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STRATA STERLING BARNSLEY WEST LTD

BARNSLEY WEST ROUNDABOUT - NORTH

LANDSCAPE AND BIODIVERSITY MANAGEMENT PLAN

FEBRUARY 2023

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LANDSCAPE AND BIODIVERSITY MANAGEMENT PLAN

FEBRUARY 2023

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REVIEWED & APPROVED BY:

Tim Palmer Technical Director

CONTENTS

DRAWINGS	TITLE	SCALE
LD10593.001	North Roundabout Planting Plan	1:500@A3

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Strata Sterling Barnsley West Ltd to undertake a Landscape Biodiversity Management Plan (LBMP) in support of a commercial and residential development project, located to the west of Barnsley, central Ordnance Survey (OS) grid reference SE 31778 07075 (hereafter known as the 'Site').

1.1.1 An application has been submitted and approved for the construction of a roundabout to the north of the Site (application no. 2020/0027). This application is distinct from the main commercial and residential application. This LBMP is required in order to discharge planning condition 11, which states:

"Upon commencement of development details of a scheme of biodiversity enhancement measures, including a timetable for their implementation, shall be submitted to and approved in writing by the Local Planning authority. The development shall be implemented in accordance with the approved details".

1.1.2 An Ecological Appraisal, Environmental Statement and several protected species baseline reports have been produced to date (WYG 2020-2021; Tetra Tech, 2021).

1.1.3 In general terms, this report outlines the management and maintenance of habitats and ecological mitigation measures to ensure that the development proposals are in line with the National Planning Policy Framework (NPPF, 2021) and published British Standards (2013) BS 42020:2013 Biodiversity - Code of practice for planning and development.

1.1.4 Habitat and ecological recommendations and proposals are shown on Drawings prepared by Wardell Armstrong, 2022

- LD10593.001 North Roundabout Planting Plan

1.2 Objectives of the LBMP

1.2.1 This LBMP should be read in conjunction with the Preliminary Ecological Appraisal (PEA) which presents the baseline status/condition of features at the site.

1.2.2 The broad objectives are to:

- Establish and maintain newly created habitats;
- Maintain and enhance retained vegetation;
- Maintain and enhance species populations;

- Contribute to local and national objectives i.e. by enhancing the habitats and to seek gains for biodiversity in line with the NPPF.

2 HABITAT CREATION, ESTABLISHMENT AND MANAGEMENT

2.1.1 The following habitat creation and management guidelines have been prepared with regard to the development proposals.

2.2 Native Hedgerow

2.2.1 Five new native species rich hedgerows are proposed between each of the roundabout access roads and will include a mix of native species including those native to the region: field maple *Acer campestre*, hazel *Corylus avellana*, holly *Illex aquifoloim,* dog rose *Rosa canina*, blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna*.

Creation

2.2.2 The location of hedgerow planting is shown on Drawing LD10593.001 North Roundabout Planting Plan. Specifications for hedgerow planting would be as follows:

- Whips will be planted during the dormant season (November-February), but not during prolonged cold spells where frost might penetrate to the roots;
- Planting will be undertaken in two staggered rows with approximately 300mm between plants and 450mm between rows; and
- Biodegradable rabbit protection, in the form of shelters / spiral guards, will be installed around transplants.

Establishment and Aftercare of Planted Hedgerows

2.2.3 The specification for establishment and aftercare of newly planted species-rich hedgerows would be as follows:

- New hedgerows to be protected by biodegradable tree guards and rabbit proof fencing which should be 900mm high galvanised mesh and timber stakes (mesh to be buried 150mm below ground with 150mm angled away from planting);
- Specimens will be firmed and watered as necessary;
- Once planting is established, generally from Year 3 onwards, stakes and guards may be removed;
- Hedgerows will be maintained using mulch to reduce pesticide use;
- Hedgerows will be maintained free of weeds along the length of the double staggered row and for an overall width of 1m and;
- Any dead or diseased planting will be removed and replanted in the next season;

Management (Year 3 Onwards)

2.2.4 Long term management of new hedgerow habitat within the Site will have the aim to improve their structure and quality as follows:

