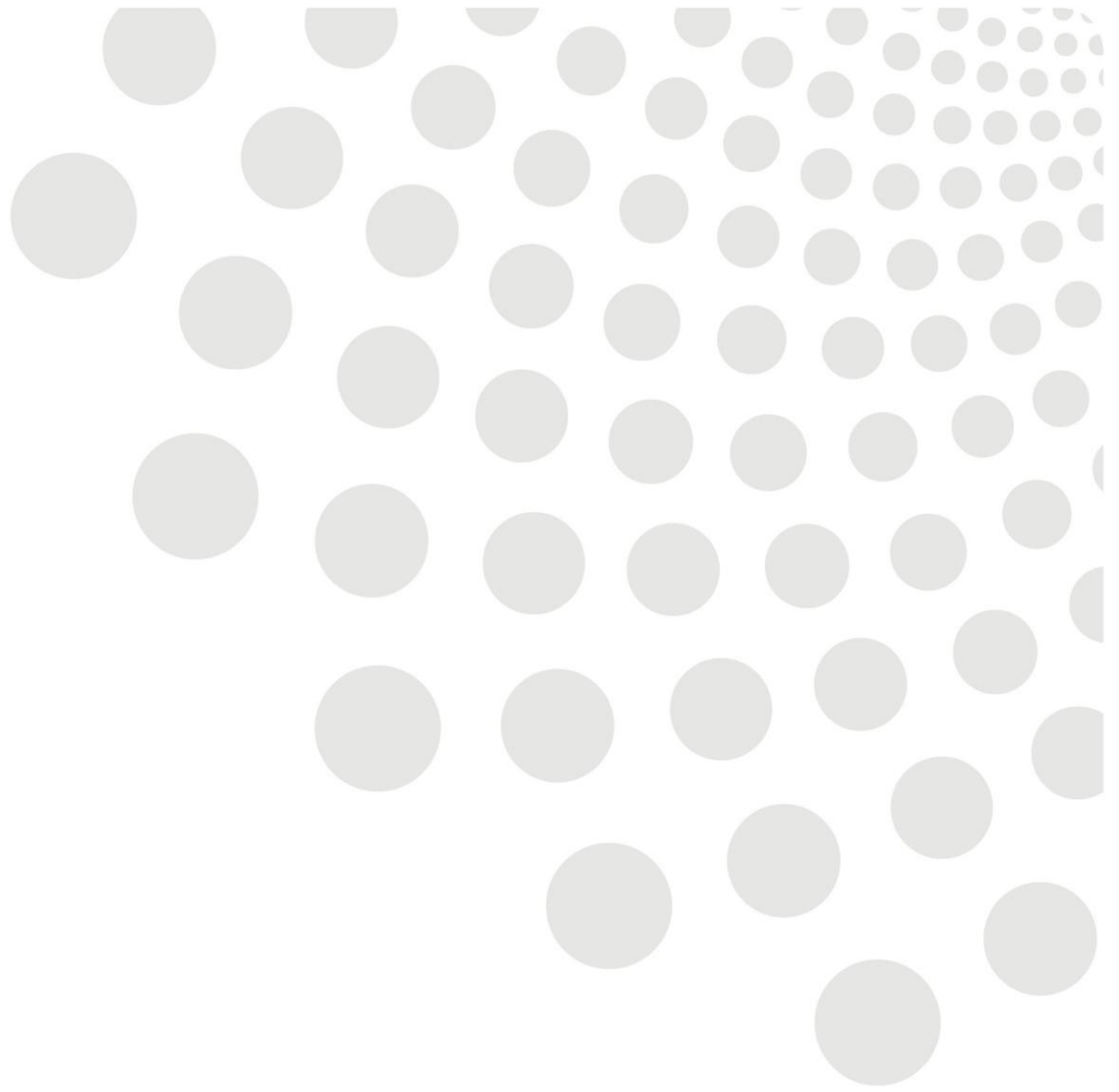




Cottam Parkway

Appendix 18.3a

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1 Introduction

1.1 Purpose of the landscape and ecology design report

1.1.1 This document supports the Environmental Masterplan (EMP) for Cottam Parkway within Volume 3, Appendix 18 of the Environmental Statement (ES). The report explains the proposed mitigation by land parcel reference and summarises the general design principals for the landscape and ecological mitigation design that has been designed to address adverse effects of the Scheme identified in the Environmental Impact Assessment. This document provides indicative plant schedules for the landscape and seeding areas shown on the EMP. The exact planting and seeding mixes will be refined further at the detailed design phase of the Scheme. This design report should be read in conjunction with the EMP (Drawings B2327FEF-JAC-ELS-00-DR-ENV-0010 and B2327FEF-JAC-ELS-00-DR-ENV-0011) (Appendix 18.1) and the Outline Establishment and Maintenance Plan (Appendix 18.3b).

1.2 Relevant guidance

1.2.1 The following guidance has been used to inform the design of the Scheme:

- Highways England, 2020(a-c) DMRB, LA107 Landscape and visual effects, LD117 Landscape design and LD118 Biodiversity design,
- Landscape Institute and Institute of Environmental Management and Assessment, 2013, Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3), and
- Lancashire County Council, Plant species appropriate for habitat creation in Lancashire.

1.3 Design objectives

- 1.3.1 The landscape and ecological mitigation proposals have been designed to restore landscape features and elements lost as a result of the Scheme; to integrate the Scheme into the local landscape; to complement and reinforce the special character of the surrounding landscape; to screen views of the Scheme from sensitive visual receptors; to limit and manage views from the wider landscape; to restore and enhance existing landscape elements including reconnecting fragmented landscape features; and to diversify the range of landscape elements within the area.
- 1.3.2 The ecological mitigation design proposals compensate for habitat losses; provide habitat for specific protected and notable species (common toad, slow worm, breeding birds, bats, hedgehog and invertebrates); and achieve beneficial habitat connections to the wider landscape. The proposals include a number of ecological enhancements such as the provision of wildlife boxes; enhancement of existing land to a wildlife enhancement area; and the creation of ponds and species rich grassland to benefit specific protected and notable species, and also other wildlife such as invertebrates and small mammals.
- 1.3.3 In order to deliver a 10% net biodiversity net gain (BNG) for the Scheme land has been acquired by Lancashire County Council (LCC) for off-site habitat creation. The design comprises a series of landscape and ecological elements that are appropriate for the area's landscape character, each of which has specific design objectives. These are set out in the Outline Establishment and Maintenance Plan in Appendix 18.3 in Volume 3 of the ES.

