



Sambrook Associates Ltd

5 Barnhill Grange | Old Coach Road
Barnhill | Broxton | Cheshire CH3 9JJ
M: 07967 013905
rebecca.sambrook@sambrookassociates.co.uk

Green Infrastructure Statement (GIS)

Site:	Broad Oak Barns, Rossett	Report Date	05 May 2024
Author	Rebecca Sambrook MCIEEM BSc.(Hons)		

Development	Demolition and conversion of buildings at Broad Oak Barns, Rossett and associated infrastructure, including parking, biodiversity compensation, enhancement and soft landscaping.
Assessed Losses	The development comprises entirely hard standing which now in places, has a discontinuous and thin cover of bramble scrub with immature shrubs such as buddleia emerging. Loss of bat roosting opportunities is mitigated and compensated by a bat mitigation strategy, which includes enhanced roosting opportunities under NRW Licence ref S093834/1. Bats are therefore not considered in this GIS, only to state that the new roost provision does provide enhanced and secure roosting opportunities with maintenance and management prescriptions in the long term. There will be no loss of trees, grassland, hedgerows or any other notable or valuable habitat. Bird nesting opportunities will be lost and these will be compensated through the provision of replacement nest boxes.
Proposed Biodiversity Net Benefit	The proposed development includes a soft landscaping scheme which will be created with a biodiversity focus. The landscaping scheme includes the planting of a native species rich hedgerow along the eastern boundary, replacement planting along the road hedgerow and sowing of a species rich neutral grassland mix in the communal open grassland areas. The Landscaping Framework plan (Cassidy + Ashton, 18/01/2019, L10, P2), shows the locations of soft landscaping. Within the site, the following will be undertaken: • Within Soft Landscaping (turf and planting areas): ○ creation of approx. 623m² of wildflower grassland by sowing Emorsgate EM2 Standard General Purpose Meadow Mixture or similar across the three areas ○ planting total of 8no. wild cherry <i>Prunus avium</i> and 6no. crab apple <i>Malus sylvestris</i> across the three areas. • Within the gardens:

	○ creation of approx. 1854m² of wildflower grassland by sowing Emorsgate Seeds EL1 Flowering Lawn Mixture or similar across the 10 gardens ○ planting 1no. wild cherry <i>Prunus avium</i> per garden (10 in total). • Along the eastern boundary, described on the plan as Post and Rail Fencing (with Supplemental Planting): ○ Planting of a species rich hedgerow with trees totaling approx. 90m in length comprising hawthorn <i>Crataegus monogyna</i>, blackthorn <i>Prunus spinosa</i>, holly <i>Ilex aquifolium</i>, hazel <i>Corylus avellana</i>, field maple <i>Acer campestre</i> and spindle <i>Euonymus europaeus</i>. ○ Seven oak <i>Quercus robur</i> trees to be planted at 10m intervals along the hedgerow. • The approx. 90m of road hedgerow (currently mainly hawthorn) that will be removed for the visibility splay will be replaced with a species rich hedgerow including hawthorn <i>Crataegus monogyna</i>, blackthorn <i>Prunus spinosa</i>, holly <i>Ilex aquifolium</i>, hazel <i>Corylus avellana</i>, field maple <i>Acer campestre</i> and spindle <i>Euonymus europaeus</i>. • 3no. Schwegler 1B nest box or similar, comprising a mix of 32mm, 26mm and oval holes. These are to be installed on suitable trees to the boundaries, at least two metres off the ground to reduce risk of predators and human interference. • A barn owl box is to be installed on the southern gable wall of the bat barn. • Swallow (5no) and swift boxes (2no) are to be installed on or in the bat barn.
--	---

Proposed Planting Specifications

Grass seed mix	For soft landscaping areas: Emorsgate EM2 Standard General Purpose Meadow Mixture or similar. For gardens: Emorsgate Seeds EL1 Flowering Lawn Mixture or similar. Both mixes: Sowing rate of 4g/m²
Trees	18no. wild cherry <i>Prunus avium</i> 6no. crab apple <i>Malus sylvestris</i> 6no. oak <i>Quercus robur</i> Girth/Dia: 12-14cm, Height: 350-425cm, Root Zone: RB.
Hedgerow	30% hawthorn <i>Crataegus monogyna</i> 30% blackthorn <i>Prunus spinosa</i> 15% hazel <i>Corylus avellana</i> 15% field maple <i>Acer campestre</i> 5% holly <i>Ilex aquifolium</i> 5% spindle <i>Euonymus europaeus</i> Bare rooted stock to be dipped in water retaining polymer and notch planted randomly in a triple staggered row at a rate of 7 plants per linear metre. Whips should be 40-60cm in height as this is the most viable size for establishing a new hedgerow.

