above ground level and ideally not above door/ window to avoid mess. Such boxes will require no further maintenance.
- 3.10.5 New insect habitat for solitary bees such as leaf-cutters will be provided through the provision of bee bricks on 50% of houses during the construction phase. They are to be located in a sunny, sheltered location on southern or western elevations >1m above ground level. Such bricks will require no further maintenance.
- 3.10.6 To provide improved wildlife connectivity, hedgehog holes are to be provided below garden/ boundary fences on all houses during the construction phase. No maintenance of this feature will be required.

## 4.0 Management, maintenance and monitoring

- 4.1.1 This LEMP is includes the following appendices that provides further details on the maintenance of the proposals and timeframes.
  - Appendix 1: Annual maintenance programme
  - Appendix 2: Detailed maintenance schedules
  - Appendix 3: Pruning techniques
  - Appendix 4: Typical maintenance clauses: NBS Q35

#### 4.2 Maintenance

- 4.2.1 The use of pesticides and herbicides should be minimised in the interests of biodiversity and best practice. Where possible, weeds should be removed by hand. Pests should only be treated when they are affecting the establishment/ health of thriving plants.
- 4.2.2 The client should be notified if any invasive plant species are discovered onsite. Invasive species should be eradicated by the most suitable and efficient means possible and must avoid contaminating the wider site.
- 4.2.3 Maintenance operations must also avoid the disturbance of wild birds and animals. The maintenance operative should also be aware of statutory obligations, including the protection of nesting birds.

## 4.3 Tree/ plant replacements

- 4.3.1 Should any trees or plants die within the first year, become seriously damaged or diseased or are removed, they are to be replaced in the following planting season as detailed in the landscape proposals and schedules.
- 4.3.2 Following the first growing season and up to five years following planting, should any trees fail to establish, die, become seriously damaged or diseased or are removed, they are to be replaced in the following planting season as detailed in the landscape proposals and schedules.
- 4.3.3 Following the first growing season and up to five years following planting, should any plants fail to establish, die, become seriously damaged or diseased or are removed, they are to be replaced in the following planting season, if appropriate, with others of a similar size and species to those detailed in the landscape proposals and schedules to ensure there are no gaps in the planting beds.

### 4.4 Monitoring

4.4.1 As all plants are living organisms and can respond differently to varying ground and microclimate conditions, it is recommended that a Chartered Landscape Architect manages the implementation of the LEMP with input from an Ecologist. This should allow iterative management of the proposed operations, responding to site circumstances and the success rate of different plant species and habitats. This will also allow the informed assessment and management of the quality of maintenance operative's services on site, and in response to the site establishment, growth and the prevailing site conditions.



## 4.5 Responsibilities

- 4.5.1 The landscape proposals are to be maintained by a landscape contractor in the first 12 months following practical completion (24 months for trees). Following this, the management of the site would be the responsibility of a management company.
- 4.5.2 The obligation to maintain the proposed landscape for 5 years will be implemented during a post construction period following practical completion, which is to be based on the maintenance requirements and schedules set out in this LEMP.



## **Appendix 1 – Annual Maintenance Programme**

- 4.5.3 The following annual maintenance programme is suggested to ensure the maintenance work is carried out at the most beneficial time. The requirement for the individual maintenance operations will be informed by ongoing monitoring.
- 4.5.4 For all seasons, the following will need to be undertaken:
  - Inspections, including adjusting tree stakes and ties when necessary and after strong winds;
  - Watering water when necessary and through periods of drought to ensure the planting / grass areas continue to thrive;
  - Pest and disease control; and
  - Litter removal.

Action	Tree planting	Bulbs	Shrub planting	Herbaceous plants	Species-rich grass	Amenity grass	SuDS features	Native hedgerows, structure planting/ native scrub buffer
January Inspections, including adjusting tee stakes and ties when necessary, and after strong winds.	x						All SuDS features: Monthly, or as required	x
Watering	x	x	x	x	x	x	If necessary	x
Pest and disease control	x	x	x	x	x		All SuDS features	x
Litter removal	x	x	x	x	x	x	All SuDS features: Monthly, or as required	X
Remedial actions							All SuDS features: Monthly, or as required	
February Weed control	x	x	x	x		x	All SuDS features	x
Amenity grass cutting and trim edges (remove cuttings from site)						x		
March Fork over planting beds (aeration)	x		x	x			All SuDS features	x
Prune trees, prune native hedges, prune native planting groups, and prune shrubs.	x		x				Rain gardens: prune shrubs	Cut structure planting/ buffer on rotation once every 10 years. Prune native hedgerows and planting groups, as necessary.
Amenity grass cutting and trim edges (remove cuttings from site)						x		
Reseed							As required or if bare soil is exposed	