2 Proposed mitigation by land parcel reference

- 2.1.1 A summary of the proposed landscape and ecology mitigation, environmental functions and rationale is provided in Table 1 for each land parcel located with the Scheme's site boundary. The land parcel references

can be found on the sheet layout plan and land parcel references inset on EMP drawing B2327FEF-JAC-ELS-00-DR-ENV-0010.

Table 1. Proposed landscape and ecology mitigation by land parcel reference

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
LA566060	Location: Pasture field to the east of Sidgreaves Lane, west of Lea Road, and to north of the Lancaster Canal. Existing baseline/local landscape character: Hedgerow with individual trees, and tree and shrub field boundaries with some individual field trees. Housing and farm building visible along west side of Lea Road. Reason for land take: To accommodate Cottam Link Road roundabout	Mitigation proposals within Land reference LA566060 are designed to provide screening of Cottam Link Road roundabout for residential receptors along Lea Road, whilst also integrating the scheme into the local landscape character and providing foraging habitat and wide habitat connectivity: • LE2.4 Native trees and shrubs and LE5.1a Individual trees planted on the Cottam Link Road roundabout embankments to filter views of the roundabout for residential receptors on Lea Road and integrate the Scheme into the local landscape. (EFA, EFB) • LE4.3 Native hedgerow with LE5.1a Native individual trees planted along the site boundary to tie in with existing field boundary and local landscape character and provide linear habitat and wider connectivity for birds, common toad, slow worm, bats and hedgehog. (EFA, EFB, EFD) • LE1.3b Native species rich coarse grassland and LE2.6a native shrubs planted adjacent to new hedgerow to tie in and complement existing field edges and field boundaries and to provide foraging habitat for birds, common toad, slow worm, hedgehog, invertebrates and other small mammals. (EFA, EFB, EFD) • E3.2.1 Bat 'hop over' trees and E3.2.2. Bat 'hop over' shrubs planted at severed field boundaries to guide flight of bats and owls over new highway where it interrupts pre-existing commuter routes. (EFA, EFB, EFD) The site boundary planting was revised from tree and shrub planting to native hedgerow with individual trees edged with native shrub planting and native species coarse grassland to tie in with existing field boundaries of hedgerow and hedgerow trees and the adjacent Preston Western Distributor Route (PWDR) mitigation planting; and to provide habitat and wider habitat connectivity for birds, common toad, slow worm, bats and hedgehog. The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 1 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0010.

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
LA507174	Location: Small strip of arable field to the south of the PWDR and the west of Sidgreaves Lane. Existing baseline / local landscape character: Field bound by a clipped hedgerow to the south and trees and shrubs along a watercourse to the west. Reason for land take: To accommodate Cottam Link Road roundabout, an attenuation pond and temporary compound/working area.	The mitigation proposals within land parcel LA507174 are designed to integrate the Cottam Link Road roundabout and attenuation pond into the local landscape, and to enhance the biodiversity of the attenuation pond area. • LE2.6a Native shrubs planted to replace habitat removed to allow for the Scheme and to provide foraging habitat for and habitat connections to the wider landscape for birds, common toad, slow worm and hedgehogs; to integrate the Cottam Link Road roundabout embankments into the local landscape; and to tie in the PWDR planting proposals. (EFB, EFB) • LE1.3b Species rich coarse grassland and LE6.4 Marsh and wet grassland seeded within attenuation pond area to integrate the pond into the local landscape and create wetland habitat and provide habitat connectivity to the wider landscape. Species-rich grassland seeded to create foraging habitat for birds, slow worms, hedgehogs, invertebrate and small mammals. (EFB, EFD) • LE4.3 Native hedgerow planting to reinstate existing southern hedgerow field boundary removed to allow for the Cottam Link Road roundabout, attenuation pond and temporary compound; and to provide habitat for birds, common toads, slow worms, bats, hedgehogs, other invertebrates and small mammals. • LE8 Temporary compound area to be returned to agriculture. (EFB) Wetland planting was changed to seed rather than plants as on several other schemes planting of marginals and aquatics has resulted in accidental introduction of invasive non-native species. The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 1 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0010.
LA408604	Location: Small pasture field to the west of Sidgreaves Lane and to the north of the	The mitigation proposals within land parcel LA408604 are designed to integrate the attenuation pond, access road, and access road bridge into the local landscape and once established provide visual screening for residential receptors along Lea Road and users of the Lancaster Canal and towpath.

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
	Lancaster Canal. Existing baseline / local landscape character: Field bound by a clipped hedgerow to the north, trees and shrubs along a watercourse to the west and groups of trees and shrubs along the Lancaster Canal to the south. Individual trees within field. Reason for land take: To accommodate Cottam Link Road roundabout, attenuation pond, access road and access road bridge over the Lancaster Canal	• LE1.3a Native 'amenity' grassland seeded where grass to be kept short along the immediate highway verge and within visibility splays. • LE2.6a Native shrubs and LE5.1a Native individual trees planted to replace losses and restore habitat connectivity at the field edge. (EFA, EFB, EFD) • LE2.4 Native trees and shrubs and LE5.1a Native individual trees planted on the access road bridge embankments to provide visual screening for residential receptors along Lea Road and users of the Lancaster Canal and canal towpath, and to integrate the embankments into the local landscape. (EFA, EFB). • LE4.3 Native hedgerow with LE5.1a Native individual trees planted around the attenuation pond site boundary and adjacent to the farm access track to restore field boundaries removed to allow for the Scheme and to tie in with the local landscape character of hedgerow field boundaries with individual trees. (EFA, EFB) • LE6.1a Pond and LE6.1b Attenuation ponds seeded with LE6.4 Marsh and wet grassland to integrate the water features into the landscape. New ponds created as compensation for unavoidably affected canal margins and to provide breeding habitat for common toad and other amphibians and provide habitat connectivity to the wider landscape. The seeding will integrate the attenuation pond into the local landscape and provide wetland habitat and habitat connectivity to the wider landscape. Field ponds are a feature of the local landscape. (EFA, EFB) • LE1.3b Species rich coarse grassland to all areas not within the immediate highway verge or visibility splays to enhance biodiversity and provide foraging habitat for common toads, slow worms, nesting birds, small mammals and invertebrates. (EFB, EFD) • LE8 Temporary compound area to be returned to agriculture. (EFB) The location of the native tree and shrubs planting was originally shown to encompass the whole of the land take to the east of the access road to provide visual screening for residents along Lea Road. The extent of the proposed planting was reviewed and adjusted so that it was limited to