	All plants to be healthy, hardened-off and with good fibrous root systems and to comply with the requirements of BS3936 Specification for Nursery Stock. All planting to be undertaken in accordance with BS4428 Code of Practice for General Landscape Operations: • All plants to be protected from wind exposure at all times. All plants to be soaked in water for several hours prior to planting and to be well watered in. • No planting to be carried out during poor weather conditions, i.e. when ground is frozen, waterlogged, or during droughts, hot sunshine or persistent dry or cold winds. All plant material to receive enough water to ensure healthy establishment. • Time of year for planting: November to March, inclusive. • Watering and weed control: Provide as necessary.
Personnel	All plants are to be sourced from recognised UK suppliers and be of native provenance. All operatives are to be appropriately trained, certified and qualified to undertake the tasks required. All work is to be carried out in accordance with the relevant British Standards, Codes of Practice and Legislation.

Management Prescriptions

Management Year / Phase	Areas	Action	Timing	Prescriptions
Year 0 Planting/ Sowing	Soft landscaping areas	Creation of species rich grassland with trees Emorsgate EM2 Standard General Purpose Meadow Mixture or similar Tree planting 8no. wild cherry <i>Prunus avium</i> and 6no. crab apple <i>Malus sylvestris</i> across the three areas	Spring/ Autumn	Trees are to be planted first, and then the grassland can be sown. Create a planting bed to a depth of 1m and fill with subsoil (700mm) and topsoil (300mm). This will be a sufficient depth the support trees and also be suitable for the creation of the grassland. Topsoil to be the top layer which should be raked to produce a fine tilth. Immediately after planting, but before applying the bark mulch, all trees should be saturated. Trees: Tree pits of at least 75cm diameter greater than the root system and no deeper than the container shall be excavated and the sides well scarified to prevent smearing. The root system of the tree should be wetted prior to planting. The tree should be planted at the correct depth taking into account the position of the root flare and the finished level - the rootball or root stem transition should be level with the existing host soil or surface. The base of the rootball should typically sit on subsoil, for larger rootballs the subsoil will sit around the lower portion of the rootball. Tree pits should be backfilled with 1 part excavated topsoil and 2 parts tree planting compost. At each stage the fill should be firmed in to eliminate all air pockets under and around the root system, but with care being taken not to excessively compact the soil. The final layer should not be consolidated. Apply a general-purpose slow release fertiliser (at the rate of 75gm/m²) and Tree Planting and Mulching Compost at the rate of (20litres/m²) are to be incorporated into the top 150mm of topsoil during final cultivations. All trees are to be double staked with 75mm dia stakes with rubbers and spacers and with 1.2m deer protection guards. Stakes should be driven at least 300mm into the ground before planting the tree, taking care to avoid underground services and cables etc. and should typically be one third the height of the tree stem above ground. Staked trees shall be secured to stakes with suitable proprietary rubber tree ties and spacers.

				Grassland: Seed to be sown in the autumn (September to October) or spring (March-April) providing there is sufficient warmth and moisture. The seed must be surface sown and is to be applied by machine or preferably broadcast by hand. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact. During the establishment phase, in very dry conditions, the seed beds may need irrigation. The need for this will be assessed by the ground maintenance team prior to first occupation. Ongoing management of the soft landscaping areas will be undertaken by the ground maintenance team appointed by the resident's management company.
	Gardens	Creation of species rich lawns and single tree	Spring/ Autumn	To prepare a seed bed first remove concrete and hard debris, then 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 level firm surface. Lawn: Seed to be sown in the autumn (September to October) or spring (March-April) providing there is sufficient warmth and moisture. The seed must be surface sown and is to be applied by machine or preferably broadcast by hand. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact. During the establishment phase, in very dry conditions, the seed beds may need irrigation. The need for this will be assessed by the ground maintenance team prior to first occupation. Thereafter, the property purchasers will be responsible for the remaining establishment of lawns. Ongoing management of the soft landscaping areas will be undertaken by the ground maintenance team appointed by the resident's management company. Trees: Once the lawns are sown, planting of the single garden tree is to be undertaken using the T-notch or slit planting methods. Single wild cherry to be planted at an appropriate location within the garden, minimum 5metres from the property. All trees are to be double staked with 75mm dia stakes with rubbers and spacers and with 1.2m deer protection guards. Stakes should be driven at least 300mm into the ground before planting the tree, taking care to avoid underground services and cables etc. and should typically be one third the height of the tree

