



## LANDSCAPE AND ECOLOGICAL MANAGEMENT AND MAINTENANCE PLAN

# Guide to the Management of Landscape and Ecological Areas at North West Haverhill Relief Road

## Revision K

REF JBA 17/364

ON BEHALF OF  
**Persimmon Homes Suffolk**

**January 2022**

Over 30 Years of Service, Value and Innovation

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## 1.0 INTRODUCTION

### 1.1 PURPOSE AND SCOPE OF DOCUMENT

1.1.1 The Management Plan shall be taken to include this document and any supporting plans, reports and specifications approved as part of the planning application for the development of a Relief Road at land North West of Haverhill, Suffolk. This includes any documentation containing quantitative and qualitative information about the external areas of the site that will be useful to those responsible for managing and maintaining them.

1.1.2 **Condition A6 of planning permission SE/09/1283 (Relief Road) requires a Landscape and Ecological Management Plan (LEMP) to be submitted to and agreed by the Council. Condition A6 states:-**

*A landscape and ecological management plan (LEMP) shall be submitted to, and be approved in writing by, the local planning authority prior to the commencement of the link road. The content of the LEMP shall include the following:*

- a) *Description and evaluation of features to be managed (Sections 4.2-4.15).*
- b) *Ecological trends and constraints on site that might influence management (Section 3.2.)*
- c) *Aims and objectives of management (Sections 4.2-4.15).*
- d) *Appropriate management options for achieving aims and objectives (Sections 4.2-4.15).*
- e) *Prescriptions for management actions (Sections 4.2-4.15).*
- f) *Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period) (Section 6.1)*
- g) *Details of the body or organisation responsible for implementation of the plan (Section 5.1).*
- h) *Ongoing monitoring and remedial measures (Section 5.2).*

*The LEMP shall also include details of the legal and funding mechanism(s) by which the long-term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery (Section 5.1). The plan shall also set out (where the results from the monitoring show that conservation aims and objectives of the LEMP are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme (Section 5.2).*

*The approved plan will be implemented in accordance with the approved details.*

1.1.3 The purpose of this document is to schedule all required maintenance regimes, operations and works necessary for the satisfactory management of the landscape in perpetuity. The Management Plan sets out the management aims and objectives for the site along with the specific management objectives for each landscape component, and the associated maintenance works required on an Annual and Occasional basis. The Annual Works are those works that will be required every year, such as watering, weeding and

cleaning. The Occasional Works are those that will be required on an irregular or cyclical basis, such as repairs and renewals.

## 1.2 THE GROUNDS

### 1.2.1 Location

The relief road forms part of a wider application for development of land to the northwest of Haverhill. The proposals for the wider site include the provision of a new Relief Road (as required under policy HAV8 of the Replacement St Edmundsbury Local Plan), up to 1150 dwellings, a local centre and primary school.

The Relief Road is located to the north of the development site and links to Haverhill Road in the east and Hales Barn Road in the west. Ann Suckling Way County Wildlife Site lies to the north of the relief road. See Fig's 1.

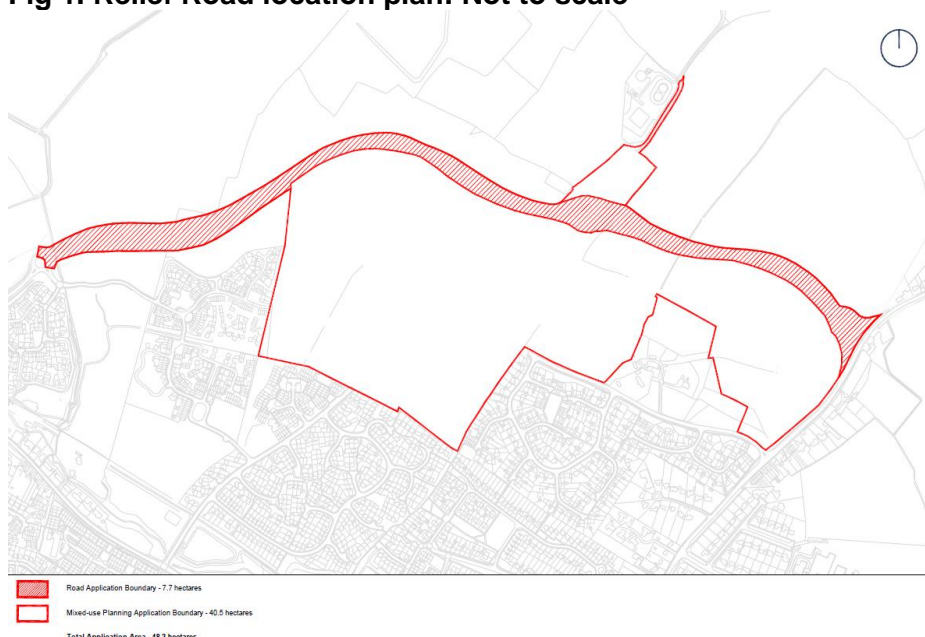
### 1.2.2 Site Description and Development Proposals

The alignment of the Relief Road has been agreed following discussions with Suffolk County Highways Authority, West Suffolk Council and the landowners. The Relief Road will be of single carriageway width and allow for speeds of up to 40 miles per hour.

Planting along the Relief Road will incorporate different types of native and natural planting in order to aid the integration of the development into the wider landscape. The landscaping proposals also provide wildlife habitat to reinforce that within Ann Suckling Way County Wildlife Site (refer to drawings JBA 17/364-01 to JBA 17/364-12).

An ecological baseline site audit was undertaken in January 2018 prior to the construction of the relief road, the results of which are discussed in Section 3.1.

**Fig 1. Relief Road location plan: Not to scale**



**Figure 2: Connectivity to Wider Landscape**

The key features that connect the Relief Road to the wider landscape are the network of hedges. There are five hedgerows which connect directly with the Relief Road, being severed by it. These provide links to wildlife sites in the countryside to the north of the route of the Relief Road, such as the woodlands at Norney Plantation and Burton Ley Plantation and Ann Suckling Way County Wildlife Site.



- Road Application Boundary
- Mixed Use Development Application Boundary
- Hedgerows and other areas of significant vegetation

### 1.2.3 Management Plan Areas

The purpose of this management plan document is to ensure the appropriate management of the retained and proposed landscape areas on and adjacent to the Relief Road following the construction and completion of the road. The landscape areas include existing hedgerows along with all new planting (trees, hedges, shrubs and grass).

The Management Plan includes the area to the east of Ann Suckling Way County Wildlife Site and north of the Relief Road that will be used as a receptor site for translocated reptiles and Sulphur Clover.

- 1.2.4 All of the landscape and ecological areas of the site will be the subject of the Landscape and Ecological Management Plan. The landscape areas subject to this Management Plan are set out in Appendix 6.1.

## 1.3 RECITALS

### 1.3.1 Parties Involved

- **The Developer:** Persimmon Homes Suffolk is responsible for the construction of the relief road (in phases) under the terms of the s106 and s278 agreements. The developer will be responsible for the protection and management of existing landscape components through the construction phase and the implementation of the hard and soft landscape works in accordance with the planning drawings, including any contractual maintenance period associated with these works.
- **The County Council:** The corridor in which the relief road is cited (defined on a plan in the s106) is transferred to Suffolk County Council (SCC) before commencement of development under the terms of the s106 agreement.
- **The Local Planning Authority:** This term (abbreviated to LPA) shall refer to West Suffolk Council and its Planning and Landscape Officers who are involved in the process of the approval of landscape and other documentation.
- **The Adopting Organisation:** Following the completion of the road (or section) and after the conclusion of the 12 month maintenance period (under the s278), the 'highway' will be adopted and maintained by SCC. Any surplus land will revert back to Persimmon Homes. As the adopting organisation SCC will be responsible for the management and maintenance of landscape areas including all landscape components and features within them. The Adopting Organisation shall also be taken to mean any employee or representative of the organisation in ownership of the grounds.
- **The Highways Authority:** The Highways Authority will be responsible for the management and maintenance of all areas within and to the road side of the maintenance strips shown on drawings JBA 17/364-01 to JBA 17/364-12).

- **The Landscape Management Contractor:** the company who may be appointed by the Adopting Organisation to carry out the landscape maintenance works.

### 1.3.2 **Status of the Landscape and Ecological Management Plan**

The plan shall demonstrate full integration of landscape, biodiversity and arboricultural considerations. The areas of planting shall thereafter be retained and maintained in perpetuity in accordance with the approved Landscape and Ecological Management and Maintenance Plan, unless any variation is approved in writing by the Local Planning authority.

- 1.3.3 The LPA will approve this document as part of the planning process and this document therefore forms part of the approved planning documents. Management shall therefore be carried out in accordance with this document following completion of the implementation management plan (and any contractual maintenance periods associated with these works). This document will outline the minimum standard of maintenance to ensure a safe, comfortable, attractive, biodiverse and sustainable landscape is achieved in perpetuity.