Action	ting		Inting	us plants	ich grass	grass	tures	dgerows, planting/ ub buffer
	Tree plan	Bulbs	Shrub pla	Herbacec	Species-r	Amenity	SuDS fea	Native he structure native scr
Cutting of Species-rich grass: <b>first year</b> <b>management</b> – cut to 50mm height to remove the annual weeds. Remove from site. Undertake first cut in August, then keep short until the end of March for the first year.					x		Detention basins	
<b>April</b> Apply fertiliser (first year only)	x		x	x		x	Avoid applying fertiliser if possible within SuDS features	
Weed control Amenity grass cutting and trim edges (remove cuttings from site)	х	х	х			x x	All SuDS features	
Review and top up bark mulch			x					
<b>May</b> Weed control	x	x	x			x	All SuDS features	x
Amenity grass cutting and trim edges						x		
Cut bulbs minimum 6 weeks after flowering		х						
June Amenity grass cutting and trim edges						x		
July Weed control	х	x	х	x		x	All SuDS features	x
Amenity grass cutting and trim edges (remove cuttings from site)						x		
August Amenity grass cutting and trim edges (remove cuttings from site)						x		
Cutting of Species-rich grass: <b>first year</b> <b>management</b> – cut to 50mm height to remove the annual weeds. Remove from site. Undertake first cut in August, then keep short until the end of March for the first year.					x		Detention basins	
<u>Hay cut</u> of species-rich grass: <b>second and</b> <b>subsequent years</b> , to 50mm high. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site.					x		Detention basins	
September Weed control	x	x	x	x		x	All SuDS features	x
Lightly fork over planting beds (aeration)	x							x
Amenity grass cutting and trim edges (remove cuttings from site)						x		
Cutting of Species-rich grass: <b>first year</b> <b>management</b> – cut to 50mm height to remove the annual weeds. Remove from site. Undertake first cut in August, then keep short until the end of March for the first year.					x		Detention basins	
Species-rich grass: dig out any residual perennial weeds such as docks.					x		Detention basins	



Action	Tree planting	Bulbs	Shrub planting	Herbaceous plants	Species-rich grass	Amenity grass	SuDS features	Native hedgerows, structure planting/ native scrub buffer
<b>October</b> Amenity grass cutting and trim edges (remove cuttings from site)						x		
Cutting of Species-rich grass: <b>first year</b> <b>management</b> – cut to 50mm height to remove the annual weeds. Remove from site. Undertake first cut in August, then keep short until the end of March for the first year.					x		Detention basins	
Mowing of species-rich grass: <b>second and</b> <b>subsequent years</b> , to 50mm high.					x		Detention basins	
Divide or cut herbaceous plants				х			Rain gardens	

## **Appendix 2 – Detailed Maintenance Schedules**

## Tree planting

Action	Details	Timing	Standard
Watering	Water to establish trees and thereafter during periods of drought. Water should be applied slowly to avoid soil erosion.	When necessary	As a general guide to provide an adequate soaking of dry soil, the following are minimum quantities required:
			• 1.5 - 2.0m high: 10 litres
			• 3.0 - 5.0m high: 20 litres
			• 6.0 – 8.0m high: 40 litres
			• 9.0 – 10.0m high: 100 litres
			Refer to <b>Appendix 4</b> : Q35/ 110; 155; 160
Weed control	<b>Hand weed</b> to remove all weeds and their roots around the trees (within the planting beds) using a hoe, trowel or fork.	February; April; May; July	Refer to <b>Appendix 4</b> : Q35/ 645; 650; 657
	Apply herbicide to kill re-growth when required		
Fertilizer	Applications of fertilizer to be carried out early in the growing season in first year (further application to be advised by monitoring)	April	Ensure correct fertilizer application. Refer to <b>Appendix 4</b> : Q35/ 695
Tree stakes/ties	Tree stakes will be needed for at least three years and should be replaced if broken or decayed	-	Stakes and ties to be inspected at least once a month and after very heavy winds. Adjust ties if necessary to conform to stem growth or to prevent chafing. Refer to <b>Appendix 4</b> : Q35/ 510
Pruning	At the appropriate season for the species, pruning to be carried out to remove all damaged diseased or dead wood	When required	Refer to <b>Appendix 4</b> : Q35/ 540 - 580
Pest and disease control	To be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
Litter removal	Collect and remove all extraneous rubbish	January	Refer to Appendix 4: Q35/ 190