				stem above ground. Staked trees shall be secured to stakes with suitable proprietary rubber tree ties and spacers.
	Eastern boundary	Creation of hedgerow with trees along eastern boundary	November to March, inclusive	Create a planting bed to a depth of 1m and fill with subsoil (700mm) and topsoil (300mm). This will be a sufficient depth the support trees and hedgerow plants. Topsoil to be the top layer which should be raked to produce a fine tilth. Immediately after planting, but before applying the bark mulch, all trees should be saturated. Trees: Tree pits of at least 75cm diameter greater than the root system and no deeper than the container shall be excavated and the sides well scarified to prevent smearing. The root system of the tree should be wetted prior to planting. The tree should be planted at the correct depth taking into account the position of the root flare and the finished level - the rootball or root stem transition should be level with the existing host soil or surface. The base of the rootball should typically sit on subsoil, for larger rootballs the subsoil will sit around the lower portion of the rootball. Tree pits should be backfilled with 1 part excavated topsoil and 2 parts tree planting compost. At each stage the fill should be firmed in to eliminate all air pockets under and around the root system, but with care being taken not to excessively compact the soil. The final layer should not be consolidated. Apply a general-purpose slow release fertiliser (at the rate of 75gm/m²) and Tree Planting and Mulching Compost at the rate of (20litres/m²) are to be incorporated into the top 150mm of topsoil during final cultivations. All trees are to be double staked with 75mm dia stakes with rubbers and spacers and with 1.2m deer protection guards. Stakes should be driven at least 300mm into the ground before planting the tree, taking care to avoid underground services and cables etc. and should typically be one third the height of the tree stem above ground. Staked trees shall be secured to stakes with suitable proprietary rubber tree ties and spacers. 7no. oak trees to be planted at 10m intervals along the hedgerow.

				Hedgerow: Planting slots shall be made using a planting spade. Plant notches should be T-, H- or L- shaped, or straight notches, using spades of a design suitable for this purpose. The planting notches must be vertical and deep enough for the roots to hang freely, with the transplant being planted so that the root collar is exactly level with the ground surface. The notch must then be closed and the soil will be well firmed round the roots in line with the guidelines as set out in BS 4428 (1989). All hedge planting stock will be protected from rabbit damage using approved proprietary 0.9m clear plastic spiral guards, supported with 0.9m 12/14lb canes as advised by the manufacturer. Composted bark mulch will be spread to a depth of 75mm along the hedgerow base. All plants shall be watered in at the end of each day of planting. Where proposed hedgerow planting coincides with proposed trees, planting to take place at the same time to avoid damage to roots.
	Road hedgerow	Creation of replacement road hedgerow	November to March, inclusive	Create a planting bed to a depth of 0.75m and fill with subsoil (450mm) and topsoil (300mm). This will be a sufficient depth the support the hedgerow plants. Topsoil to be the top layer which should be raked to produce a fine tilth. Planting slots shall be made using a planting spade. Plant notches should be T-, H- or L- shaped, or straight notches, using spades of a design suitable for this purpose. The planting notches must be vertical and deep enough for the roots to hang freely, with the transplant being planted so that the root collar is exactly level with the ground surface. The notch must then be closed and the soil will be well firmed round the roots in line with the guidelines as set out in BS 4428 (1989). All hedge planting stock will be protected from rabbit damage using approved proprietary 0.9m clear plastic spiral guards, supported with 0.9m 12/14lb canes as advised by the manufacturer. Composted bark mulch will be spread to a depth of 75mm along the hedgerow base. All plants shall be watered in at the end of each day of planting. Where proposed hedgerow planting coincides with proposed trees, planting to take place at the same time to avoid damage to roots.
Year 1 Establishment	Soft landscaping areas	Management of grassland and trees	Late summer (grassland)	Grassland: Most of the sown meadow species are perennial and are slow to establish. Soon after sowing there will be a flush of annual weeds which can look unsightly, but they will offer shelter to the sown seedlings, are great for insects, and they will die before the year is out. Cut the annual weeds mid to late summer; ideally August, then remove and compost. 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.

			Early spring (trees)	Trees: Top up mulch to ensure a 50mm layer around tree bases is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust ties, sheaths and stakes as and when required; the need for this must be checked annually.
	Gardens	Management of lawns and trees	From spring (grassland) Early spring (trees)	Year 1 management onwards will be subject to property owner's discretion. The recommended method of management of the lawns will be provided in a home pack upon purchase of the property. It is noted however, that there will be no proposal to enforce this under any form of agreement. Lawn: The wildflower and grass species in this mix are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season. This annual weed growth is easily controlled by repeated mowing. Mow newly sown flowering lawns regularly (every 7 -10 days during growing season) throughout the first year of establishment. Cut to a height of 40-60mm, removing cuttings if dense. This will gradually develop a good sward structure, help maintain balance between faster growing grasses and slower developing wild flowers, and control annual weeds. Dig out any residual perennial weeds such as docks. Trees: Top up mulch to ensure a 50mm layer around tree base is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust ties, sheaths and stakes as and when required; the need for this must be checked annually.
	Eastern boundary	Management of hedgerow with trees along eastern boundary	Early spring	Top up mulch to ensure a 50mm layer around tree/hedgerow bases is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust ties and stake as and when required; the need for this must be checked annually.
	Road hedgerow	Management of replacement road hedgerow	Early spring	Top up mulch to ensure a 50mm layer around tree/hedgerow bases is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust sheaths and stakes as and when required; the need for this must be checked annually.