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
		where screening and integration would be required on the access road and roundabout embankments. This update created space within the site boundary to create a new pond with marsh and wet grassland to the north of the Lancaster Canal and a native hedgerow field boundary with individual trees, shrub and species rich grassland along the eastern site boundary. These elements enhance biodiversity, provide breeding habitat for common toad, and tie in with the local landscape character. Field ponds, hedgerow and individual tree field boundaries and native shrubs are a common features within the local landscape. The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 1 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0010.
LAN73283	Location and existing baseline /local landscape character: Small strip of grassland to the west of Sidgreaves Lane to the east of land reference LAN73283. Reason for land take: To accommodate farm access track and grass verge reinstatement next to Sidgreaves Lane and the access road bridge	The mitigation proposals within land parcel LAN73283 are design to integrate the Scheme into the landscape: • LE1.3b Species rich coarse grassland reinstatement adjacent to Sidgreaves Lane. Species rich grassland is proposed to integrate the Scheme into the local landscape and to provide foraging habitat for common toads, slow worms, nesting birds, small mammals and invertebrates. (EFB, EFD) The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 1 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0010.
LAN216472	Location: Large pasture field to the south of the Lancaster Canal and to the west of	The mitigation proposals within land parcel LAN216472 are designed to integrate the access road, station and station car park into the local landscape and once established provide visual screening for residential receptors along Lea Road and users of the Lancaster Canal and towpath whilst also enhancing biodiversity and the local amenity.

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
	Lea Road. Existing baseline / local landscape character: Large pasture field with occasional scattered trees and field pond. Field bound by clipped hedgerows with individual trees. Housing along Lea Road visible to the east. Mature trees and native shrubs along the north side of the railway. Reason for land take: To accommodate temporary construction compound, access road, station and station car park.	• LE1.3b Native species rich coarse grassland and E3.2.3 Natural habitat regeneration areas adjacent to the trees on the railway embankment to enhance biodiversity and provide wider habitat connectivity. To provide foraging habitat for common toads, slow worms, nesting birds, and other small mammals and invertebrates. (EFD) • LE2.6a Native shrubs and LE5.1a Native individual trees planted where the land take is wider along the proposed 2.0m high close boarded timber boundary fence, and at the access road junction with Sidgreaves Lane, to provide landscape integration and visual screening of the access road and car park for residential receptors along Lea Road; and foraging habitat for common toads, slow worms, birds, small mammals and invertebrates. Planting adjusted to show the indicative location of the pedestrian accesses from the proposed residential development site along Lea Road, to the north of the close boarded boundary fence. (EFA, EFB, EFD) • LE3.2 Ornamental shrubs, LE3.3 Groundcover and perennials and LE5.1b Ornamental trees planted at the access road junction with Lea Road (no trees) and within planting beds within the station car park to provide seasonal interest (autumn colour, ornamental bark, berries, blossom), frame views, soften the built form, enhance visual amenity and integrate with the urban setting along Lea Road. (EFA, EFB, EFE). • LE4.3 Native hedgerow with LE5.1a Native individual trees and LE1.2 Native 'amenity' grassland and bulbs planted/seeded along the north side of the access road as a continuation of the existing clipped hedgerow along Sidgreaves Lane to visually screen and integrate the Scheme into the local landscape; replace the hedgerow removed along the west side of Sidgreaves Lane to allow for the access road, provide foraging habitat for bird, bats, common toad, slow worm hedgehog and other small mammals and invertebrates; and provide habitat connectivity to the wider landscape. (EFA, EFB, EFD); • LE4.3 Native hedgerow with LE5.1a Native individual trees, and where space allows LE2.6a Native shrubs planted along the railway embankment to replace trees removed to construct the station building, and to integrate the station and car park into the local landscape. To provide nesting and foraging habitat for bats and birds, and foraging

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
		habitat for slow worm, common toad, hedgehog and other small mammals and invertebrates. (EFA, EFB, EFD) • LE6.1 Pond, LE 6.4 Marsh and wet grassland, and E3.2.6 Wildlife enhancement area. Wildlife enhancement area created adjacent to an area of existing woodland. Enhancement of the existing pond/seasonally wet area to create a pond with reed planting, damp grassland, scrub planting and hibernacula to provide breeding habitat for common toads and other amphibians. Hibernacula and refugia from felled trees to provide habitat for reptiles, amphibians, invertebrates and small mammals. Native shrubs and species rich grassland to provide foraging habitat for birds, common toad, hedgehog, slow worm and other small mammals; and connectivity with the wider landscape (EFD) • E3.2.1 Bat ‘hop over’ trees and E3.2.2. Bat ‘hop over’ shrubs planted at severed field boundaries to guide flight of bats and owls over new highway where it interrupts pre-existing commuter routes. (EFA, EFB, EFD) • E3.2.4 Hedgehog houses, E3.2.7 Bat boxes, and E3.2.8 Bird boxes installed in the existing woodland within the wildlife enhancement area to compensate for tree and hedgerow removal and provide refuge until replacement trees and habitat become established. (EFD) The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 2 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0011.
LAN386642	Location: Pasture field to the south of the Lancaster Canal and to the west of Sidgreaves Lane. Existing baseline / local landscape	Mitigation proposals for land parcel LAN386642 designed to integrate the access road and access road bridge over the Lancaster Canal into the local landscape and once established provide visual screening and integration of the access road bridge embankments for residential receptors along Lea Road, Sidgreaves Lane and Darkinson Lane, and users of the Lancaster Canal and towpath, whilst also enhancing biodiversity and providing habitat connectivity with the wider landscape. • LE1.3a Native ‘amenity’ grassland seeded where grass is to be kept short along the immediate highway verge and visibility splays (EFB).