## Native hedge planting, Structure planting – native scrub buffer

Action	Details	Timing	Standard
Watering	Water to establish hedgerows, coppice and native planting and thereafter during periods of drought. Water should be applied slowly to avoid soil erosion.	When necessary	Water is to soak into the ground, it is not sufficient to dampen the surface. Water must be applied slowly to avoid damage to plants. Refer to <b>Appendix 4</b> : Q35/ 110; 155; 160



Action	Details	Timing	Standard
Weed control	<b>Hand weed</b> to remove all weeds and their roots around the trees (within the planting beds) using a hoe, trowel or fork.	February; April; May; July	Refer to <b>Appendix 4</b> : Q35/ 645; 650; 657
	Apply herbicide to kill re-growth when required		
Fertilizer	Applications of fertilizer to be carried out early in the growing season in first year (further application to be advised by monitoring)	April	Ensure correct fertilizer application. Refer to <b>Appendix 4</b> : Q35/ 695
Pruning	At the appropriate season for the species, pruning to be carried out to remove all damaged diseased or dead wood	When required	Refer to <b>Appendix 4</b> : Q35/ 540 - 580
Pest and disease control	To be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
Litter removal	Collect and remove all extraneous rubbish	January	Refer to <b>Appendix 4</b> : Q35/ 190

## Ornamental shrubs, hedges and herbaceous planting

Action	Details	Timing	Standard
Watering	Watering shall be carried out to maintain vigorous plant growth	When necessary	Water is to soak into the ground, it is not sufficient to dampen the surface. Water must be applied slowly to avoid damage to plants. Refer to <b>Appendix 4</b> : Q35/ 110; 155; 160
Weed control	Hand weed a minimum of 4 times per year. Apply herbicide to kill re-growth when required	February; April; May; July	Refer to <b>Appendix 4</b> : Q35/ 645; 650; 657; 670
Fork over planting beds (Aeration)	Prick up trodden or compacted soil surfaces to aerate the soil without damaging the plants.	March/Septe mber	Refer to <b>Appendix 4</b> : Q35/680
Fertilizer	Applications of fertilizer to be carried out to shrubs early in the growing season in first year (further application to be advised by monitoring). No fertilizer application to bulbs	April	Ensure correct fertilizer application. Refer to <b>Appendix 4</b> : Q35/695
Pest and disease control	to be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
Pruning	At the appropriate season for the species, pruning to be carried out to remove all damaged diseased or dead wood.	February - October	<b>Shrubs</b> : Prune to ensure the plant is kept well balanced and in good shape. (Refer to <b>Appendix 3</b> for pruning techniques) Refer to <b>Appendix 4</b> : Q35/ 540 - 580
Litter removal	Collect and remove all extraneous rubbish	January	Refer to <b>Appendix 4</b> : Q35/ 190

## Species-rich grass

Action	Details	Timing	Standard
Watering	-	When necessary	Refer to <b>Appendix 4</b> : Q35/ 110; 155; 160
Weed control	Hand weed a minimum of 4 times per year. Apply a selective herbicide to kill re- growth when required	February; April; May; July	Refer to <b>Appendix 4</b> : Q35/ 645; 650; 657
Mowing	<b>first year</b> – cut to 50mm height to remove the annual weeds. Remove from site. Undertake first cut in August, then keep short until the end of March for the first year. <b>second and subsequent years</b> , to 50mm high.	August – October; March October for 2 <sup>nd</sup> and subsequent vears	Refer to <b>Appendix 4</b> : Q35/ 540 - 580
Pest and disease control	To be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
Litter removal	Collect and remove all extraneous rubbish	January	Refer to <b>Appendix 4</b> : Q35/ 190