- Hedgerows within the Site will be trimmed on a 3-year rotation, incrementally raising the cutting height each year to ultimately achieve 3m in height;
- All stakes and guards will be removed by the end of Year 5;
- Works will be undertaken in January and February to avoid the peak nesting bird season and following berry production which is a valuable resource for birds and mammals; and

2.3 Neutral Grassland

2.3.1 Neutral Grassland will be seeded on the roundabout embankments. The species mix will be analogous to the National Vegetation Classification MG6 *Lolium perenne* - *Cynosurus cristatus* grassland. The mix will be introduced over all areas on the embankments other than those areas identified for shrub/hedgerow and tree planting.

2.3.2 The location and composition of grassland creation areas, including wildflower meadow mix grassland is shown on Drawing LD10593.001 Landscape Planting Plan

2.3.3 It is recommended that the seed mix is sourced from Emmorsgate EG6 standard meadow mixture and germinal seed farmland mix RE9[1] (or similar).

2.3.4 Species dominant/constant in the seed mix should include:

- Common Mouse-ear *Cerastium fontanum*
- Crested Dog's-tail *Cynosurus cristatus*
- Red Fescue *Festuca rubra*
- Yorkshire-fog *Holcus lanatus*
- Perennial Rye-grass *Lolium perenne*
- White Clover *Trifolium repens*

2.3.5 In addition to the above a number of flowering plants should also be present to ensure nectar sources for invertebrates these should include the following species:

- Yellow Rattle *Rhinanthus minor*
- Yarrow *Achillea millefolium*
- Common Knapweed *Centaurea nigra*
- Lady's Bedstraw *Galium verum*
- Meadow cranesbill *Geranium pratense*
- Meadow Vetchling *Lathyrus pratensis*
- Oxeye Daisy *Leucanthemum vulgare*
- Birdsfoot Trefoil *Lotus corniculatus*

[1] https://germinalamenity.com/re9-farmland-mixture-mg6-grassland

2.3.6 Yarrow is a particularly important component as it is a hemi (partial) parasite on grasses, which may otherwise become dominant to the exclusion of flowers, and result in a dense, closed in sward.

Establishment and Management

2.3.7 Once existing and colonising vegetation has been controlled and a sterile seed bed is created, the area will be cultivated and harrowed/raked to produce a medium tilth, appropriate for seeding.

2.3.8 The first grass cut will be carried out in March/April after autumn sowing or June/July after spring sowing. A second cut will be carried out later in the first year.

2.3.9 Any areas that fail to germinate will be reseeded in the next suitable sowing season.

Management (Year 2 Onwards)

- The management in following years can be achieved through a single late summer (late August to early September) hay cut after flowers have finished flowering, to approximately 50 mm. Following this, all arising's will be removed and not left in-situ.
- Management of invasive weeds such as docks *Rumex* spp. and thistles Cirsium spp., will be managed annually. Or may be controlled by aftermath grazing.
- Annual cuts of grassland will be continued for a period of 30 years.

2.4 Individual Trees

Creation

Supplementary planting of medium sized goat willow *Salix caprea* and rowan *Sorbus acucuparia* trees are proposed.

Establishment and Management

2.4.1 In order to ensure that healthy, vigorous growth is achieved of the newly planted trees, the following specification would be applied:

- All plating carried out in autumn or early spring;
- all planting stock supplied would be in accordance with BS3936 and would be the best quality of their respective kind;
- all plant stock would be supplied from a reputable nursery which can supply species of local provenance where possible;
- all plant material would be healthy, vigorous and sound transplanted nursery stock with well-formed fibrous root systems and well-formed heads;

- plant material to be free from pest and diseases, undamaged and any containers free from weeds, prior to planting;
- The trees would be pit planted and protected using 1.2m high tree tubes or guards constructed of a biodegradable material and supported by a single stake;
- The trees will be maintained free of weeds for a 1m diameter area around each tree through the maintenance of mulch to reduce pesticide use; and
- Any dead or diseased planting will be removed and replanted in the next season.