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
	character: Field boundaries comprise trees and shrubs along the canal to the north, clipped hedgerow field boundaries with occasional trees to the south and east and mature trees and shrubs extend along a watercourse to the south. Railway cottages visible to the south. Reason for land take: To accommodate temporary compound, access road and access road bridge.	• LE4.3 Native hedgerow with LE5.1a Native individual trees planted along the site boundary to restore field boundaries removed to allow for the Scheme and to tie in with the local landscape character of hedgerow field boundaries with individual trees. (EFA, EFB) • LE2.6a Native shrubs and LE5.1a Native individual trees planted to replace losses and provide foraging habitat for birds, bats, common toad, hedgerow and small mammals and provide habitat connectivity to the wider landscape. (EFA, EFB, EFD) • LE2.4 Native trees and shrubs and LE5.1a Native individual trees planted on the access road bridge embankments to provide visual screening for residential receptors along Lea Road and users of the Lancaster Canal and canal towpath, and to integrate the embankments into the local landscape. (EFA, EFB) • LE6.1a Pond and LE6.4 Marsh and wet grassland created to the south of the Lancaster Canal as compensation for unavoidably affected canal margins and to create breeding habitat for common toads and other amphibians and provide habitat connectivity to the wider landscape. Field ponds are a feature of the local landscape.(EFB, EFB) • LE1.3b Species rich coarse grassland to all areas not within the immediate highway verge or visibility splays to enhance biodiversity and provide foraging habitat for common toads, slow worms, nesting birds and small mammals and invertebrates and provide habitat connectivity to the wider landscape. (EFB, EFD) • LE8 Temporary compound area to be returned to agriculture. (EFB) The location of native tree and shrub planting was originally shown to encompass the whole of the land take to the east and west of the access road to provide visual screening for residents along Lea Road and to integrate the Scheme into the landscape. The extent of the proposed planting was reviewed and adjusted so that it was limited to where screening and integration would be required on the access road and roundabout embankments. This update created space within the site boundary to create a new pond with marsh and wet grassland to the south of the Lancaster Canal; native shrub planting and species rich coarse grassland along the west

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
		side of Sidgreaves Lane; and a native hedgerow field boundary with individual trees, shrub and species rich grassland along the western site boundary. These habitats enhance biodiversity, provide habitat for common toads, and tie in with the local landscape character. Field ponds, hedgerow and individual tree field boundaries and native shrubs are a common features within the local landscape. The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 1 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0010.
LAN66202	Location: Pasture field to the north of Railway Cottages and west of Sidgreaves Lane. Existing baseline / local landscape character: Field boundaries comprise hedgerow with individual trees to the north and east and trees and shrubs along a watercourse to the west. Groups of trees and shrubs along the Preston Fylde Junction to Blackpool North line. Railway cottages visible to the south.	Mitigation proposals for land parcel LAN66202 are designed to provide visual screening for residential receptors at Railway Cottages and Darkinson Lane, landscape integration of the access road and restore habitat connectivity to field boundaries. • LE1.3a Native 'amenity' grassland seeded where grass is to be kept short along the immediate highway verge and visibility splays (EFB). • LE1.3b Species rich coarse grassland to all areas not within the immediate highway verge or visibility splays for landscape integration and to enhance biodiversity and provide habitat for common toads, slow worms, nesting birds and small mammals and invertebrates and habitat connectivity with the wider landscape. (EFB, EFD) • LE2.4 Native trees and shrubs planted on the west side of the access road to provide visual screening for residential receptors at Railway Cottages along Lea Road and users of the Lancaster Canal and canal towpath, and to integrate the embankments into the local landscape. (EFA, EFB) • LE2.4 Native trees and shrubs and LE4.3 Native hedgerow planted on additional land acquired by LCC to achieve 10% BNG for the Scheme. The proposed planting will compensate for loss of habitat to allow for the Scheme, provide habitat for birds, common toads, slow worms, hedgehog and small mammals and provide habitat connectivity to the wider landscape (EFB, EFD). • LE4.3 Native hedgerow and LE5.1a Native individual trees planted to replace field

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
	Reason for land take: Land take to accommodate access road and compensatory habitat for BNG.	boundaries removed to allow for the Scheme, provide visual screening for visual receptors along Darkinson Lane and Railway Cottage, and to reinstate habitat connectivity along the field boundary, providing foraging habitat for birds, bats, common toads, hedgehogs, slow worms and small mammals. (EFA, EFB, EFD) E3.2.1 Bat ‘hop over’ trees and E3.2.2. Bat ‘hop over’ shrubs planted at severed field boundaries to guide flight of bats and owls over new highway where it interrupts pre-existing commuter routes. (EFA, EFB, EFD) The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 1 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0010.
LA846034	Location: Small pasture fields to the east of Darkinson Lane Existing baseline / local landscape character: Small pasture fields bound by fragmented hedgerows with some individual trees. Tree and shrubs extend along the along a watercourse to the southeast. Reason for land take: To accommodate Secondary Means of	Mitigation proposals for land parcel LA846034 are designed to provide screening and integration of the SME and station for residential receptors along Lea Road. This land parcel is to be acquired by LCC to provide compensatory habitat to achieve 10% BNG for the Scheme. - LE1.3c Species rich grassland (nutrient rich soil) and LE2.8 Native scrub planted on land acquired by LCC for compensatory habitat to achieve 10% BNG. Scrub and species rich grassland to provide habitat for common toad, slow worm, hedgehog and birds and other invertebrates and small mammals. (EFD) - LE2.4 Native trees and shrubs and LE6.4 Marsh and wet grassland to reinstate vegetation and grassland habitat removed for the culvert works to existing watercourse. (EFB, EFD) - LE2.4 Native trees and shrubs planted on the SME embankments to replace tree and shrub planting removed to accommodate the SME and provide visual screening for residential receptors along Lea Road whilst also reinstating habitat connectivity along the south side of the railway. (EFA, EFB, EFD) The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 2 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0011.