### 1.3.4 **Supportive Information**

This Management Plan is submitted together with the Detailed Soft Landscape Proposals for the Relief Road (drawing numbers JBA 17/364-01, to JBA 17/364-14), the Management Areas and Responsibilities Plan and the Schedule of Maintenance Operations, attached as Appendices (6.1 - 6.2) to this document.

- 1.3.5 The document should be read in conjunction with the following planning documents:
- Phase 1 Habitat Survey of Relief Road, Haverhill, Suffolk. James Blake Associates, 2018.
  - Arboricultural Method Statement of Haverhill Relief Road, James Blake Associates, 2020
  - Land at North-West Haverhill Environmental Statement. Bidwells, 2009.
  - Land at North-West Haverhill Supplementary Environmental Statement and associated Appendices. Bidwells, 2010.
  - Landscape and Visual Impact Assessment. Land at North-West Haverhill. Bidwells, 2009.

## **2.0 AIMS AND OBJECTIVES OF THE LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN**

### **2.1 AIMS**

2.1.1 The principal aims of this Landscape and Ecological Management Plan are as follows:

- To achieve a high standard of maintenance: To take measures to ensure the successful establishment and growth of new structural and incidental planting and to take appropriate long-term management measures to ensure the satisfactory appearance and sustainability of vegetation. To ensure that landscape components are replaced, augmented and/or improved over time as appropriate;
- To maintain and enhance biodiversity: To protect and enhance the nature conservation interest of both existing and new habitats and to ensure the adoption of management practices that enhance the biodiversity value of the site. To fulfil all legal requirements in relation to the protection and management of ecological features and the protection and management of target species including bats and reptiles;
- To ensure the successful integration of the Relief Road with the surrounding landscape;
- To ensure health and safety: To uphold the duty of care that all landscape components are safe and that all reasonable steps are taken to minimise risk of injury and damage to people and property; and
- To provide a mechanism for monitoring and review: To ensure that management practices are monitored and where necessary reviewed on an annual basis in accordance with changing site circumstances and the views of key stakeholders (Adopting Authority, resident's representatives and LPA).

### **2.2 OBJECTIVES**

2.2.1 The main objectives of the Landscape and Ecological Management Plan are to manage the landscape in such a way as to:

- Maintain a visual buffer around the Relief Road and the new development edge, providing visual screening from viewpoints to the north;
- Screen views of the road from within the town;
- Create a green edge to the town;
- Increase the wildlife habitat and landscape resource;
- Link existing and proposed habitat features (such as hedges and areas of greenspace) in order to create a cohesive landscape and wildlife habitat network;
- Maintain and improve the condition of existing landscape features within the Relief Road corridor that are to be retained, such as trees and hedges;



- Provide a landscape buffer between the Relief Road and the County Wildlife Sites; and
- Create habitats suitable for species which may require translocation due to the construction of the road and associated residential development. This will involve the creation of an additional area of calcareous grassland to increase the amount of that habitat available and to bolster the County Wildlife Site.

## 3.0 GENERAL ECOLOGICAL ADVICE

### 3.1 INTRODUCTION

The development proposals for the site have been driven by the desire to create a form of development that respects the particular characteristics of the site and complements the character of the surrounding area. To that end the landscape proposals incorporate different types of native and natural planting in order to aid the integration of the development into the wider landscape. The landscaping proposals also provide wildlife habitat to reinforce that within Ann Suckling Way County Wildlife Site.

### 3.2 ECOLOGICAL SURVEYS

An Ecological Survey of the wider site was produced by RPS in April 2009. This found that:

- The majority of the site is arable and species-poor grassland of minimal conservation interest. Field margins comprise intact or defunct hedgerows and ditches. Two small areas of semi-natural broad-leaved woodland are present on site. An area of species-poor unimproved neutral grassland, dominated by False Oat-grass, was recorded in the southeast of the site.
- The habitats of conservation interest present on the site are hedgerows; some qualify as 'Important' hedgerows under the 1997 Hedgerow Regulations. At the time of the original survey, in 2007, some of the hedgerows qualified as Ancient and / or Species-Rich Hedgerows, which was a UK Biodiversity Action Plan (BAP) (and Local BAP) Priority Habitat. Since the original survey, the definition and name of the UKBAP Priority Habitat has been changed to 'Hedgerows', and all hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are now covered by this Priority Habitat definition.
- A population of the Nationally Scarce plant Sulphur Clover was found in one location. No other nationally rare or scarce plants, or plants listed on the UKBAP or LBAP were recorded from within the site boundary. However, Ann Suckling Way CWS supports populations of Sulphur Clover and the Nationally Rare species Crested Cow-wheat.
- A total of 504 species of terrestrial invertebrate were recorded during the survey, including 226 moths. One individual of a nationally rare Red Data Book species *Andrena proxima* was recorded. A single adult Four-spotted Moth was recorded at the start of the survey, but despite targeted surveys was not detected again. Four-spotted Moth is a UKBAP Priority Species.
- Eleven Nationally Notable and 20 Nationally Local invertebrate species were recorded. Twenty species associated with dead wood habitats were also recorded.
- The invertebrate interest on the site was associated with the hedgerows and adjacent grassland strips. The majority of the site (arable land) was of low interest for invertebrates.

- No ponds capable of supporting breeding amphibians were present on the site. Two ponds in the grounds of Boyton Hall were surveyed. No Great Crested Newts were found. Smooth Newt, Common Frog and Common Toad were recorded from the ponds.
- One Slow-worm was recorded during the survey. No other reptile species were recorded.
- A total of 43 species were recorded during the bird survey. Of these, 25 were confirmed to be breeding on the site.
- Six species of bat were recorded on the site. The predominant area of activity for the majority of the bats was along the Ann Suckling Way hedgerow, with some activity also recorded along the east-west hedgerow running from Ann Suckling Way to the east of the site and near the small wooded area to the southeast
- No evidence of Badgers was recorded, and it is therefore concluded that Badgers are not present on the site.
- No evidence of Water Voles was recorded in any of the ditches, and it is therefore concluded that Water Voles are not present on the site.

An Ecological Survey of the Relief Road site was carried out in January 2018 by James Blake Associates, this found that:

- A few of trees within the site boundary were semi-mature and mature and that were considered to have low to negligible bat roost potential.
- The site provided good quality foraging habitat for bats with hedgerows also providing potential commuting routes. Hedgerow and arable fields are abundant in the wider landscape. Further bat activity surveys are recommended.
- The semi-improved grassland margins and tall ruderal vegetation provided moderate quality habitat for reptiles, with the hedgerows providing hibernation and sheltering opportunities. Further reptile surveys are recommended.
- Trees and hedgerows throughout and surrounding the site provided potential nesting and foraging opportunities for birds. The arable and tall ruderal fields were considered suitable for ground nesting birds due to little disturbance and the size of the fields. Breeding bird surveys are recommended.
- Habitats on the site were suitable for great crested newts (GCN) with semi-improved grassland margins and tall ruderal vegetation providing foraging opportunities and hedgerows suitable for shelter and hibernation. Further surveys are needed in order to determine the presence/absence of Great Crested Newts.
- The arable fields were not considered likely to support a large number of invertebrates due to the lack of plant diversity. However, the areas of tall ruderal vegetation, scrub and hedgerows did provide potential habitat for common invertebrates.

- The site and the surrounding hedgerows provided suitable habitat for foraging and commuting badgers. Badger droppings were found at the western end of the site during the survey indicating the use of the site by badgers.
- The site was considered potentially suitable for dormice. Many hedgerows had not been intensively managed and relatively continuous, providing cover and foraging opportunities for dormice. Woodlands outside the site boundary provided potential habitat for dormice with mature canopy structure. Hedgerows on the site provided potential corridors for dormice to move between woodland areas connected to the site. Further dormice surveys are recommended.
- The habitats on site were sub-optimal for harvest mice, lacking densely-packed vegetation and long grassland in the field margins.
- The site was considered to be potentially suitable for hedgehogs, with hedgerows and grassland providing opportunities for sheltering and foraging.
- There were several wet ditches within the site and adjacent to the site which were considered not suitable for water vole. However, the wettest of the western ditches was considered to be sub-optimal for water vole. No definite evidence of water vole was recorded during the site visit; however, the visit was conducted during the sub-period for recording signs for this species. Further surveys for water vole of potentially suitable waterways are recommended.