## Amenity grass

Action	Details	Timing	Standard
Watering	-	When necessary	Refer to Appendix 4: Q35/ 110; 155; 160
Mowing	The grass area shall be managed to a height of 25mm	March - October	Refer to <b>Appendix 4</b> : Q35/ 170; 220; 225; 235; 240; 265
Weed control	Hand weed a minimum of 4 times per year. Apply a selective herbicide to kill re- growth when required	February; April; May; July	Refer to <b>Appendix 4</b> : Q35/645; 650; 657
Raking/Scarifying	Relieve thatched conditions and remove dead grass in the autumn over the whole of the grassed areas.	September	<b>Appendix 4</b> : Q35/ 300
Spiking (Aeration)	Aerate to increase water, nutrient and oxygen movement into the soil	September	Refer to Appendix 4: Q35/ 295
Fertilizer	Applications of fertilizer to be carried out early in the growing season in first year (further application to be advised by monitoring)	April	Ensure correct fertilizer application. Refer to <b>Appendix 4</b> : Q35/ 695
Pest and disease control	to be carried out if necessary and in accordance with best practice	When required	To eradicate all pests and disease to a high standard
General	If surface is disturbed by over use, restore by firming or lifting with a fork	When required	-
Litter removal	Collect and remove all extraneous rubbish	January	Refer to Appendix 4: Q35/ 190



## **Appendix 3 – Pruning techniques**

### General

- All pruning cuts shall be made in accordance with BS 7370;
- Pruning shall be undertaken to promote flowering and fruiting in accordance with the species and age of the plant;
- Stems shall only be removed to retain the natural appearance of the individual plant species;
- All damage, diseased or deadwood material shall be removed from trees/shrubs;
- Any crossing or rubbing branches are to be removed from trees/shrubs;
- Plants may be permitted to overlap hard areas e.g., paving. If growth restricts the use of the paving, it will be necessary to trim by shortening long growths NOT by cutting indiscriminately along the edge; and
- Ground cover plants should not overhang grass areas because of the difficulty in keeping edges trimmed, prune back encroaching.



## Pruning techniques



Taken from Landscape Management & Maintenance Handbook, Jones, Hing P (1990)

## Appendix 4 – Typical Maintenance Clause NBS: Q35

#### Generally

- 110 NOTICE: Give notice before:
  - Application of herbicide.
  - Application of fertilizer.
  - Watering.
  - Each site maintenance visit.
  - Period of notice: 1 week before site visit.
- 130 REINSTATEMENT: Damage or disturbance to soil structure, planting, grass: Reinstate to original condition and within a reasonable period of time (according to season).
- 140 CONTROL OF MAMMALIAN PESTS: Employ only approved firms and methods.

#### 155 WATERING

- Supply: Potable mains water.
- Quantity: Ensure the full depth of topsoil is thoroughly wetted.
- Application: Do not damage or loosen plants. Use a fine rose or low-pressure hose where appropriate to avoid damaging or loosening plants.
- Compacted soil: Where necessary, loosen soil or form depressions around the stem base of plants to ensure that water reaches the root zone instead of dispersing on the surface.
- Frequency: As necessary for the continued thriving of all planting/grass areas.
- 160 WATER RESTRICTIONS: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding.
- 170 DISPOSAL OF ARISINGS GENERALLY: unless specified otherwise, dispose of arisings from all specified operations by removing from site.
- 180 CHIPPING OR SHREDDING: Not permitted on site.
- 197 CLEANLINESS: Leave the works in a clean, tidy condition at completion and after any maintenance operations.

#### New grassland areas

- 222 MAINTENANCE OF IMPROVED/ SPECIES RICH GRASS AREAS:
  - Grass height: to be maintained using traditional meadow management based around a main summer hay cut in combination with autumn and possibly spring mowing.