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
	Escape (SME), temporary construction compound and compensatory habitat for BNG.	
LAN133982	Location: Ashton & Lea Golf Club to the south of the railway. Existing baseline / local landscape character: Golf course bound by tree and shrub planting along north, east and west boundary. Reason for land take: To accommodate SME and reinstate native shrub planting removed to accommodate the Scheme and working area.	Mitigation proposals for land parcel LAN133982 are designed to provide screening and integration of the SME and station for residential receptors along Lea Road and users of the Ashton & Lea Golf Club, and to reinstate vegetation removed to accommodate the Scheme's working area and provide habitat connectivity to the wider landscape. • LE2.4 Native trees and shrubs and LE1.3c Species rich grassland (nutrient soil) planted and seeded on the SME embankments to reinstate tree and shrub planting and grassland removed to accommodate the SME; provide visual screening for residential receptors along Lea Road; provide foraging habitat for bats, birds, common toad, slow worm, hedgehog, invertebrates and other small mammals whilst also reinstating habitat connectivity along the south side of the railway. (EFA, EFB, EFD) The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 2 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0011.
LAN216472	Location: Small irregular shaped pasture field to the south	Mitigation proposals for land parcel LAN216472 are designed to provide screening and integration of the SME and turning head for residential visual receptors along Lea Road and to reinstate vegetation removed to accommodate the Scheme's working area.

Land reference	Location, existing baseline /local landscape character and reason for land take	Proposed landscape and ecology mitigation, environmental functions and rationale (Environmental functions: EFA = Visual screening, EFB = Landscape Integration, EFD = Nature Conservation and Biodiversity, EFE = Visual Amenity)
	of the Preston Fylde Junction to Blackpool North line and the west of Lea Road. Existing baseline / local landscape character: Tree on the railway embankment form the northern field boundary and a low clipped hedgerow extends along the west side of the Lea Road. Native shrubs extend along Lady Head Runnel watercourse. Housing along Lea Road is visible to the east. Reason for land take: To accommodate SME and turning head.	• LE1.1 Amenity native grassland seeded to grasscrete turning head. (EFB) • LE2.4 Native trees and shrubs and LE1.3c Species rich grassland (nutrient soil) planted and seeded on the SME embankments to reinstate tree and shrub planting and grassland removed to accommodate the SME and provide visual screening for residential receptors along Lea Road whilst also reinstating habitat connectivity along the south side of the railway. (EFA, EFB, EFD) • LE2.6a Native shrubs and LE6.4 Marsh and wet grassland to replace native shrubs removed within the working area. The planting and seeding would provide landscape integration, visually screening for residential receptors along Lea Road and provide habitat connectivity to the wider landscape. (EFA, EFB, EFD) The proposed landscape and environmental elements and their environmental functions are shown on the EMP Sheet 2 drawing no. B2327FEF-JAC-ELS-00-DR-ENV-0011.

3 General design principles and indicative plant schedules

3.1 General principles

- 3.1.1 The general design principles (GDP) have informed the design of the Scheme. Each principle is applicable to at least one design objective, as prescribed in the Outline Establishment and Maintenance Plan.
- 3.1.2 A series of indicative planting schedules and have been created for areas of mitigation vegetation by landscape architects in conjunction with ecologists, cultural heritage specialists and arboriculturists using the general design principles and the DMRB landscape element categories as a guide. The general design principals and schedules have been developed to ensure the mitigation vegetation meets its objectives such as providing screening and creating habitats.
- 3.1.3 Seeding mixes for compound areas have not been included in this document as consultation will need to be carried out with landowners to confirm seeding requirements. The seeding mixes for these areas will, therefore, be developed as part of the detailed design phase for the Scheme.
- 3.1.4 Final planting positions, numbers and species will be identified during detailed design and will need to comply with DMRB guidelines when planting near to roads. Planting works will be undertaken in accordance with BS 3936 Nursery stock specification, BS 5837 Trees in relation to design, demolition and Construction and BS4428 Code of practice for general landscape operations and a Series 3000 landscape and ecology specification for planting will be developed at the detailed design stage.
- 3.1.5 A summary of the GDP and indicative plant schedules for each landscape and ecological design element (LE) are outlined below.

3.2 LE1.2 Grassland with bulbs

- 3.2.1 **GDPLE1.2:** Bulb planting has been proposed to enhance visual amenity at Cottam Link Road roundabout.

Table 2. LE1.2 Bulb indicative plant schedule

Species	Common name
<i>Narcissus pseudonarcissus</i>	Wild Daffodil
<i>Galanthus nivalis</i>	Snowdrop
Seed mix: LE1.3a Native 'amenity grassland'	
Site preparation and seeding works to be in accordance with the Specification for Highway Works Series 3000 Landscape and Ecology.	

3.3 LE1.3a Native 'amenity' grassland

- 3.3.1 **GDPLE1.3a:** Native amenity grassland mix has been proposed for its habitat and amenity value where longer grass is acceptable beyond the immediate roadside verge environment in order to provide foraging habitat for common toad, slow worm, birds, hedgehog, small mammals and invertebrates. The roadside verge and visibility splays will be maintained as short grassland for road safety and to deter foraging animals or birds near the carriageway. Exact species composition to be confirmed at the detailed design stage.