Further surveys were undertaken, including:

- Great Crested Newt eDNA Survey (JBA, June 2019)
- Reptile Survey (JBA, June 2019 Rev A)
- Botanical Survey (including Sulphur Clover Survey) (JBA, August 2019)
- Hedgerow Survey (JBA, August 2019a)
- Breeding Birds Survey (JBA, October 2019)
- Badger Survey (JBA, October 2019a)
- Bat Activity Survey (JBA, December 2019)
- Hazel Dormouse Survey (JBA, December 2019a)
- Wintering Bird Survey (JBA, February 2020)
- Water Vole Habitat Assessment (JBA, October 2020)
- Updated Badger Survey (JBA, October 2020a)

### **3.3 ECOLOGICAL TRENDS AND CONSTRAINTS ON SITE THAT MIGHT INFLUENCE MANAGEMENT**

As stated in Section 2.2, one of the key objectives of the Landscape and Ecological Management Plan is to maintain and enhance biodiversity through the protection and enhancement of the nature conservation interest of both existing and new habitats, to ensure the adoption of management practices that enhance the biodiversity value of the site and to fulfil all legal requirements in relation to the protection and management of ecological features and the protection and

management of target species. In order to do this, it is necessary to consider the local situation with regard to species which are afforded particular legal protection and the influence that their presence might have on the design and management of the landscape of the Haverhill Relief Road.

### **Dormice**

There are populations of dormice in the local area, and the ecological survey of the site concluded that the hedgerows and woodlands close to the site would provide good cover and foraging opportunities for them. Hedgerows which provide potential corridors for dormice between areas of woodland will be severed by the new road. Further surveys were undertaken which found the likely absence of dormouse on site. However, dormice bridges could be used to cross the road on the lines of the hedges which will be severed by the new Relief Road. The type used in Japan are to be preferred, as they have been shown to be used by dormice. Even though no dormice were found in the hedgerows associated with the site, the planting design and management should take the needs of dormice into account in order to make the site as attractive as possible to them. This will include:

- Planting lengths of hedge and lines of native shrubs from the highway boundary planting up to the carriageway on either side (leaving gaps for the maintenance strips) where the hedges have been severed by the road to minimise the gap created by the new road.
- Providing connected habitat along the length of the new road, linking to existing hedges and woodlands.
- Using native species which will provide food for dormice for as long a period of the year as possible. For example, Blackthorn and Bird Cherry flower early in the year, and provide food at a time when it is hard to find from other sources.
- Managing the native woodland and native hedge in a way that will provide a structure that will suit the requirements of dormice by providing cover for them. For example, coppicing understorey shrubs within the areas planted with a native woodland mix such as Hazel (*Corylus avellana*) and Guelder Rose (*Viburnum opulus*) on a twelve-year cycle.
- Ensuring that management activities are carried out at the time of year when dormice will not be disturbed. This means that hedges, trees and woodland can only be pruned between December and February inclusive, following an inspection for roosting bats by an ecologist with a licence for bats. Removal of plants including their roots can only be carried out between April and October. Any such work to be carried out between April and October shall only be carried out after an inspection for nesting birds, roosting bats and dormice by an ecologist with a licence for bats and dormice.

### **Harvest Mice**

No harvest mice were found on site during the ecological surveys and the existing habitats are sub-optimal for this species, as the fallow fields do not feature densely-packed vegetation and there is only limited long grassland in the field margins. The management prescriptions for dormice and nesting birds will help to improve the habitats for this species.

### **Hedgehogs**

The ecological surveys carried out found no evidence of hedgehogs on the route of the Relief Road. However, the habitat is suitable for this species, with hedgerows and grassland suitable for foraging and providing shelter. The management prescriptions for dormice and nesting birds will help to improve the habitats for this species.

### **Reptiles**

A slow-worm was found on the site during the ecological survey carried out on the site in 2009. Conditions were judged to be moderately suitable for reptiles at the time of the January 2018 survey. However, no reptiles were recorded on site during the 2019 survey. As reptiles have been recorded in the area previously, it is necessary to manage areas of grassland in ways that will create a habitat suitable for reptiles and also precautionary measures during construction should be implemented (details could be provided within a reptile mitigation strategy). The two main areas within the site that have potential as enhancement sites for reptiles are:

- The field to the east of Ann Suckling Way Local Nature Reserve. Much of this field will be seeded with a calcareous meadow mix and managed in a way that will encourage the formation of tussocky grass through the phased mowing of it on a three-year cycle.
- The south-facing meadow areas to the north of the Relief Road.

### **Bats**

Although no bat roosts were found on-site, several species were recorded on the site in the 2009 Ecological Survey and also by JBA in 2019. The presence of bats represents a constraint that will influence the design and management of the landscape for the Relief Road. The main considerations are:

- To provide a suitable commuting corridors and 'bridges' for bats through native tree and shrub planting on both sides of the new road.
- To provide bat boxes and, in time, new mature trees to provide enhanced provision of potential roosting sites for bats.
- To ensure that any tree removal or operations that would cause disturbance are carried out following an inspection by an ecologist with a bat licence.
- To ensure that the lighting scheme for the road minimises the amount of lighting used both during and post construction.

### **Badgers**

An updated badger survey was undertaken in October 2020, which found no setts on site or within 30m of the site boundary. It is known that there are populations of badgers in the area and evidence of badgers using the site for commuting and foraging. This will influence the design of the landscape for the Relief Road through:

- Providing culverts under the new road as badger tunnels in the locations where existing hedges are severed.
- Providing a native mixed hedge along the length of the Relief Road to link existing hedges on the northern side of the road in order to provide connections to the countryside.

### **Breeding Birds**

It is known that a range of breeding bird species typical of woodlands, hedgerows and arable areas are to be found on the site and in its vicinity. The main considerations for the management of the Relief Road landscape are as follows:

- The loss of bird nesting sites through the removal of trees and hedgerows will be compensated for by the introduction of nesting boxes suitable for a range of different birds. In the longer-term, the new trees, shrubs and hedges that will be planted as part of the scheme will provide alternative nesting sites.
- Ground-nesting birds such as Skylarks are known to be breeding on the site, the loss of nesting sites on arable land will be compensated for by the creation of skylark patches within the field to the east of the Anne Suckling Way Local Nature Reserve or on arable land within 4km of the site.
- Any pruning or thinning of trees, shrubs and hedges will not take place during the bird breeding season (February to September) unless there has been an inspection by an ecologist to ensure that no nesting birds will be disturbed.

### **Water Voles**

A water vole habitat assessment was undertaken during October 2020; while there are currently no water features on site considered to be optimal water vole habitats, the design and management of the site should take account of the needs of water voles in the hope that, if there are suitable habitats, they may move into the area. In order to do this:

- Sunny banks with sedges should be created and maintained in this state where there are ditches and attenuation ponds.

### **Great Crested Newts**

While the ecological surveys carried out on site and in two adjacent ponds found no evidence of great crested newts (GCN), the design and management of the site should aim to create conditions suitable for the species. This includes:

- Ensuring that there is aquatic vegetation suitable for GCN egg-laying in the water body (such as Water Mint or Water Forget-me-not)

- Ensuring that there is not more than 20% of scrub in the vicinity of the water body.

### **Sulphur Clover**

Sulphur Clover is a Nationally Scarce plant species which grows in calcareous grassland. It has been found on the site and will require relocation if the area is to be impacted by the development. An area of calcareous grassland will be created by seeding part of the field to the east of Anne Suckling Way Local Nature Reserve with a calcareous meadow seed mix and managing it as a wildflower meadow. This will involve one cut a year (after the Sulphur Clover has flowered), with the mowings raked off. If weather conditions promote particularly high levels of growth, a second cut and raking might be necessary.



## 4.0 SPECIFIC ELEMENTS REQUIRING MANAGEMENT AND MAINTENANCE

- 4.1.1 The development will be separated into three construction phases: phases 1a and 1b which involve the construction of a small area of footpath, measuring 20m long by 2m wide, and the Eastern Roundabout; phase 2 which relates to the central section of road, and phase 3 which relates to the western section of road.
- 4.1.2 The management and maintenance of each area should commence upon the completion of that phase.
- 4.1.3 The information provided in this section includes a description and specific management objectives for each component along with the annual and occasional management regimes required.
- 4.1.4 The extent and location of areas to be managed is shown on the Landscape Management Areas Plan in Appendix 6.1.
- 4.1.5 The Highway Authority will be responsible for the management of the area between the maintenance access strips on each side of the carriageway (including the strips themselves). The other areas to the north of the maintenance access strip to the north of the carriageway to the site boundary and to the south to the southern maintenance access strip to the southern site boundary is to be the management responsibility of a Management Company to be set up by Persimmon Homes for this purpose.
- 4.1.6 The landscape areas subject to this Landscape Management Plan include the following components:
- New tree planting;
  - New and established native hedgerows;
  - New native buffer, shrub and canopy mix planting;
  - New wildflower meadow;
  - New wet wildflower meadow;
  - New close mown grass;
  - New tussock grassland;
  - New calcareous grassland;
  - New marginal planting;
  - New attenuation basin;
  - New badger crossings;
  - New bird boxes;
  - New hibernacula;
  - New bat boxes; and
  - New SUDS Pond.

4.1.7 The Highways Authority will be responsible for the following landscape elements:

- New tree planting;
- New native hedgerows;
- New native buffer mix planting;
- New wildflower meadow;
- New close mown grass; and
- New badger crossings.