Year 2-5 Initial ongoing management	Soft landscaping areas	Management of grassland and trees	Late summer (grassland), autumn/ winter, early spring (if required) Early spring (trees)	Grassland: In the second and subsequent years EM2 sowings will be managed by traditional meadow management based around a main summer hay cut in combination with autumn and possibly spring mowing. The meadow grassland is not to be cut from late April through to late August to give the sown species an opportunity to flower. After flowering in August take a ‘hay cut’: cut back with a scythe, petrol strimmer or tractor mower to c 50mm. Leave the arisings to dry and shed seed for 3 days then remove from site, or compost. Mow the re-growth through to late autumn/winter to c 50mm and again in spring, if needed. Trees: Top up mulch to ensure a 50mm layer around tree/hedgerow bases is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust ties and stakes as and when required; the need for this must be checked annually.
	Gardens	Management of lawns and trees	From spring (grassland) Early spring (trees)	Subject to property owner’s preferences, the following will be suggested: Lawn: Mow regularly as a lawn but not too short (25-40mm). To permit flowering, mowing can be relaxed from late June. Cut again when the sward gets untidy (after 4-8 weeks). Mowing may be suspended earlier in the year to allow cowslips to flower. Heavy quantities of cuttings should be collected and removed. Trees: Top up mulch to ensure a 50mm layer around tree/hedgerow bases is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust ties and stakes as and when required; the need for this must be checked annually.
	Eastern boundary	Management of hedgerow with trees along eastern boundary	Early spring for topping up mulch and adjusting ties/sheaths /stakes Pruning in Jan/Feb	Top up mulch to ensure a 50mm layer around tree/hedgerow bases is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust protective sheaths, ties and stakes as and when required; the need for this must be checked annually. From Year 3, landscape contractor to check for the need to prune to encourage a good shape.

	Road hedgerow	Management of replacement road hedgerow	Early spring for topping up mulch and adjusting sheaths/ stakes Pruning in Jan/Feb	Top up mulch to ensure a 50mm layer around tree/hedgerow bases is maintained. Replace any dead, dying, damaged stock with same species of similar size. Adjust protective sheaths and stakes as and when required; the need for this must be checked annually. From Year 3, landscape contractor to check for the need to prune to encourage a good shape.
Year 6-30 Ongoing management	Soft landscaping areas	Management of grassland and trees	Late summer for grassland Winter/ early spring for trees	Grassland: Late August, cut to c 50mm height, leave the arisings to dry and shed seed for 3 days then remove from site, or compost. Mow the re-growth through to late autumn/winter to c 50mm and again in spring, if needed. Trees: Assess trees and remove tree stakes and protective sheaths if the tree is sufficiently self-supporting. Prune as required.
	Gardens	Management of lawns and trees	Late summer (grassland), autumn/ winter, early spring (if required) Winter/ early spring (trees)	Subject to property owner's preferences, the following will be suggested: Lawn: Mow regularly as a lawn but not too short (25-40mm). To permit flowering, mowing can be relaxed from late June. Cut again when the sward gets untidy (after 4-8 weeks). Mowing may be suspended earlier in the year to allow cowslips to flower. Heavy quantities of cuttings should be collected and removed. Trees: remove tree stakes and protective sheaths if the tree is sufficiently self-supporting. Prune as required.
	Eastern boundary	Management of hedgerow with trees along eastern boundary	Pruning in Jan/Feb Early spring removing ties/stakes	Replace any dead, dying, damaged stock with same species of similar size. Remove protective sheaths and stakes as and when required (usually year 6 but may be extended where replacement planting has occurred); the need for this must be checked annually. Landscape contractor to trim hedgerows every 3 rd year, maintaining a minimum height of 1.5m and 1m width.

	Road hedgerow	Management of replacement road hedgerow	Pruning in Jan/Feb Early spring for removing ties/stakes	Replace any dead, dying, damaged stock with same species of similar size. Remove protective sheaths and stakes as and when required (usually year 6 but may be extended where replacement planting has occurred); the need for this must be checked annually. Landscape contractor to trim hedgerows every 3rd year, maintaining a minimum height of 1.5m and 1m width. Additional cuts may be required to maintain as per highway specifications.
--	---------------	---	---	---