Table 3. LE1.3a: Native 'amenity' grassland indicative plant schedule

Species	Common name	% mix
Wildflowers – 20%		
<i>Achillea millefolium</i>	Yarrow	1.8
<i>Centaurea nigra</i>	Common Knapweed	0.5
<i>Daucus carota</i>	Wild Carrot	2
<i>Galium verum</i>	Lady's Bedstraw	2
<i>Leucanthemum vulgare</i>	Oxeye Daisy	2

Species	Common name	% mix
<i>Lotus corniculatus</i>	Birdsfoot Trefoil	1
<i>Plantago lanceolata</i>	Ribwort Plantain	1.8
<i>Primula veris</i>	Cowslip	0.2
<i>Prunella vulgaris</i>	Self Heal	0.4
<i>Ranunculus acris</i>	Meadow Buttercup	2
<i>Rhinanthus minor</i>	Yellow Rattle	1
<i>Rumex acetosa</i>	Common Sorrel	0.1
<i>Silene dioica</i>	Red Campion	1.1
<i>Trifolium pratense</i>	Red Clover	2
<i>Trifolium repens</i>	White Clover	2
<i>Viola tricolor</i>	Wild Pansy	0.1
Grasses 80%		
<i>Festuca ovina</i>	Sheeps Fescue	20
<i>Festuca rubra</i>	Strong Creeping Red Fescue	15
<i>Festuca rubra litoralis</i>	Slender Creeping Red Fescue	12.5
<i>Festuca rubra commutata</i>	Chewings Fescue	12.5
<i>Poa pratensis</i>	Smooth Stalked Meadow Grass	10
<i>Agrostis capillaris</i>	Browntop Bent	5
<i>Agrostis stolonifera</i>	Creeping Bent	2.5
<i>Lolium perenne</i>	Perennial Ryegrass	2.5
Site preparation and seeding works to be in accordance with the Specification for Highway Works Series 3000 Landscape and Ecology.		

3.4 LE1.3b Species rich coarse grassland

- 3.4.1 **GDP LE1.3b:** Species rich coarse grassland has been proposed for its habitat and amenity value adjacent to existing mature tree and shrubs near the railway and within the wildlife enhancement area. Exact species composition to be confirmed at the detailed design stage.

Table 4. LE 1.3b Species rich coarse grassland indicative plant schedule

Species	Common name	% mix
Wildflowers – 80%		
<i>Achillea millefolium</i>	Yarrow	5
<i>Centaurea nigra</i>	Common Knapweed	5
<i>Digitalis purpurea</i>	Foxglove	4
<i>Geranium pratense</i>	Meadow Crane's-bill	5
<i>Geranium robertianum</i>	Herb Robert	5
<i>Hypochaeris radicata</i>	Cat's Ear	5
<i>Lathyrus pratensis</i>	Meadow Vetchling	5
<i>Leucanthemum vulgare</i>	Oxeye Daisy	5
<i>Lotus corniculatus</i>	Birdsfoot Trefoil	5
<i>Plantago lanceolata</i>	Ribwort Plantain	4
<i>Prunella vulgaris</i>	Self Heal	4
<i>Rhinanthus minor</i>	Yellow Rattle	4
<i>Rumex acetosa</i>	Common Sorrel	4
<i>Sanguisorba officinalis</i>	Great Burnet	5
<i>Silene Dioica</i>	Red Campion	5
<i>Trifolium pratense</i>	Red Clover	5
<i>Vicia cracca</i>	Tufted Vetch	5
Grasses – 20%		
<i>Agrostis capillaris</i>	Common Bent	5
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	5
<i>Cynosurus cristatus</i>	Crested Dog's-tail	5
<i>Festuca rubra</i>	Red Fescue	5

3.5 LE1.3c Species rich grassland (nutrient rich soil)

3.5.1 **GDP LE1.3c:** Species rich grassland mix for nutrient rich soil has been proposed for its habitat and amenity value for the land acquired for BNG and areas adjacent to the SME to the south of the Preston Fylde Junction to

Blackpool North line. Exact species composition to be confirmed at the detailed design stage.

Table 5. LE1.3c Species rich grassland (nutrient rich soil) indicative plant schedule

Species	Common Name	% mix
Wildflowers – 80%		
<i>Achillea millefolium</i>	Yarrow	5
<i>Centaurea nigra</i>	Common Knapweed	5
<i>Filipendula ulmaria</i>	Meadowsweet	5
<i>Geranium pratense</i>	Meadow Crane's-bill	5
<i>Hypochaeris radicata</i>	Cat's Ear	5
<i>Leontodon autumnalis</i>	Autumn Hawkbit	5
<i>Lathyrus pratensis</i>	Meadow Vetchling	5
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	5
<i>Lotus corniculatus</i>	Bird's-foot-trefoil	5
<i>Plantago lanceolata</i>	Ribwort Plantain	5
<i>Prunella vulgaris</i>	Self Heal	5
<i>Ranunculus acris</i>	Meadow Buttercup	5
<i>Rhinanthus minor</i>	Yellow Rattle	5
<i>Rumex acetosa</i>	Common Sorrel	5
<i>Trifolium pratense</i>	Red Clover	5
<i>Vicia cracca</i>	Tufted Vetch	5
Grasses – 20%		
<i>Agrostis capillaris</i>	Common Bent	7
<i>Cynosurus cristatus</i>	Crested Dog's-tail	6
<i>Festuca rubra</i>	Red Fescue	7
Site preparation and seeding works to be in accordance with the Specification for Highway Works Series 3000 Landscape and Ecology.		

3.6 LE2.4 Native trees and shrubs

- 3.6.1 **GDP LE2.4:** Native tree and shrub planting has been proposed where significant visual effects are anticipated; to filter views; provide benefit for common toad, slow worms, birds, bats, hedgehogs and also other wildlife such as invertebrates and small mammals; and to create replacement semi-natural habitat and contribute to habitat connectivity. Native tree and shrub species have been selected due to their presence in the local landscape. Areas of planting would be planted to promote a naturalistic aesthetic and minimise the perception of the Scheme within the landscape.

Table 6. LE2.4 Native trees and shrubs indicative plant schedule

Species	Form / size	% mix
<i>Betula pendula</i> (Silver Birch)	200-250cm / B / Ftd / 2x / 5 breaks	10
<i>Prunus avium</i> (Wild Cherry)	200-250cm / B / Ftd / 2x / 5 breaks	5
<i>Sorbus aucuparia</i> (Rowan / Mountain Ash)	200-250cm / B / Ftd / 2x / 5 breaks	5
<i>Quercus robur</i> (Common Oak)	200-250cm / B / Ftd / 2x / 5 breaks	10
<i>Crataegus monogyna</i> (Hawthorn)	100-125cm / B / 1+1 / 5 breaks	25
<i>Corylus avellana</i> (Hazel)	100-125cm / B / 1+1 / 5 breaks	25
<i>Viburnum opulus</i> (Guelder Rose)	100-125cm / B / 1+1 / 5 breaks	20
Site preparation and planting works to be in accordance with the Specification for Highway Works Series 3000 Landscape and Ecology.		