- Condition: Maintain grass in a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
- Water logging and compaction: ensure that soil and grass does not become compacted or waterlogged.
- 273 MAINTENANCE OF DITCH/HEDGEROW BUFFERS: Carry out the following:
  - Times of year/frequency of cutting: October to March
  - Height of cut: 80mm eight weeks after sowing in first year; subsequent years 150mm, with exception of vegetation 2m radius around refugia, which will not be cut.
  - Arisings: Cuttings will be left to dry and shed seed for approximately one to seven days and the resulting cuttings removed from the site and composted.
- 275 MAINTENANCE OF TUSSOCKY/NECTAR RICH PLANTING: Carry out the following:
  - Times of year/frequency of cutting: October to March
  - Height of cut: 80mm eight weeks after sowing in first year; subsequent years 150mm, with exception of vegetation 2m radius around refugia, which will not be cut.
  - Arisings: Cuttings will be left to dry and shed seed for approximately one to seven days and the resulting cuttings removed from the site and composted.

#### Native Shrubs / Trees

#### 500 ESTABLISHMENT OF NEW PLANTING

- Duration: 0-5 years.
- Weed control: refer to Q35/645; 650; 657; 670.
- Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- 510 TREE STAKES AND TIES (IF REQUIRED): Inspect as scheduled and additionally immediately after strong winds, and carry out the following:
  - Check stakes for looseness, breaks and decay and replace as necessary to original specification. If a tree with a defective stake has grown sufficiently to become self supporting, remove stake(s) and fill the hole(s) with lightly compacted soil.
  - Adjust, refix or replace loose or defective ties as necessary, allowing for growth since planting and to prevent chafing. Where chafing has occurred, reposition or replace ties to prevent further chafing.
  - Where stakes are longer than half the height of the clear stem of the tree, cut the stake to this height in spring and retie to tree firmly but not tightly with a single tie.

- Remove redundant tapes, tags, ties, labels and other encumbrances.
- Remove stakes and ties during spring when no longer required to support tree.
- 520 REFIRMING: Ensure that trees and shrubs remain firmly bedded after strong winds, frost heave and other disturbances. Refirm by treading around the base. 'Collars' at the base of tree stems created by tree movement to be broken up by fork, avoiding damage to roots, backfilled with topsoil as necessary, and refirmed.
- 530 TREE SHELTERS: Adjust, refix or replace any loose or defective guards to original specification and to prevent chafing. Remove tree shelters and dispose off site once trees / shrubs are fully established.
- 540 PRUNING GENERALLY:
  - Prune in accordance with good horticultural practice. Prune larger branches and woody stems in accordance with good arboricultural practice.
  - Thin, trim and shape appropriately to each species, location, season, and stage of growth, leaving a well balanced natural appearance.
  - Use clean sharp secateurs, hand saws or other tools to carry out works. Trim off ragged edges of bark or wood with a sharp knife.
  - Remove branches without damaging or tearing the stem.
  - Keep wounds as small as possible and cut cleanly back to sound wood. Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.
  - Prune larger branches neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
- 545 PRUNING OF EXCESSIVE OVERHANG: Remove annually any growth encroaching onto grassed areas.
- 550 PRUNING OF EXCESSIVE HEIGHT: Remove excessive height of more than five metres within the edge mix, and eight metres within woodland mix and dispose off site.
- 570 FORMATIVE PRUNING OF YOUNG TREES:
  - Do not prune whips or feathered trees.
  - Type and timing of pruning operations to be carried out to suit the plant species.
  - Do not prune during the late winter/early spring sap flow period, unless specified otherwise.
  - Crown prune young trees up to 4 m high by removing dead branches and reducing selected side branches by one third to preserve a well-balanced head, ensuring the development of a single strong leader and the removal of duplicated branches and potentially weak or tight forks. In each case cut back to live wood.