4.1.8 The Appointed Maintenance Company will be responsible for the following landscape elements:

- New tree planting;
- New and established native hedgerows;
- New native buffer, shrub and canopy mix planting;
- New wildflower meadow;
- New wet wildflower meadow;
- New close mown grass;
- New tussock grassland;
- New calcareous grassland;
- New marginal planting;
- New attenuation basin;
- New bird boxes;
- Hibernacula ;
- New bat boxes; and
- New SUDS Pond.

## **Management Prescriptions for Landscape Elements**

### **4.2 NEW TREE PLANTING**

#### **Description and Evaluation**

- There is new tree planting along the length of the Relief Road. These trees are planted within the new hedge, within the native shrub mixes and within wildflower planting on either side of the new native hedgerows. They are of species often seen growing within hedges in the countryside (i.e. Oak, Wild Cherry and Field Maple) and planted as Feathered Standards.

- The planting of hedgerow trees provides additional habitats, enhances the quality of the road as a bat corridor and improves the screening of the road and residential development from viewpoints to the north and of the road from the residential development to the south.

### Management Objectives

- Ensure the satisfactory establishment and growth of new tree planting typical of the respective species.

### Annual Works

- General tree maintenance during establishment:** Check all trees for firmness and stability in the ground. Check and adjust tree ties, replacing if necessary. Top up bark mulch levels where necessary around the base of new trees, using the same or similar product to that previously supplied to maintain an approximate depth of 75mm to reduce competition from weeds and retain soil moisture. Where trees are in grass areas, remove weed growth by hand and retain a circle of bark mulch (approximate radius of 500mm) to aid mowing and prevent damage to the main stem. Trees that are not located within an area being managed as a Wildflower Meadow shall be fertilised using a suitable and approved liquid feed (N10:P15:K10) at a rate of 60g/m<sup>2</sup> during early May and again in late September. Prune back any diseased or rotten wood (including the removal of main stems and limbs) back to sound wood as required. Remove all cut material from site.
- Watering trees:** Water feathered and standard trees during dry periods (being any period without substantial rainfall for 14 days or more), until trees are successfully established. Water at a rate of 25 litres per tree position into watering tubes. Apply water at a frequency of once per fortnight from April to the end of September (to a maximum of 15 visits). Increase watering frequency during any continuous hot weather lasting more than 7 days. The Landscape Management Contractor shall be entirely responsible for varying the frequency of these visits according to climatic conditions and for contacting the Adopting Organisation and agreeing the timing of any additional watering visits if required and where restrictions are placed on the use of water, sources and costs of obtaining second class water. The Landscape Management Contractor shall be responsible for any tree failures or excessive die back from drought stress during the management contract.

### Occasional Works

- Checking and removal of tree stakes and ties:** Review the need for tree stakes and ties annually for up to 6 years. Remove stakes and ties between 4 to 6 years after planting, but be sure trees are firm and stable. Stakes and ties removed shall be cut at ground level, below lowest grass height (to prevent snagging mower blades) or pulled from the ground and the post holes filled with suitable topsoil. If the tree is found to be weak or unstable after the stakes have been removed, then check the base of the tree for signs of rot. If rotten or unlikely to stabilise, remove the tree and replace. If the tree is free from rot or other cause of its instability, then re-instate a

tree support, using 100mm diameter chestnut stake and single tie. The stake should be pushed into the ground with a post rammer, to a depth of 600mm and cut to one third the height of the tree. Fix the tree stem with a rubber tie and spacing device attached to a point no more than 25-35mm below the top of the post, in order to prevent chaffing against the post in high winds. Remove old posts and ties and arisings and dispose off-site.

- ii) **Long-term tree surgery works:** After 10-20 years of maintenance as above (or earlier if required), newly planted trees will reach semi-maturity and at this time may be in need of corrective surgery. Trees should become subject to the annual Arboricultural Assessment and any works recommended shall be carried out in accordance with paragraphs 4.2.3 and 4.2.4. Any deadwood should be left in-situ in order to provide suitable habitat for invertebrates.
- iii) **Timeframes & Specialist Advice:** All works should be completed at an appropriate time of year and in accordance with relevant EU and UK wildlife legislation. Where possible this should be outside of the bird nesting season (i.e. between October through to March inclusive). For management advice in relation to hedgerows which may contain dormice, see below. However (according to the nature of the works), there may be a requirement for a watching brief by a qualified ecologist to ensure there are no nesting birds or bats present if undertaken within nesting/roosting season.
- iv) **Removal of Trees and shrubs:** Any removal of trees and shrubs which are found to be suitable dormice habitat should be undertaken as follows. The tree or shrub shall be cut to a height of 30cm between December and February (during the dormice hibernation season). If necessary, the remainder of the tree or shrub shall be removed between May and October. **Advice should be sought from a suitably qualified ecologist before any works are carried out on hedgerows which may provide suitable dormice habitat.**
- v) **Tree replacement and enhancement of tree cover:** Any tree that dies or is necessarily felled, but which is not removed as part of a programme of tree removals, shall be replaced with a tree of appropriate species and stock size. Such replacement shall be with a tree of either the same or similar species as those existing. The option for replacing with a different species is to allow some flexibility avoiding problems encountered with 'Same Species Disease' and to ensure sustainable tree cover in the interests of visual amenity. Possible damage to drainage/services and adjoining building foundations must be considered before choosing a replacement tree species and location. Where alternative species are being considered, then the species should be suitable to the character of the location and adjoining trees. Once annually the site shall be considered for the need for any strategic replacement or enhancement planting, to broaden the age class of trees and tree groups, in the interests of the long-term sustainability of strategically important vegetation. Trees should be a minimum stock size of standards (10-12cm girth), and implemented and maintained in accordance with good horticultural

practice. Replacement and enhancement planting is best undertaken during the planting season (November through to March inclusive).

### 4.3 NEW AND ESTABLISHED NATIVE HEDGEROWS

#### Description and Evaluation

- Native hedgerows have been planted along the length of the Relief Road (not all within the relief road proposals some part of the hedge are within the infrastructure proposals) in order to enhance the rural character, provide connectivity with existing hedges and help to screen the Relief Road and residential development. These hedges will be managed so as to be broad and high, with the hedge along the northern side of the road maintained at a height and width of about 4m.
- Hedgerow planting has been carried out in order to gap up existing hedgerows.
- Existing sections of hedgerow within the area covered by the Landscape and Ecological Management Plan will be managed in order to maintain and improve their condition.

#### Management Objectives

- To maintain existing and new native hedgerows to a naturalistic appearance and to a given predetermined ultimate height, shape and width.
- To ensure continuity of form and density through under or inter-plant any gaps or sparse areas using species mixes to match as required.
- To ensure that leggy and unkempt growth is pruned back and maintained at a functional size so that the hedge does not hold litter or present Health and Safety problems

#### Annual Works

- General native hedge maintenance:** Top up mulch levels for new hedges where necessary, using the same or similar product to that previously supplied. For the first few years native hedges should be cut once annually in December. Cutting of hedgerows which are located away from roads and footpaths or are not required to be stock proof can then be reduced to a biannual cut. This should be carried out on a phased basis, so that half of the hedge length is cut each year. It is recommended that the cut be carried out in January in order to allow fruiting tree species to finish fruiting, and to allow birds to continue feeding further into winter.
- Pruning native hedges:** Prune any diseased or rotten wood (including the removal of main stems and limbs) back to sound wood. Remove all stems and limbs which are unsafe or are in danger of falling or breaking up during gales. Remove all cut material from site and cart away to tip. Do not site burn. Top out native hedgerows to the above intended eventual height (about 4m high for the main linear hedges on the north and south sides of the road), and face up the sides, using an electric hedge cutting device, to

form an even and tidy hedge alignment so that its cross-section forms an 'A' shape. Cut larger stems with a shrub pruning tool.

### Occasional Works

- i) **Gapping up native hedges:** Remove failed plants for new native hedges and replace with a plant of the same species, to a minimum size of an open ground whip, 0.9-1.2m high, planted between the months of December and mid-March inclusively, unless the plant is either Ilex, Ligustrum or other native evergreen species, when the height can be 500mm minimum and be supplied in a 3L pot. Gap up areas of less dense growth with additional plants as required to achieve a continuous hedge alignment, taking due allowance for natural growth and
- ii) **Occasional surgery to larger native hedges:** Native hedges which have grown out into tree lines, should be faced up only, retaining taller trees, unless there are weaknesses in the root stock and stumps from rot. Such trees shall be pollarded to the given hedge height above. Retain any sound stems.
- iii) **Timeframes & Specialist Advice:** All works should be completed at an appropriate time of year and in accordance with relevant EU and UK wildlife legislation. Where possible this should be outside of the bird nesting season (i.e. between October through to March inclusive), For management advice in relation to hedgerows which may contain dormice see below. However (according to the nature of the works), there may be a requirement for a watching brief by a qualified ecologist to ensure there are no nesting birds or bats present if undertaken within nesting/roosting season.
- iv) **Removal of Hedgerows and Trees:** Any removal of hedgerows which are found to be suitable dormice habitat should be undertaken as follows. The hedgerow shall be cut to a height of 30cm between December and February (during the dormice hibernation season). If necessary, the remainder of the hedgerow shall be removed between May and October. **Advice should be sought from a suitably qualified ecologist before any works are carried out on hedgerows which may provide suitable dormice habitat.**

## 4.4 NEW NATIVE BUFFER, SHRUB AND CANOPY MIX PLANTING

### Description

- Native whip and shrub planting has been carried out in locations where the corridor is of a sufficient width along the southern side of the Relief Road next to phase 1. It has also been added to northern side of the relief road, just beyond the hedge to create character and pockets of native shrubs, trees and pockets of wildflower.
- Native species will be selected to provide general habitats and foraging for wildlife including flowering and fruiting varieties.