3.7 LE2.6a Native shrubs

- 3.7.1 **GDP LE2.6a:** Native shrubs species appropriate to location combined with native individual trees are proposed adjacent to hedgerow boundaries to replace losses along the railway embankment and adjacent to field boundaries. To enhance biodiversity and filter views whilst also helping to

create a layered structure around field boundaries along the station car park boundaries.

Table 7. DE4: Native shrubs indicative plant schedule

Species	Form / Size	% Mix
<i>Corylus avellana</i> (Hazel)	60-80cm / B / 1+1	20
<i>Crataegus monogyna</i> (Hawthorn)	60-80cm / B / 1+1	20
<i>Ilex aquifolium</i> (Holly)	60-80cm / C / 2L	5
<i>Rosa canina</i> (Dog Rose)	60-80cm / B / 1+1	15
<i>Sambucus nigra</i> (Elder)	60-80cm / B / 1+1	20
<i>Viburnum opulus</i> (Guelder Rose)	60-80cm / B / 1+1	20

3.8 LE2.8 Native scrub

3.8.1 **GDP LE2.8:** Native scrub to be planted with land acquired by LCC to achieve 10% BNG. Species to be appropriate to the location and to be planted to enhance biodiversity and help with landscape integration.

Table 8. LE2.8 Native scrub indicative plant schedule

Species	Form / size	% mix
<i>Corylus avellana</i> (Hazel)	60-80cm / B / 1+1	10
<i>Crataegus monogyna</i> (Hawthorn)	60-80cm / B / 1+1	35
<i>Prunus spinosa</i> (Blackthorn)	60-80cm / B / 1+1	35
<i>Rosa canina</i> (Dog Rose)	60-80cm / B / 1+1	10
<i>Lonicera periclymenum</i> (Common Honeysuckle)	60-80cm / B / 1+1	5
Site preparation and planting works to be in accordance with the Specification for Highway Works Series 3000 Landscape and Ecology.		

3.9 LE3.2 Ornamental shrubs and LE3.3 Groundcover and perennials

- 3.9.1 **GDP LE3.2:** a mix of ornamental evergreen shrubs, ground cover and perennial planting areas have been proposed within the station car park and access road entrance off Lea Road to enhance visual amenity and to soften the built form, car park, access road area and boundary fencing. The same palette to be used through the car park and access road area to provide a common planting vernacular.
- 3.9.2 The planting scheme would be designed to provide year-round colour, with species selected for leaf colour, fragrance and texture, and would include specimen shrub species with ornamental bark for winter interest. Accents of perennial plant species would provide strong colour at the station entrance and car park from the spring through to autumn. The exact species composition of the planting areas are to be developed at the detailed design stage.

3.10 LE4.3 Native hedgerow

- 3.10.1 **GDP LE4.3:** Native hedgerow species characteristic of existing field boundaries have been proposed along site boundary to in keeping with local landscape character to replace semi natural habitat, compensate for impacts on habitat connectivity, to help screen views of the Scheme and to integrate the Scheme into the surrounding landscape. Individual trees (DE1) are proposed where appropriate to provide further screening, in keeping with the character of the surrounding landscape.

Table 9. LE4.3: Native hedgerow indicative plant schedule

Species	Form / size	% mix
<i>Prunus avium</i> (Wild Cherry)	60-80cm / B / 1+1	5
<i>Quercus robur</i> (Common Oak)	60-80cm / B / 1+1	5
<i>Ulmus glabra</i> (Wych Elm)	60-80cm / B / 1+1	5
<i>Cornus sanguinea</i> (Dogwood)	60-80cm / B / 1+1	10
<i>Corylus avellana</i> (Hazel)	60-80cm / B / 1+1	20

Species	Form / size	% mix
<i>Crataegus monogyna</i> (Hawthorn)	60-80cm / B / 1+1	30
<i>Ilex aquifolium</i> (Holly)	60-80cm / C / 2L	5
<i>Rosa canina</i> (Dog Rose)	60-80cm / B / 1+1	10
<i>Viburnum opulus</i> (Guelder Rose)	60-80cm / B / 1+1	10
Site preparation and planting works to be in accordance with the Specification for Highway Works Series 3000 Landscape and Ecology.		

3.11 LE5.1a Native individual tree

3.11.1 GDP LE5.1a: Native individual trees proposed where significant visual effects are anticipated, to replace individual trees lost as part of the Scheme, and to aid landscape integration of the Scheme into the surrounding landscape. Planted at mostly 3m high to guide the flight of bats and birds away from moving vehicles where the road cuts through existing hedgerows.

Table 10. LE5.1a: Native individual trees indicative plant schedule

Species	Form / Size
<i>Alnus glutinosa</i> (Alder)	300-350cm / RB / SStd / 2x / 10-12cm girth/ 200cm clear stem
<i>Betula pendula</i> (Silver Birch)	300-350cm / RB / SStd / 2x / 10-12cm girth/ 200cm clear stem
<i>Malus sylvestris</i> (Crab Apple)	300-350cm / RB / SStd / 2x / 10-12cm girth/ 200cm clear stem
<i>Prunus avium</i> (Wild Cherry)	300-350cm / RB / SStd / 2x / 10-12cm girth/ 200cm clear stem
<i>Quercus robur</i> (Common Oak)	300-350cm / RB / SStd / 3x / 10-12cm girth/ 200cm clear stem
<i>Sorbus aucuparia</i> (Rowan / Mountain Ash)	300-350cm / RB / SStd / 2x / 10-12cm girth/ 200cm clear stem
<i>Ulmus glabra</i> (Wych Elm)	150-175cm / B / Ftd / 2x / 3 breaks

3.12 LE5.1b Ornamental tree

3.12.1 **GDP LE5.1b:** Ornamental trees have been proposed to enhance visual amenity and soften the station frontage and car park. Trees species to have an upright narrow growth habit, seasonal interest, frame views and create landscape structure within the station car park.