- 580 PRUNING FLOWERING SPECIES: Unless otherwise specified or instructed, prune:
  - Winter flowering shrubs in spring.
  - Shrubs flowering between March and July immediately after the flowering period.
  - Shrubs flowering between July and October back to old wood in winter.
- 611 TRIMMING ESTABLISHED HEDGES:
  - Time of year: January/February.
  - Operations:
  - Form: Trim carefully and neatly to regular line and shape with vertical sides.
  - Trim: Remove current growth rather than old wood.
  - Tools/ Cutting: suitable mechanical cutters.
- 620 REMOVAL OF DEAD PLANT MATERIAL: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.
- 635 REINSTATEMENT OF PLANTING AREAS:
  - Remove dead and damaged plants
  - Carefully move any mulch materials to one side and dig over the soil, leaving it fit for replanting. Take care not to disturb roots of adjacent plants.
  - Replace plants, using pits and plants to the original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
  - Dress with Enmag slow-release fertilizer at 70g/sq. m.
- 645 WEED CONTROL GENERALLY:
  - Remove and/or prevent plant growth that is not required in the landscape to achieve the following level(s) of weed control: 90% control; no weed species in excess of 150mm high.
  - Ensure that the methods used cause the minimum of damage to adjacent plants, trees or grass.
  - All tree and shrub planting to be maintained weed free throughout planting area.
- 650 HAND WEEDING: Remove all weeds, including roots, by hand using hoes, trowels or forks, taking care to remove not more than a minimum quantity of soil, causing minimum disturbance to trees, plants, mulched surfaces and leaving the area in a neat, raked, clean condition.
- 657 HERBICIDE TO KILL REGROWTH:
  - Apply a suitable foliar acting herbicide to kill regrowth.
  - Allow the recommended period before clearing arisings.

#### 670 WEED CONTROL WITH SUMMER HERBICIDE:

- Apply a suitable foliar acting herbicide.
- Re-apply as necessary to maintain required level of weed control.
- Allow the recommended period before clearing arisings.
- 680 SOIL AERATION: Prick up trodden or otherwise compacted soil surfaces using a border fork as specified in BS 7370: Part 4, to aerate the soil of root areas. Do not damage plants and their roots.
- 690 MAINTENANCE OF MULCH:
  - Top up with Melcourt Forest Biomulch to thickness of 50mm.
  - Sweep up and replace mulch spilling onto adjacent areas and, if not contaminated with weeds or rubbish, return to planted area.
  - Remove weeds growing on or in mulch by hand weeding or herbicide.
- 695 FERTILIZING ESTABLISHED TREES AND SHRUBS: Spring spread of Enmag slow release fertilizer, at a uniform rate of 70g/m<sup>2</sup>.
- 710 NATIVE TREE AND SHRUB PLANTING MAINTENANCE
  - Watering: In exceptional circumstances to prevent plants dying.
  - Loose plants: Refirm surrounding soil, without compacting.
  - Vegetation: Except trees and coppice shoots to be retained, cut down to 5m in edge mix area and 8m in woodland mix area.
  - Arisings: Leave between rows.
  - Ditches and drains: Keep clear.
- 715 NATIVE TREE AND SHRUB THINNING: Thin out the northern edge of the existing woodland, every five years, by removing dead/dying trees and favouring straight, upright trees. Prune low branches along the northern edge. Allow the removal of branches to be left on woodland floor to decay and return nutrients into the soil. Avoid thinning during the bird nesting season (generally March-September).

#### Tree work

- 810 TREE WORK GENERALLY
  - Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
  - Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.



- Removing branches: Cut as shown in Arboricultural Association Leaflet No 8 'Mature tree maintenance'. Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well-balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural Association.

#### 815 ADDITIONAL WORK

- Defective, diseased, unsafe or weak parts of trees additional to those scheduled for attention: Give notice if detected.
- 820 PREVENTION OF WOUND BLEEDING
  - Standard: To BS 3998, clause 8.
- 825 PREVENTION OF DISEASE TRANSMISSION
  - Standard: To BS 3998, clause 9 and Appendix B.
- 830 CLEANING OUT AND DEADWOODING

Remove:

- Rubbish, wind blown or accumulated in branch forks.
- Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
- Other unwanted objects, e.g., tree houses, swings.
- 835 CUTTING AND PRUNING GENERALLY
  - Tools: Appropriate, well maintained and sharp.

Final pruning cuts:

- Chainsaws: Do not use on branches of less than 50 mm diameter.
- Hand saws: Cut in one continuous operation to form a smooth cut surface.
- Anvil type secateurs: Do not use.

Removing branches: Do not damage or tear the stem.

- Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.
- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.

Large branches: Remove in small sections and lower to ground with ropes and slings.

• Dead branches and stubs: When removing, do not cut into live wood.

- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.
- 840 CROWN REDUCTION/ SHAPING
  - General: Cut back selectively to lateral or sublateral buds or branches to retain flowing branch lines without leaving stumps.
- 845 CROWN LIFTING
  - Clearances: Remove branch systems to give clearance.
  - Removing branches: Remove whole branches back to the stem or cut lower portions of branches back to lateral or sublateral buds or branches. Do not leave stumps.
- 850 CROWN THINNING
  - Removing branches: Remove inward growing, crossing, rubbing, dead and damaged branches.
  - Thinning: Selectively remove approximately 2.0 metres of secondary and small live branch growth evenly throughout the crown.
  - Branches: Cut back to lateral or sublateral buds or branches without leaving stumps.
  - Appearance: Leave a uniform and well-balanced structure of branches and foliage

#### 855 CUTTING TREE ROOTS

- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
- The branch spread of the tree.
- An area with a radius of half the tree's height, measured from the trunk.
- Outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.

#### Cutting:

- Make clean smooth cuts with a hand saw.
- Wounds: Minimize. Avoid ragged edges.
- Finishing: Pare cut surfaces smooth with a sharp knife.

#### Backfilling:

• Protection: Cover cut roots with clean sharp sand.



• Material: Backfill with original topsoil.

#### 860 REMOVING TREES

- Standards: To BS 3998, Appendix A and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.

#### Tree stumps:

- Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.

#### Filling holes:

- Material: Use as-dug material and/ or imported soil as required.
- Finishing: Grade to marry in with surrounding ground level

#### 865 BARK DAMAGE

Wounds:

- Bark: Gently remove ragged edges using a sharp knife.
- Wood: Remove splintered wood from deep wounds.
- Size: Keep wounds as small as possible.

#### 870 CAVITIES IN TREES

- Investigation: Remove rubbish and rotten wood. Probe the cavity to find the extent of any decay and give notice.
- Water filled cavities: Do not drain.
- Sound wood inside cavities: Do not remove.

#### Ponds

#### 896 CLEARANCE OF PONDS AND SWALES

Clearance: Remove Litter, debris and excessive scrubby vegetation causing obstruction.

 Frequency: On-going vegetation clearance to remove scrub from encroaching on ponds and swales; vegetation removed to be left on the bankside for two days before being removed from the site.

- Time of Year: Autumn to early spring; only one pond, or one side of swale managed in any one year.
- Method: By hand.

### Protecting / Maintaining / Making Good Defects

MAINTENANCE:

• Make visits at approximately monthly intervals during the growing season and as necessary to fulfil the requirements of this specification.

FAILURES OF PLANTING:

- Excepting theft or malicious damage after practical completion, any trees/shrubs/plants that have failed to thrive will be regarded as defects due to materials or workmanship not in accordance with the Contract. Unless otherwise instructed they must be replaced by approved equivalent trees/shrubs/plants during the next suitable planting season.
- Replacements must match the size of adjacent or nearby plants of the same species or should match the original specification, whichever is the greater.



## **Appendix 5 – Figures**

- TC22003 LA.01: Landscape Strategy
- TC22003 LA.02: Landscape Detail (West)
- TC22003 LA.03: Landscape Detail (East)





## **Obsidian Homes** Brynheulog, St Clears

# Landscape Strategy **01**



Planning Application boundary

## Soft Landscape

Landscape planting will provide an overall positive impact on the biodiversity value of a site and the local area. Pollinatorfriendly plants will be included in the landscape planting for insects.

Existing trees to be retained

Proposed tree - native species used where possible

Structure planting - native scrub buffer

Proposed shrub planting including selected native species where possible

Proposed native boundary hedgerow planting

Proposed grass areas with areas with ecotone transition habitats and areas of wildflower, long grass, annual meadow



SuDS features - detention basins

SuDS features - rain gardens

## Boundary treatments



Proposed masonry boundary walling to residents' garden, 1.8m high

Proposed close-board garden fences, 1.8m high including Hedgehog gateways in all fences between gardens

Proposed knee rail, 0.6m high

## Green Infrastructure Target Notes

Incorporating recommendations within Preliminary Ecological Assessment prepared by Habitat Matters Ltd



 $\left(4\right)$ 

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Mixed native tree and shrub planting along southern boundary

Landscape planting will include native species of local provenance (zone 303 or 304) where possible to enhance the biodiversity value of a site and the local area