## Management Objectives

The management objectives for native whip and shrub planting are to:

- Ensure the satisfactory establishment and growth of new planting;
- Maintain planting in a healthy and attractive condition and enhance the value of planting as a food source to wildlife; and
- Ensure continuity of the design approach and amenity value of planting.

## Annual Works

- i) **Weeding:** Remove all weed growth by hand as necessary to ensure weed free and tidy planting areas. Six to eight visits are required per growing season. Visits should occur approximately monthly in the growing season, subject to weather conditions from April to October, with an extra visit outside of the growing season in December or January to inspect the condition of the beds. Take great care not to disturb sheet or bark mulch; top up bark mulch levels where necessary for the first 3 years, using the same or similar product to that previously supplied. Note: For planting using a non-biodegradable weed suppressant membrane, reduce visits to 4 times per year in the growing season. Where a biodegradable weed suppressant fabric has been used, this will have disappeared within the establishment phase. Weeding frequency should therefore be varied according to the site and density of vegetation cover and in any event should be between 4 and 8 i.e. whatever is required to achieve a weed free scheme. All weeds shall be removed from the site.
- ii) **Spot Herbiciding:** Where required, persistent perennial weeds can be controlled using herbicide. For planting beds containing herbaceous plants and shrubs, apply a suitable folia-acting systemic translocated herbicide using a weed wiper device to avoid killing wanted plants. The use of herbicides should only be made following a risk assessment to consider potential effects on the environment and on human health, but also spray drift killing the wrong plants. The purchase, transport and storage of herbicides are regulated by Part III of the Food and Environment Protection Act 1985, Control of Pesticides (Amendment) Regulations 1997; the Health and Safety at Work Act 1974; the COSHH Regulations, the product COSHH sheet and EC Directive 91/414/EEC (the "Authorization Directive") and the Plant Protection Products Regulations 1995 as amended by the Plant Protection Products (Basic Conditions) Regulations 1997. All herbicides must have an appropriate full or "off-label" approval for use in a relevant situation. Refer to the Pesticide Safety Directive, for which the website is given here for your assistance: [www.pesticides.gov.uk](http://www.pesticides.gov.uk).

All pesticides shall be applied in suitable calm weather conditions; allow for repeat spraying as required to achieve a complete kill. **DO NOT HERBICIDE WITHIN CLOSE PROXIMITY OF SWALE.** Apply herbicide as required and at intervals to ensure no regeneration of weed, usually equating to four sprays per year during the growing season at 6 week intervals, from late April onwards. The timing of visits may vary according to weather conditions. Extreme care must be taken to avoid damage to surrounding plants and grass, and to avoid spray drift. Any damage

resulting from incorrect usage, spillage, and spray drift, to be rectified at the Landscape Management Contractor's expense.

- iii) **General planting maintenance:** At each visit firm in and straighten any loose plants. Top up bark mulch levels where necessary for the first 3 years, using the same or similar product to that previously supplied to maintain an approximate depth of 50mm to reduce competition from weeds and retain soil moisture.
- iv) **Pruning of planting:** Prune back shrubs in the period between October to March in accordance with sound horticultural practices, pruning back to a node, shoot or bud; prune out dead, leggy and broken branches, without damage to the natural habit or appearance of plant without box clipping or rounding off plants. Prune out crossover branches, invasive suckers, dead wood, damaged stems, any spindly growths and any epicormic growth that will weaken the plant. Prune back Rosaceous and quick and leggy growing plants much harder than other species, but prune back by no more than 30% in any one-year. Prune Cornus varieties back to 200mm above ground every 3rd year, but retaining any young growths.
- v) **Watering:** For the first year after planting water both shrubs and whips during dry periods (being any period without substantial rainfall for 14 days or more). Water all shrubs to field capacity (minimum 10 litres per m<sup>2</sup>) and water all large specimens at 10 litres each. Apply water at a frequency of up to 2 times per week from April to the end of September (to a maximum of 15 visits in any one calendar year) as required during any continuous hot weather lasting more than 7 days. The Landscape Management Contractor shall be entirely responsible for varying the frequency of these visits according to climatic conditions and for contacting the Adopting Organisation and agreeing the timing of any additional watering visits if required and where restrictions are placed on the use of water, sources and costs of obtaining second class water. The Landscape Management Contractor shall be responsible for any tree failures or excessive die back from drought stress during the management contract. Following the first year after planting watering should be unnecessary as all of the species are native and should be tolerant of drought conditions.

### Occasional Works

- i) **Replacement and enhancement planting:** Cut back any shrubs and herbaceous plants where they have become old, misshapen, leggy or they have lost their vigour. Specimens, shrubs or herbaceous plants that fail to show growth or develop full foliage (including plants damaged during management operations), where such plant failure leaves a gap in the foliage not filled by adjacent plants, shall be replaced with stock of the size, species and quality originally specified. Include any plants that are destroyed by vandalism, theft or similar cause through no fault of the Landscape Management Contractor, up to and not exceeding 5% of the plant stock. Specimens, shrubs or herbaceous plants so replaced shall be the same as those specified, previously supplied and approved. Nursery stock shall be open grown whips (60-90 cm high) or where evergreen species a minimum stock size of a 3L pot. Planting should be implemented



and maintained in accordance with good horticultural practice. Include any works necessary to enable planting to be properly carried out i.e. removal and disposal of dead material off site and for topping up/replacement of bark mulch. Once annually the site shall be considered for the need for any strategic replacement or enhancement planting, to broaden the age class of vegetation in the interests of the long-term sustainability of strategically important vegetation.

- ii) **Thinning and Coppicing:** Thinning and coppicing will allow trees and shrubs to develop diversity of form and different types of nesting, feeding and foraging habitat and extend the potential life of individual plants. Additional thinning of the buffer planting areas may be required at intervals following an initial selective thin. The timing of thinning should be informed by the arboricultural survey, which should include a visual inspection, checking if crowns are overlapping and thinning is needed. Any trees, apart from understorey species, which have failed to reach the canopy and have been suppressed, will need removal. Thin on a phased basis in blocks. The aims should be to create a 'ring of sky' around each tree that is retained, into which it can spread. Protect coppice stools from deer/rabbit browsing by piling brash over them. Monitor coppice periodically, noting any stools that fail to regrow and replant the following autumn. Remove weeds and invasive species as required. A competent person should plan thinning and coppicing operations in advance by identifying and marking all trees for removal and coppicing in winter. All thinning operations should be undertaken between October and February.

## 4.5 NEW WILDFLOWER MEADOW

### Description and Evaluation

- Areas of wildflower grassland are provided along the length of the Relief Road These were seeded with Emorsgate Seeds EM3 Special General Purpose Meadow Mix (or similar) consisting of 20% of wildflower seeds and 80% of meadow grass seeds. This will create a sward with a wide variety of different wildflowers typical of neutral grassland. The maintenance access strips will be sown with the same seed mix.

### Management Objectives

The management objectives for wildflower grassland areas will be to:

- To ensure the satisfactory establishment of the sward; and
- To maintain a healthy and biodiverse sward suitable for a range of wildlife.

### Annual Works

- i) **Cutting of wildflower areas:** Meadow grass and wildflower areas shall be strimmed only once a year to a height of 100mm in late August. To ensure that soil fertility is reduced, rake up the arisings immediately, or in hot dry weather, they can be left in situ for a maximum of 2 days to set seed before raking. In a warm and wet year, a second cut may be required and if so this should be carried out either in October or March as appropriate. The timing of all cutting operations should take into consideration any protected

species (such as reptiles) that may be present. Once cut and raked up, all arisings shall be collected and removed off site as agreed.

- ii) **General care:** Hand weed pernicious, ruderal and aggressive or invasive weeds in in order to maintain the visual amenity of the area. Do not herbicide or fertilise. Hibernacula should be left undisturbed. Arising's from tree surgery work can be retained on site and used to create new hibernacula as required.