3.12.2 Species to be confirmed at the detailed design stage.

3.13 LE6.1a Pond and LE6.1b Attenuation pond

3.13.1 **GDP LE6.1:** Enhancement and deepening of the existing pond and adjacent area to retain more water within the wildlife enhancement area, and the creation of an attenuation pond, and two ponds to the north and south of the Lancaster Canal will provide breeding and foraging habitat for amphibians and other aquatic/semi-aquatic species. The adjacent planting area will be of benefit for common toad, slow worm, hedgehog and bats once established. The location and deepening of existing pond subject to further consideration at the detailed design stage.

3.14 LE6.4 Marsh and wet grassland

3.14.1 **GDP LE6.4:** Marsh and wet grassland is proposed on the slopes of the attenuation ponds and adjacent to the existing pond to be refurbished within the wildlife enhancement area due to its ability to withstand wet soils and periodic flooding. Exact species composition and seeding locations to be determined at the detailed design stage.

Table 11, LE6.4 Marsh and wet grassland indicative plant schedule

Species	Common Name	%
Wildflowers – 30%		
<i>Achillea millefolium</i>	Yarrow	1
<i>Alisma plantago-aquatica</i>	Water-Plantain	1
<i>Angelica sylvestris</i>	Wild Angelica	1

Species	Common Name	%
<i>Centaurea nigra</i>	Common Knapweed	1
<i>Dipsacus fullonum</i>	Teasel	1
<i>Eleocharis palustris</i>	Common Spike	1
<i>Eupatorium cannabinum</i>	Hemp Agrimony	1
<i>Filipendula ulmaria</i>	Meadowsweet	2
<i>Gallium mollugo</i>	Hedge Bedstraw	2
<i>Gallium verum</i>	Lady's Bedstraw	2
<i>Geum rivale</i>	Water Avens	1
<i>Iris pseudacorus</i>	Yellow Flag Iris	2
<i>Leucanthemum vulgare</i>	Oxeye Daisy	1
<i>Lychnis flos-cuculi</i>	Ragged Robin	1
<i>Lycopus europaeus</i>	Gipsywort	1
<i>Lythrum salicaria</i>	Purple Loosestrife	1
<i>Plantago lanceolata</i>	Ribwort Plantain	1
<i>Primula veris</i>	Cowslip	1
<i>Prunella vulgaris</i>	Self Heal	3
<i>Ranunculus acris</i>	Meadow Buttercup	1
<i>Rhinanthus minor</i>	Yellow Rattle	1
<i>Rumex acetosa</i>	Common Sorrel	1
<i>Silene Dioica</i>	Red Champion	1
<i>Stachys officinalis</i>	Betony	1
Grasses – 70%		
<i>Agrostis capillaris</i>	Common Bent	10
<i>Schedonorus pratensis</i>	Meadow Fescue	25
<i>Cynosurus cristatus</i>	Crested Dog's-tail	25
<i>Festuca rubra</i>	Slender-creeping Red Fescue	10
Site preparation and seeding works to be in accordance with the Specification for Highway Works Series 3000 Landscape and Ecology.		

3.15 E3.2 Ecological - Bird and bat boxes, hedgehog houses, refuge features and hibernacula

- 3.15.1 **GDP15:** Bird and bat boxes, hedgehog houses and refuge/hibernation features for amphibians and reptiles are proposed to be installed within suitable areas throughout the Scheme.
- 3.15.2 Bird boxes suitable for a range of species would be erected on retained trees including a section of the treeline adjacent to the railway and the broadleaved woodland area in the south-east corner of the Scheme. A range of box types are proposed. These boxes will target both common and declining bird species.
- 3.15.3 Different bat box types will be used to suit the range of species recorded as present in the area and include boxes suitable for maternity colonies. The broadleaved woodland in the south-east corner of the Scheme is to provide the location for these boxes.
- 3.15.4 Hedgehog houses will provide refuge and hibernation opportunities within the wildlife enhancement area for this declining species. Wildlife refuge features and hibernacula in the form of log and brash piles are to be created during vegetation clearance. This will be of benefit to reptiles, amphibians, invertebrates and small mammals.
- 3.15.5 The quantities, types and location of features to be determined at the detailed design stage.

3.16 Existing retained vegetation

- 3.16.1 These areas have not been designed and therefore do not have a GDP.

3.17 Consultation

- 3.17.1 A public consultation for the Scheme was held in December 2021 and January 2022, the results of which have been used to inform the landscape and ecological design of the Scheme.

4 References

Highways England, Transport for Scotland, Welsh Government and Department for Infrastructure. (2020a) Design Manual for Roads and Bridges. Sustainability & Environment Appraisal. LA107 Landscape and visual effects. [online] Available at:
<https://www.standardsforhighways.co.uk/dmrb/search/bc8a371f-2443-4761-af5d-f37d632c5734>

Highways England, Transport for Scotland, Welsh Government and Department for Infrastructure (2020b). Design Manual for Roads and Bridges. Sustainability & Environment Appraisal. LD117 Landscape Design. [online] Available at:
<https://www.standardsforhighways.co.uk/dmrb/search/82073bde-ec0c-4d4f-8eeb-afe0ace3c639>

Highways England, Transport for Scotland, Welsh Government and Department for Infrastructure. Design Manual for Roads and Bridges. Sustainability & Environment Appraisal (2020c). LD118 Biodiversity design. [online] Available at:
<https://www.standardsforhighways.co.uk/dmrb/search/9317652b-4cb8-4aaf-be57-b96d324c8965>

Lancashire County Council (undated). Plant species appropriate for habitat creation in Lancashire. [online] Available at:
<https://www.lancashire.gov.uk/council/planning/planning-application-process/ecology/ecology-advice-for-developers/habitat-re-establishment/>

Landscape Institute and Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3).