Pollinator friendly, local provenance seed mix used within SUDS areas

- A dark corridor will be maintained along the hedgerow and woodland boundaries
- Reduced mowing frequency of grassland

Native shrub & tree planting to comprise holly (Ilex aquifolium), hazel (Corylus avellana), hawthorn (Cratageus monogyna), dogwood (Cornus sanguinea), spindle (Euonymus europaeus), field maple (Acer campestre), rowan (Sorbus aucuparia), honeysuckle (Lonicera periclymenum) and dog rose (Rosa canina)



North

Scale @ A1 - 1:500

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December 2021

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## **Obsidian Homes** Brynheulog, St Clears

## Landscape Proposals 02 (west)





## Planning Application boundary

Existing trees to be retained and fully protected during construction in accordance with BS 5837:2012: Trees in relation to design, demolition and construction-Recommendations

Proposed tree - Proposed tree - Betula pendula

Proposed tree - Prunus avium [Heavy Standard; 350-425cm high]

Proposed tree - Sorbus aucuparia 'Sheerwater Seedling' [Heavy Standard; 350-425cm high]

[Heavy Standard; 350-425cm high]

Proposed tree - Malus sylvestris [Heavy Standard; 350-425cm high]



Proposed tree - Acer campestre 'Elsrijk' [Extra Heavy Standard; 400-450cm high] Structure planting - Ilex aquifolium (3L) and Corylus avellana, Cratageus monogyna, Cornus sanguinea,

*periclymenum* and *Rosa canina* all 1+2; Transplant - 80-100cm high, 1.25m centres

Proposed shrub planting including selected native species where possible:

Euonymus europaeus, Acer campestre, Lonicera

Caryopteris x clandonensis [30-40cm high; 3L] Cistus x corbariensis [40-60cm high; 5-7.5L] Corylus avellanna [40-60cm high; 5-7.5L] Hebe salicifolia [30-40cm high; 3L] Hedera helix [30-40cm; 3L] Philadelphus 'Belle Etoile' [40-60cm high; 5-7.5L] Viburnum opulus 'Roseum' [40-60cm high; 5-7.5L] Rosa 'Fru Dagmar Hastrup' [30-40cm high; 3L]



Proposed native boundary hedgerow planting



20% Acer campestre [1+2; Transplant - 100-125cm high] 20% *Corylus avellana* [1+2; Transplant - 80-100cm high] 5% llex aquifolium Container grown 3L; 100-125cm high] 20% *Viburnum opulus* [1+2; Transplant - 100-125cm high] 35% *Ligustrum vulgare* [Bushy; 100-125cm high]

Proposed grass areas with areas with ecotone transition habitats and areas of wildflower, long grass. Local seed mix focused on polinators sulied by Wyndrush Wild (https://wyndrushwild.

SuDS features - detention basins. Local seed mix focused on polinators sulied by Wyndrush Wild



co.uk/)



Shrubs Caryopteris x clandonensis\* [30-40cm high; 3L] Lavandula angustifolia 'Hidcote'\* [30-40cm high, 7.5L] Viburnum opulus \*[30-40cm high, 7.5L]

(https://wyndrushwild.co.uk/)

SuDS features - rain gardens

\* to be used on upper slopes of rain garden

Herbaceous Nepeta 'Six Hills Giant' 2 litre container Schizostylis coccinea 'Major' 2 litre container Eupatorium cannabinum 3 litre container Geranium x oxonianum 'Rose Clair' 3 litre container Rudbeckia birta 3 litre container Helleborus foetidus 3 litre container

Acorus gramineus 'Ogon' 5 litre container Carex pendula 3 litre container Pennisetum alopecuroides 'Hameln' 5 litre container





Scale @ A1 - 1:250

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Grasses







## **Obsidian Homes** Brynheulog, St Clears

Landscape Proposals 03 (east)

Key



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Part -

Planning Application boundary

Refer to Plan 02 for plant specifications



Proposed tree - native species used where possible

Structure planting - native scrub buffer

Proposed shrub planting including selected native species where possible

Proposed native boundary hedgerow planting

Proposed grass areas with areas with ecotone transition habitats and areas of wildflower, long grass, annual meadow



SuDS features - rain gardens





Scale @ A1 - 1:250

TC22003 - 01-03 v2.dwg



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