### Occasional Works

- i) **Replacement of failed wildflower grassland areas:** Meadow grass and wildflower sward that is species poor shall be enhanced. In areas of low fertility, closely strimming or mow the existing sward and remove all cuttings in August. Rake or scarify to disturb the ground and overseed with a suitable mix of wildflowers selected to the microclimatic and soil conditions and repeatedly tread over the area. After sowing mow the grass to a height of 60mm in height to allow light and air to the emerging seedlings for a full growing season. In areas where soil fertility is too high or the sward has failed the area will require re-cultivating and re-seeding. Remove dead material and re-cultivate the topsoil to a depth of 100mm. Small areas may be reseeded following the autumn cut by spreading the cut arisings onto the bare soil to set seed. For more wholesale degradation, cultivate the affected area until a fine, level tilth is achieved, removing stones greater than 20mm diameter. **Do not fertilise or herbicide.** Evenly seed with an appropriate seed mix (80% grasses: 20% wildflowers) selected to the microclimatic and soil conditions at the specified rate. Carefully rake in thoroughly to ensure that the seed is a few millimetres below the surface and roll using a very light roller or a cylinder mower, ensuring the surface is even and level. Water thoroughly and maintain the soil in a moist condition, removing stones, weeding and mowing until the grass is established.

## 4.6 NEW WET WILDFLOWER MEADOW

- The wet wildflower meadow grassland will incorporate a diversity of wildflower and grass species suitable for seasonally wet soils of species traditional found in water meadows (appropriate to the microclimate and soil type).
- Accommodate short periods of flooding in winter months, and well drained in summer months.

### Management Objectives

The management objectives for wet wildflower meadow grassland areas will be to:

- To ensure the satisfactory establishment of the grass sward; and
- To maintain a healthy and biodiverse sward suitable for winter flooding and to be drained in summer months.

### Annual Works

- i) **Cutting of wet wildflower meadow areas:** Meadow grass and wildflower areas shall be strimmed 'hay cut' to a height of 50mm in late August. To ensure the seed is shed fully, leave arisings for 1-7 days then remove from site. During late autumn / winter strim again to 50mm and again in spring if required, leaving the wet meadow grassland uncut between spring and late July / August. The timing of all cutting operations should take into consideration any protected species (such as reptiles) that may be present. There may be an additional requirement for monitoring or a watching brief by a qualified ecologist to ensure that no protected species are present. Once cut and raked up, all arisings shall be collected and removed off site as agreed.
- ii) **General care:** Hand weed pernicious, ruderal and aggressive or invasive weeds in in order to maintain the visual amenity of the area. Do not herbicide or fertilise.

### Occasional Works

- i) **Replacement of failed wet wildflower meadow grassland areas:** wet meadow grass and wildflower sward that is species poor shall be enhanced. In areas of low fertility, closely strimming or mow the existing sward and remove all cuttings in August. Rake or scarify to disturb the ground and overseed with a suitable mix of wildflowers selected to the microclimatic and soil conditions and repeatedly tread over the area. After sowing mow the grass to a height of 60mm in height to allow light and air to the emerging seedlings for a full growing season. In areas where soil fertility is too high or the sward has failed the area will require re-cultivating and re-seeding. Remove dead material and re-cultivate the topsoil to a depth of 100mm. Small areas may be reseeded following the autumn cut by spreading the cut arisings onto the bare soil to set seed. For more wholesale degradation, cultivate the affected area until a fine, level tilth is achieved, removing stones greater than 20mm diameter. **Do not fertilise or herbicide.** Evenly seed with an appropriate seed mix (80% grasses: 20% wildflowers) selected to the microclimatic and soil conditions at the specified rate. Carefully rake in thoroughly to ensure that the seed is a few millimetres below the surface and roll using a very light roller or a cylinder mower, ensuring the surface is even and level. Water thoroughly and maintain the soil in a moist condition, removing stones, weeding and mowing until the grass is established.

## 4.7 NEW CLOSE MOWN GRASS

### Description and Evaluation

Areas of close-mown grass have been provided in the following locations:

- along the edges of the carriageway for reasons of safety; and
- along the western boundary of the field to the east of Ann Suckling County Wildlife Site to be used as a reptile and Sulphur Clover translocation site to the east of the Anne Suckling County Wildlife Site and to the north of

the Relief Road. This will provide a route suitable for horse riders and pedestrians and will maintain the existing close-mown grass field edge which is used by member of the public at present.

### Management Objectives

- To provide a grass surface that can be use by pedestrians and horse-riders (in the case of the path to the west of the translocation field).
- To keep the carriageway clear of overhanging vegetation (in the case of the mown strips immediately adjacent to the carriageway)
- To provide a surface that is free of pernicious weeds such as Creeping Thistle, Stinging Nettle and Bramble.

### Annual Works

- Mow the strip of grass adjacent to each side of the carriageway every 28 days during the growing season.

### Occasional Works

- **General care:** Hand-weed pernicious, ruderal and aggressive or invasive weeds in in order to maintain the visual amenity of the area.

## 4.8 NEW TUSSOCK GRASSLAND

### Description and Evaluation

- An area of tussock grassland has been incorporated into the open space to the east of Ann Suckling Way County Wildlife Site and to the north of the Relief Road. It will provide suitable habitat for reptiles. The seed mix in the meadow is Emorsgate Seeds EM10 Tussock Mixture (or similar) which consists of 20% of wildflower seeds and 80% of species of grass that form a tussocky sward.
- In accordance with the ecologists recommendations the area will incorporate a number of hibernacula close to the site boundaries to provide refuges for amphibians, reptiles, invertebrates and small mammals (see section 4.15).

### Management Objectives

The management objectives for tussock grassland areas will be to:

- To ensure the satisfactory establishment of the grass sward; and
- To maintain a healthy and biodiverse sward suitable for a range of wildlife.

### Initial Works

- i) Tussock grass mix choice: Tussock mixes should be chosen to be well suited to their habitat and soil type. According to the UK Soil Observatory the soil for the site is freely draining slightly acidic, but base rich ([www.ukso.org/maps](http://www.ukso.org/maps)), so tussock mixes should be chosen to be suited to this. A mix such as EM10-tussock grassland (which includes wildflower species) from Emorsgate would be suitable as it would provide habitat for insects, small mammals, birds, amphibians and reptiles, providing nesting sites during spring, food during summer and autumn, and shelter during winter.
- ii) Tussock grass seeding: Remove all existing vegetation and cultivate the topsoil to a depth of 100mm, until a fine, level tilth is achieved, removing stones greater

than 20mm diameter. Do not fertilise or herbicide. Evenly seed with an appropriate seed mix (80% grasses: 20% wildflowers) selected to the microclimatic and soil conditions at the specified rate. Carefully rake in thoroughly to ensure that the seed is a few millimetres below the surface and roll using a very light roller or a cylinder mower, ensuring the surface is even and level. Water thoroughly and maintain the soil in a moist condition, removing stones, weeding and mowing until the grass is established.

- iii) **Hibernacula creation:** A number of hibernacula will be incorporated within the grassland to provide important sheltering and hibernating opportunities for reptiles. For further details of hibernacula creation and management, refer to Section 4.15.

### Annual Works

- i) **Cutting of tussock grass areas:** Mow newly sown meadows once a month throughout the growing season of the first year of establishment to a height of 40-60mm, removing cuttings. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers.

Once established, tussocky grassland requires minimal maintenance.

To control scrub and bramble development, tussocky areas may need cutting every 3 years between October and February. For wildlife this cutting is best done on a rotational basis so that no more than half the area is cut in any one year leaving part as an undisturbed refuge

The timing of all cutting operations should take into consideration any protected species (such as reptiles) that may be present. There may be an additional requirement for monitoring or a watching brief by a qualified ecologist to ensure that no protected species are present. Once cut and raked up, all arisings shall be collected and removed off site as agreed.

- ii) **General care:** Hand-weed pernicious, ruderal and aggressive or invasive weeds in in order to maintain the visual amenity of the area. Do not herbicide or fertilise. Hibernacula should be left undisturbed. Arising's from tree surgery work can be retained on site and used to create new hibernacula as required.

### Occasional Works

- i) **Replacement of failed tussock grassland areas:** Meadow grass and that is species poor shall be enhanced. In areas of low fertility, closely strimming or mow the existing sward and remove all cuttings in August. Rake or scarify to disturb the ground and overseed with a suitable mix of tussock grasses selected to the microclimatic and soil conditions and repeatedly tread over the area. After sowing mow the grass to a height of 60mm in height to allow light and air to the emerging seedlings for a full growing season. In areas where soil fertility is too high or the sward has failed the area will require re-cultivating and re-seeding. Remove dead material and re-cultivate the topsoil to a depth of 100mm. Small areas may be reseeded following the autumn cut by spreading the cut arisings onto the bare soil to set seed. For more wholesale degradation, cultivate the affected area until a fine, level tilth is achieved, removing stones greater than

20mm diameter. **Do not fertilise or herbicide.** Evenly seed with an appropriate seed mix (80% grasses: 20% wildflowers) selected to the microclimatic and soil conditions at the specified rate. Carefully rake in thoroughly to ensure that the seed is a few millimetres below the surface and roll using a very light roller or a cylinder mower, ensuring the surface is even and level. Water thoroughly and maintain the soil in a moist condition, removing stones, weeding and mowing until the grass is established.