2.4.2 Ground flora will be allowed to develop naturally.

Management

2.4.3 Monitoring of the condition of the trees and woodland will be carried out at least once every 5 years. Other management work would include:

- Arboricultural works to rejuvenate trees in poor condition;
- The felling and clearance of diseased trees where there is a clear risk of disease or pest transmission.
- Creation of veteran tree features such holes, splits, cavities in existing poor quality trees to create habitat for invertebrates, nesting birds and bats;
- Limited selective thinning of trees and coppicing of selected species to introduce stand diversity and to benefit the growth of other trees and habitats; and
- Selective thinning of naturally regenerated juvenile trees to better the growth of the trees to be retained.

2.5 Scrub planting

Creation

2.5.1 The proposed native scrub mix will include; field maple *Acer campestre*, common dogwood *Cornus sanguinea,* hazel *Corylus avellana*, hawthorn C*rataegus monogyna*, holly *Ilex aquifolium,* blackthorn *Prunus spinosa*, pedunculate oak *Quercus robur*, dog rose *Rosa canina*, elder *Sambucus nigra,* rowan *Sorbus aucuparia* and guelder-rose *Viburnum opulus.*

Establishment and Management

2.5.2 In order to ensure that healthy, vigorous growth is achieved of the newly planted trees and shrubs, the following specification would be applied:

- All planting carried out in autumn or early spring;
- All planting stock supplied would be in accordance with BS3936 and would be the best quality of their respective kind;
- All plant stock would be supplied from a reputable nursery which can supply species of local provenance where possible;
- All plant material would be healthy, vigorous and sound transplanted nursery stock with well-formed fibrous root systems and well-formed heads;
- Plant material to be free from pest and diseases, undamaged and any containers free from weeds, prior to planting;

- The trees and shrubs would be notch planted, with the exception of the holly which would be pit planted and protected using 1.2m high tree tubes or guards constructed of a biodegradable material and/or post and wire fencing;
- The trees and shrubs will be maintained free of weeds for a 1m diameter area around each plant through the maintenance of mulch to reduce pesticide use; and
- Any dead or diseased planting will be removed and replanted in the next season.

Management

- Scrub planting and management will encourage the growth of scrub species of a range of ages;
- Bramble around hawthorn, blackthorn and other native species will be cut annually to allow other shrubby species to persist, enhancing structure and diversity;
- Scrub within the receptor area will be managed to cover no more than 30% of the area; and
- All arisings to be removed from Site.

Table 1: Summary of Maintenance and Timings

Habitat	Planting Schedule	Maintenance Schedule	Maintenance Details
Hedgerows	Planted during dormant season (Nov-Feb)	Maintenance implemented from year 3 onwards	Stakes and guards removed, by end of year 5
		Undertaken in Jan and Feb to avoid nesting bird season and to allow berries to grow	Trimmed on 3-year rotation
Neutral Grassland	Seeding to take place autumn or spring	Initial cut will be in March/April if sown in autumn, or June/July if sown in spring	One annual late-summer (late Aug/early Sept) hay cut, for 30 years
		All other maintenance will take place from year 2 onwards	Management of invasive weeds will take place annually
Trees	Autumn or early spring	Maintenance to be carried out every 5 years	Rejuvenation, felling of diseased trees, thinning and coppicing

Scrub	Autumn or early spring	Maintenance to be carried out annually	Cutting, removal of arisings

3 PROTECTED SPECIES ENHANCEMENT MEASURES

3.1 Badger

3.1.1 Updated walkovers would be carried out 3 months prior, and again 2 weeks prior to construction to confirm absence of badger setts at and 30m around the site boundary.

3.1.2 If setts are located, a 30m buffer would be demarcated around the sett to prevent any damage or disturbance occurring during construction. If a 30m buffer cannot be accommodated, a licence to close the sett would be required and would be applied for in advance of construction occurring. To obtain a Natural England sett closure licence, a detailed method statement would be required setting out the measures to be implemented on Site. In the event that a licence is required to close an active sett, sett closure can ordinarily be undertaken between July to November inclusive to avoid the breeding and cub rearing season.