#### 4.9 NEW CALCAREOUS GRASSLAND

##### Description and Evaluation

- An area of calcareous grassland has been created to the north of the Relief Road. This will increase habitat availability and bolster the County Wildlife Site. This grassland has been created on what is currently an arable field using Emorsgate EM6 Meadow Mixture for Chalk and Limestone Soils (or similar), consisting of 20% of wildflower seeds and 80% of calcareous meadow grasses). The area will form the translocation site for Sulphur Clover.

##### Management Objectives

The management objectives for the calcareous grassland area will be to:

- To ensure the satisfactory establishment of the grass sward; and
- To maintain a healthy and biodiverse sward suitable for a range of wildlife.

##### Annual Works

- Cutting of calcareous grassland areas:** Calcareous grassland typically takes 3-5 years to establish. During this period a regime of cutting and light grazing is required. Cutting in the first year may be required in order to keep the sward shorter than 10 cm. The grassland should be mowed once in the second and third years after the flowers and grasses have set seed. The area can be lightly scarified in order to allow the seeds to reach the soil. The timing of all cutting operations should take into consideration any protected species or ground nesting birds that may be present. There may be an additional requirement for monitoring or a watching brief by a qualified ecologist to ensure that no protected species are present. Once cut all arisings shall be left on the ground for approximately 48 hours to allow seed to drop before being collected and removed off site as agreed.
- Cutting of wildflower areas:** Meadow grass and wildflower areas shall be strimmed only once a year to a height of 100mm in late August. To ensure that soil fertility is reduced, rake up the arisings immediately, or in hot dry weather, they can be left in situ for a maximum of 2 days to set seed before raking. In a warm and wet year, a second cut may be required and if so this should be carried out either in October or March as appropriate. The timing of all cutting operations should take into consideration any protected species (such as reptiles) that may be present. There may be an additional requirement for monitoring or a watching brief by a qualified ecologist to

ensure that no protected species are present. Once cut and raked up, all arisings shall be collected and removed off site as agreed.

- iii) **General care:** Hand weed pernicious, ruderal and aggressive or invasive weeds in in order to maintain the visual amenity of the area. Do not herbicide or fertilise.

### Occasional Works

- i) **Replacement of failed calcareous grassland areas:** In areas where soil fertility is too high or the sward has failed the area will require re-cultivating and re-seeding. Remove dead material and re-cultivate the topsoil to a depth of 100mm. Small areas may be reseeded following the autumn cut by spreading the cut arisings onto the bare soil to set seed. For more wholesale degradation, cultivate the affected area until a fine, level tilth is achieved, removing stones greater than 20mm diameter. **Do not fertilise or herbicide.** Evenly seed with an appropriate seed mix selected to the microclimatic and soil conditions at the specified rate. Carefully rake in thoroughly to ensure that the seed is a few millimetres below the surface and roll using a very light roller or a cylinder mower, ensuring the surface is even and level. Water thoroughly and maintain the soil in a moist condition, removing stones, weeding and mowing until the grass is established.

## 4.10 PROPOSED WETLAND MARGINAL PLANTING

### 4.10.1 Description

- The marginal planting will incorporate suitable wetland species traditionally found towards the edge of water bodies (appropriate to the microclimate and soil type).

### 4.10.2 Management Objectives

The management objectives for water marginal planting areas will be to ensure the satisfactory establishment of the planting towards the edge of the waterbody.

### 4.10.3 Annual Works

- i) **Marginal planting:** 50% of *Typha angustifolia* to be cut down in winter or pulled (as required) to restrict spread into water body. Leaf litter to also be removed. All arising's to be removed from site. Other marginal species to be trimmed as required to reduce growth. All arising's to be removed from site.

## 4.11 NEW ATTENUATION BASIN

### 4.11.1 Description

- There are several attenuation basins across the site, with wet wildflower and marginal planting within them.

#### 4.11.2 Management Objectives

The management objectives for attenuation basins are to:

- Ensure drainage features are in working order.
- Maintain sustainable health and growth of marginal vegetation and ensure water bodies do not become overgrown with plant growth inhibiting drainage and storage functions.

#### 4.11.3 Annual Work

- Regular inspection and maintenance:** This will be undertaken by the Adopting Organisation and is important for the effective operation. Regular mowing in and around the area is required along maintenance access routes, amenity areas and across embankments. Maintenance activities should be detailed in the Health and Safety Plan and a risk assessment should be undertaken. Specific maintenance activities are detailed in the maintenance schedule attached (see appendix 6.1).

#### 4.11.4 Occasional Work

- Replacement planting:** For distressed and failing areas of vegetation, remove dead material and re-cultivate the topsoil, to a depth of 100mm. Small areas may be reseeded following the autumn cut by spreading the cut arisings onto the bare soil to set seed. Evenly seed with an appropriate mix of wildflowers and grasses in either October/ November or February/ March, to a mix and at a rate as agreed with the landscape architect or consultant ecologist. Carefully rake in thoroughly to ensure that the seed is a few millimetres below the surface. Roll using a very light roller or a cylinder mower, ensuring the surface is even and level. In the event of unexpected dry weather water thoroughly to field capacity using a fine spray hose and continue to water to maintain a moist soil until complete establishment. Protect newly seeded areas by metal stakes and high visibility tape to restrict access and hand weed out persistent residual weeds and new germinated ruderal weed seed. Inspect inlets, outlets, overflows and grilles for blockages and clear if required. Inspect inlets for silt accumulation, and excavate if found to be impeding inlet function. Sediment to be disposed of in line with Environment Agency protocol, with sediment testing to be undertaken as required.

### 4.12 BADGER CROSSINGS

#### Description and Evaluation

- Two Badger crossing points are proposed in order to maintain ecological connectivity. The potential sites for crossings are the locations where existing hedges are severed by the new road. The indications from the surveys carried out in January 2018 are that the most important crossing points are likely to be in the mid-point of the road close to the roundabout and on the western end of the route linking with the open land close to the railway line Local Nature Reserve and County Wildlife Site.



**Management Objectives**

The management objectives of the Badger crossings are to:

- Provide connectivity for the local badger population.
- Ensure badger crossings are maintained for the functionality of the local badger population and for safety to the public.

**Annual Work**

- All crossing points should be annually inspected for presence, damage, obstruction and if necessary should be cleaned.

**Occasional Work**

If replacement through loss or damaged is required, it should be for an identical product positioned in a similar location.

**4.13 BIRD BOXES****Description and Evaluation**

- Bird boxes have been provided for a variety of locally occurring bird species on the few suitable mature trees on or close to the route of the Relief Road. Where there are no suitable trees, bird boxes have been mounted on posts. Boxes will be positioned so they are sheltered from prevailing wind, rain and strong sunlight, normally facing north-west through to north-east on suitable mature trees or posts, at a height of between 2m and 5m depending on the bird species, ensuring a clear flight path to the entrance. Where fitted to trees, a uv-stable ratchet strap has been used.
- Different types of boxes (hole-entrance and open-fronted) have been used in order to attract a variety of different birds. Suitable brands include Schwegler, Ibstock or Cedar Plus as these are known to be durable, long-lasting and to regularly attract birds to nest; however, suitable alternative manufacturers are available.

**Specific Objectives**

The management objectives for bird boxes are to:

- Provide sheltering and nesting opportunities for a variety of bird species
- Ensure nest boxes are maintained for the functionality for birds and for safety to the public

**Annual Work**

- All boxes should be annually inspected for presence, damage, obstruction and if necessary should be cleaned. Inspection and cleaning should be conducted during winter months to avoid impact on nesting birds.

**Occasional Work**

If replacement through loss or damaged is required, it should be for an identical product positioned in a similar location.

#### 4.14 BAT BOXES

##### Description and Evaluation

- Bat boxes and tubes have been fixed to the few retained trees on or close to the route of the Relief Road, using uv-stable ratchet straps, on a range of different aspects (mainly to the south-east through to south-west, but providing a variety of different positions to offer a range of climatic conditions). Boxes have been placed as high as possible, (4m and above), ensuring the entrance is free from obstruction. Favoured sites are close to linear features along the hedge line. Suitable brands include Schwegler, Ibstock or Cedar Plus as these are known to be durable, long-lasting and to regularly attract birds to nest; however, suitable alternative manufacturers are available.

##### Management Objectives

The management objectives of the bat boxes are to:

- Provide sheltering and nesting opportunities for a variety of bat species
- Ensure roost boxes are maintained for the functionality for birds and for safety to the public

##### Annual Work

- All boxes should be annually inspected for presence, damage, obstruction and if necessary should be replaced for an identical product in a similar location.