3.2 Bats

3.2.1 The site contains limited foraging habitat for bats and supports no potential roosting habitats, therefore the clearance of vegetation for site works is not anticipated to have an adverse effect on local bat populations.

3.2.2 A sensitive lighting scheme will be used during construction works, which will maintain dark commuting corridors and foraging habitat. The sensitive lighting scheme will be designed in accordance with 'Guidance Note 08/18' (BCT, ILP, 2018) to minimise light spill into sensitive habitats. Careful design/selection of product will be undertaken with consideration of the following:

- Luminaries will not emit light from the UV spectrum;
- Metal halide and fluorescent sources will not be used;
- LED luminaries will be used where possible;
- A warm white spectrum (ideally <2700 Kelvin) will be adopted;
- Luminaries will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats; and
- Luminaries with an upward light ration of 0% will be used.

3.2.3 The lighting scheme will be subject to review by a suitably qualified ecologist prior to finalisation.

3.3 Birds - General

3.3.1 Site clearance works will be undertaken where possible outside the active nesting season (taken to be March to August inclusive). In the event that such timescales

cannot be accommodated a check for the presence of active nests will be undertaken by a suitably experienced ecologist, prior to commencement of works. Any active nests recorded would be identified and protected until the nesting attempt is complete.

4 CONCLUSION

4.1.1 In conclusion, the management prescriptions outlined above show that the Site can be managed to benefit wildlife and provide biodiversity benefits. The Site should be managed and maintained in accordance with the above recommendations for 30 years to align with the recommendations enhancing the habitats to ensure a Biodiversity Net Gain can be achieved on Site. The establishment and habitats such as hedgerow, pond and wetland, trees and species rich grassland will provide an overall benefit to wildlife. In addition, the Site can be managed to enhance and manage habitats which will benefit populations of bats and nesting birds.

5 REFERENCES

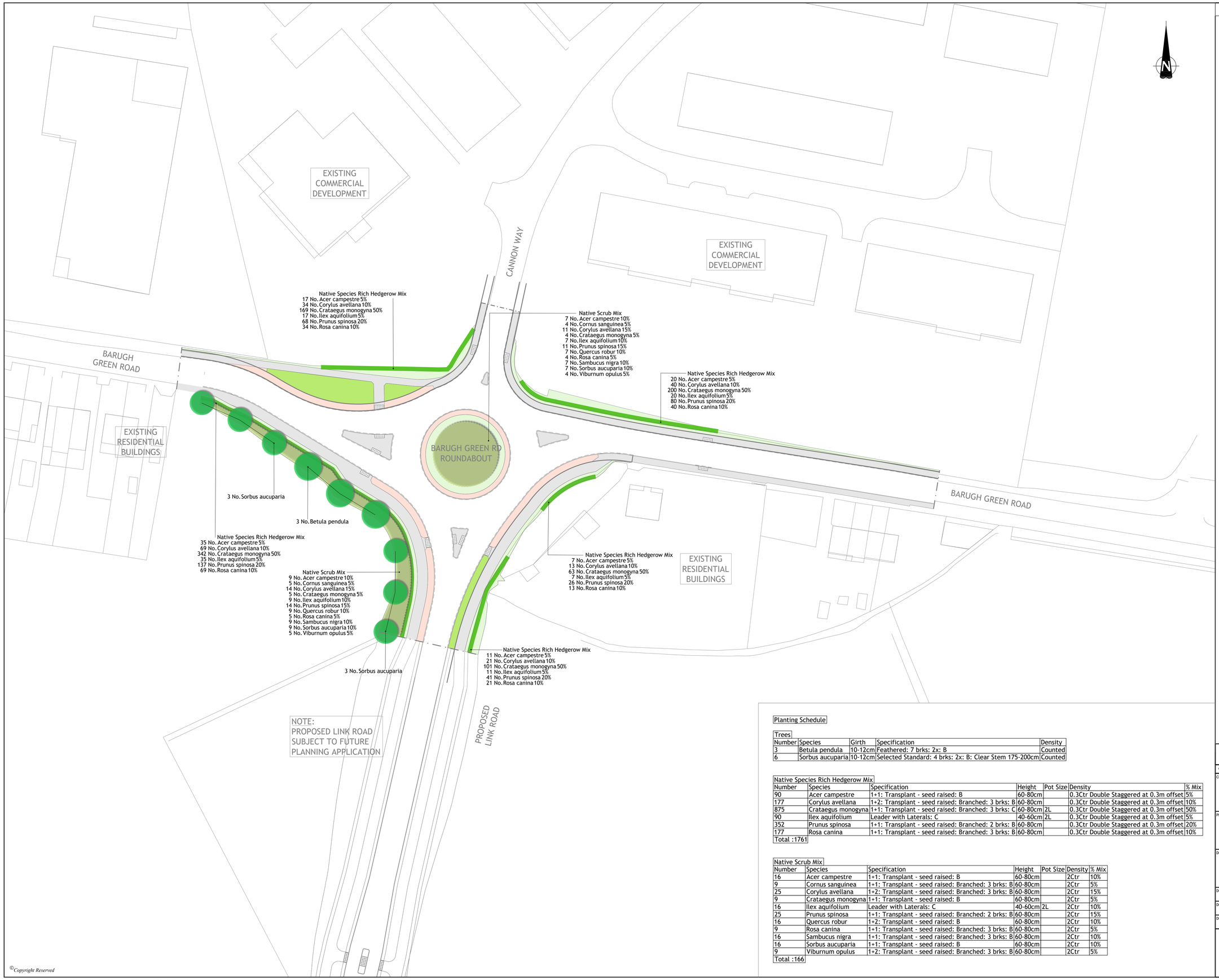
British Standards Institute. (2013). *Biodiversity – Code of Practice for Planning and Development*. BS 42020:2013.

Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd edn. Bat Conservation Trust, London.

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth.

Gent, T. & Gibson, S. (eds). 2003. Herpetofauna Workers' Manual (revised reprint), JNCC, Peterborough, ISBN 1 86107 450 6.

DRAWINGS



DO NOT SCALE FROM THIS DRAWING

KEY

- Individual Trees
- Native Species Rich Hedgerow Mix
- Native Scrub Mix
- Neutral Grassland Mix NVC MG6 Community
- Standard Meadow Mixture Emmorsgate EG6
- Tarmac Paving
- Block Paving

General Planting Notes

1. Tree protection shall be in place prior to works commencing, refer to the submitted Existing Vegetation Removal and Protection Plan. Any existing trees to be retained are the responsibility of the main contractor on site who shall take all necessary protective measures set out in BS 5837:2012.

2. All groundworks and planting operations shall be in accordance with the following British Standards and guidelines unless otherwise indicated:

- BS 4428:1989 Code of Practice for General Landscape Operations
- BS 8545:2014 Trees: from nursery to independence in the landscape.
- Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

3. On site soils may be used for planting subject to quality and quantity of soil resources available. Where topsoil is to be imported this should meet the criteria set out in BS3882:2015 with a clay content of no more than 30% (multipurpose). For imported subsoil the criteria set out in BS8601:2013 should be met with a clay content of no more than 30% (multipurpose). All areas of proposed planting/seeding affected by construction works to be relieved of compaction by ripping to a depth of 600mm, in two directions.

4. Effective weed control must be carried out prior to cultivation. All planting areas to be cultivated to a depth of 300mm, all proposed seeded areas to be cultivated to a depth of 150mm, except within 4.0m of any existing tree stem, unless otherwise stated in the specification.

5. Topsoil depths to be: 150mm seeded areas; 300mm for shrub areas; 300mm for trees. Good quality on site topsoil can be used for tree, shrub and grass areas. Pit planting will be used for trees and shrubs. Pits will be dug by the landscape contractor and should be freely draining. For areas to be seeded, the soil level shall be flush with any finished paved surfaces after settlement. For shrub beds and tree planting leave beds 75mm below finished pavement or grass areas in order to receive mulch. Organic compost (PAS 100) to be thoroughly incorporated into all topsoil used for shrub, hedge and tree planting.

6. Any deciduous trees and shrubs to be planted in late October to late March. Any conifers and evergreens to be planted in September/October or April/May. Any herbaceous plants, to be planted in September/October or March/April. Container grown plants may be planted at any time of year (avoiding the driest months of July/August).

7. All plants shall be watered in on planting with 20 litres per square metre. Trees to be supported by appropriate staking.

8. Organic compost (PAS 100) surface mulching to be supplied to all ornamental shrub planting, individual trees in grass and hedges to a depth of 75mm.

9. Where there is possibility of damage by browsing animals, plants are to be protected with appropriate tree and shrub shelters and/or rabbit proof fencing.

10. All planting areas to be maintained weed free for 2 years. Any dead or diseased plants shall be replaced during the following planting season. Watering to be carried out as necessary to allow plants to thrive through the 2-year establishment maintenance period.

Planting Schedule

Trees

Number	Species	Girth	Specification	Density
3	Betula pendula	10-12cm	Feathered: 7 brks: 2x: B	Counted
6	Sorbus aucuparia	10-12cm	Selected Standard: 4 brks: 2x: B: Clear Stem 175-200cm	Counted

Native Species Rich Hedgerow Mix

Number	Species	Specification	Height	Pot Size	Density	% Mix
90	Acer campestre	1+1: Transplant - seed raised: B	60-80cm		0.3Ctr Double Staggered at 0.3m offset	5%
177	Corylus avellana	1+2: Transplant - seed raised: Branched: 3 brks: B	60-80cm		0.3Ctr Double Staggered at 0.3m offset	10%
875	Crataegus monogyna	1+1: Transplant - seed raised: Branched: 3 brks: C	60-80cm	2L	0.3Ctr Double Staggered at 0.3m offset	50%
90	Ilex aquifolium	Leader with Laterals: C	40-60cm	2L	0.3Ctr Double Staggered at 0.3m offset	5%
352	Prunus spinosa	1+1: Transplant - seed raised: Branched: 2 brks: B	60-80cm		0.3Ctr Double Staggered at 0.3m offset	20%
177	Rosa canina	1+1: Transplant - seed raised: Branched: 3 brks: B	60-80cm		0.3Ctr Double Staggered at 0.3m offset	10%
Total :1761						

Native Scrub Mix

Number	Species	Specification	Height	Pot Size	Density	% Mix
16	Acer campestre	1+1: Transplant - seed raised: B	60-80cm		2Ctr	10%
9	Cornus sanguinea	1+1: Transplant - seed raised: Branched: 3 brks: B	60-80cm		2Ctr	5%
25	Corylus avellana	1+2: Transplant - seed raised: Branched: 3 brks: B	60-80cm		2Ctr	15%
9	Crataegus monogyna	1+1: Transplant - seed raised: B	60-80cm		2Ctr	5%
16	Ilex aquifolium	Leader with Laterals: C	40-60cm	2L	2Ctr	10%
25	Prunus spinosa	1+1: Transplant - seed raised: Branched: 2 brks: B	60-80cm		2Ctr	15%
16	Quercus robur	1+2: Transplant - seed raised: B	60-80cm		2Ctr	10%
9	Rosa canina	1+1: Transplant - seed raised: Branched: 3 brks: B	60-80cm		2Ctr	5%
16	Sambucus nigra	1+1: Transplant - seed raised: Branched: 3 brks: B	60-80cm		2Ctr	10%
16	Sorbus aucuparia	1+1: Transplant - seed raised: B	60-80cm		2Ctr	10%
9	Viburnum opulus	1+2: Transplant - seed raised: Branched: 3 brks: B	60-80cm		2Ctr	5%
Total :166						

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
A	Updated following client's comments	27.03.23	YX	LG	LG

CLIENT

STRATA STERLING BARNSLEY WEST LTD

PROJECT

BARNSLEY WEST HIGHWAYS

DRAWING TITLE

NORTH ROUNDABOUT PLANTING PLAN

ORG No.	REV	SUIT. CODE
LD10593-001	A	

ORG SIZE	SCALE	DATE
A1	1:500	24.03.23

DRAWN BY	CHECKED BY	APPROVED BY
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