##### Occasional Work

- The boxes should be cleaned once every three years by a suitably licensed bat ecologist (if not of a self-cleaning design). Unlicensed individuals should not interfere with bat boxes or tubes once installed.

#### 4.15 NEW HIBERNACULA

##### Description and Evaluation

- Hibernacula will be created using arisings from vegetation clearance; these will provide important refuges and microhabitats for reptiles and other wildlife. They will be located on the reptile translocation site to the east of Ann Suckling Way County Wildlife Site and north of the Relief Road.
- The hibernacula will be supplemented with coppiced material following each rotational coppice.

##### Management Objectives

The management objectives for hibernacula are to:

- Maintain important refuge areas for a variety of species, including reptiles, amphibians and insects.

### **Initial Works**

- Construction of the hibernacula will involve the excavation of a linear trench to a depth of 300mm that is then filled with demolition rubble and brash to a height of 700mm above ground level. The linear hibernacula will then be capped with topsoil to a maximum depth of 250mm on top and 200mm toward the sides. These margins are to be left open to allow access to amphibians.

### **Annual Work**

- Cut the turf on top of the hibernacula every three years between October and February Rake up the mowings and remove from the site. A tool-box talk should be made available for contractors undertaking the works.

## 5.0 IMPLEMENTATION, MONITORING AND REVIEW

### 5.1 IMPLEMENTATION

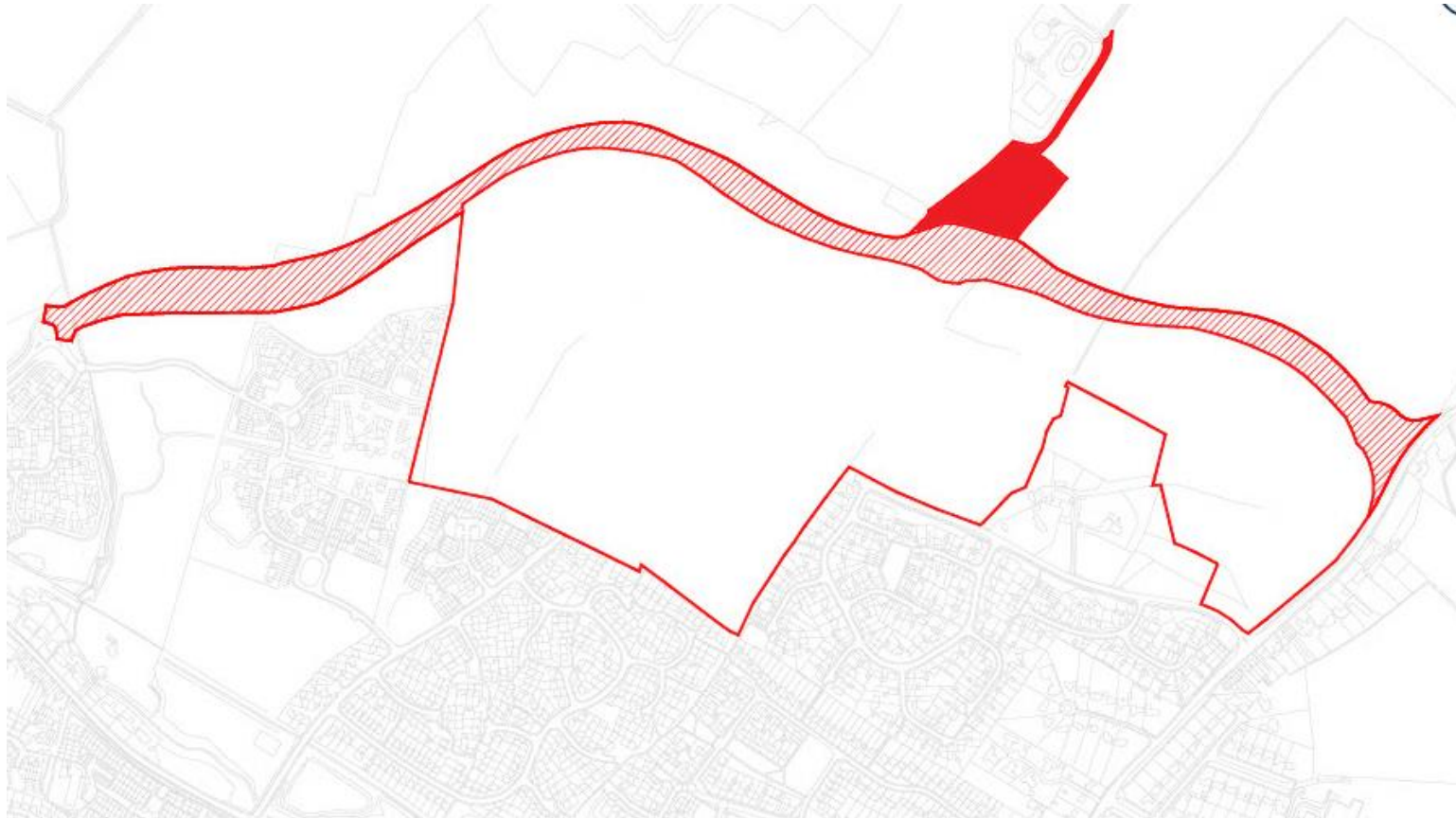
- 5.1.1 Suffolk County Council and the Management Company to be set up by Persimmon Homes for this purpose will be responsible for all management aspects relating to the landscaped areas of the Relief Road.
- 5.1.2 Suffolk County Council and the Management Company to be set up by Persimmon Homes for this purpose will coordinate all management of the site in perpetuity in accordance with this Landscape Management Plan and the accompanying maintenance schedules.
- 5.1.3 Suffolk County Council and the Management Company to be set up by Persimmon Homes for this purpose may employ a Landscape Management Contractor to carry out general maintenance operations. Specialist Contractors may be used on an as needs basis to complete specialist operations and/or occasional works.
- 5.1.4 Suffolk County Council may also appoint from time to time consultants to provide specialist advice, monitoring or to undertake a watching brief in relation to particular aspects of this site or specific maintenance operations. This may include suitably qualified ecologists, arboriculturists, landscape architects, engineers and/or health and safety executives.
- 5.1.5 All works, materials and operations will be in accordance with relevant legislation, British Standards, Regulations (including the CDM Regulations) and Codes of Practice.
- 5.1.6 The maintenance of the areas to be adopted as Highway will be funded through Suffolk County Council's Highways Maintenance budget.
- 5.1.7 The maintenance of the areas where management responsibility will be passed over to Persimmon Homes will be managed by a Management Company which will be set up by Persimmon Homes for this purpose and funded through the same funding mechanism as other Public Open Spaces within the new residential development area.

### 5.2 PROCESS FOR MONITORING AND REVIEW

- 5.2.1 The Landscape and Ecological Management Plan and maintenance schedules will be monitored and assessed for their effectiveness on an annual basis for the first five years following the completion of the development.
- 5.2.2 Each annual review will be coordinated and completed by a suitably qualified representative appointed by the developer and or the Management Company. The review will include advice from specialist consultants as required (such as a qualified Arboriculturist and ecologist), the Landscape Management Contractor and other stakeholders including representative(s) from the LPA and local residents.
- 5.2.3 **To this end the review may include (as appropriate):**
- Specialist reports - advising on particular aspects such as protected species, general silvicultural husbandry and health and safety issues;

- Records or attendance sheets demonstrating the maintenance work undertaken;
  - A walk over assessment of the landscape areas to assess landscape components and their condition, and the need for enhancement including minutes;
  - Monitoring of the condition of the County Wildlife Site and the condition of the Crested Cow-wheat population;
  - Monitoring of the condition of the area of calcareous grassland to be created to the east of the Ann Suckling Way County Wildlife Site and the condition of the translocated Sulphur Clover population;
  - Monitoring the condition of the area of tussocky grassland to be created to the east of the Ann Suckling Way County Wildlife Site and the status of the reptiles that have been translocated there;
  - Monitoring the condition of the areas of wildflower meadow to be created adjacent to the carriageway of the Relief Road; and
  - Any other ecological monitoring deemed necessary.
- 5.2.4 The review should identify any changes to site conditions and circumstances, whether the aims and objectives of the Landscape and Ecological Management Plan are being met, and where identified changes are needed to existing management practices and timeframes. Furthermore, any strategic enhancements, including new planting should be identified and priorities established for undertaking these works.
- 5.2.5 Within 1 calendar month of the review, a revised Landscape and Ecological Management Plan shall be produced (if appropriate), and circulated to stakeholders. Within 5 years of the completion of the site, the revised document shall be submitted to the LPA as a non-material amendment to the previously approved Landscape and Ecological Management Plan.
- 5.2.6 After the first five years, the Landscape and Ecological Management Plan will be reviewed every five years, or as required to ensure the satisfactory management of the landscape in perpetuity.

## 6.0 APPENDICES



**SCHEDULE OF MAINTENANCE OPERATIONS**

Maintenance Operation	Number of Visits (to be dependent on season – where not dependent on season, if appropriate, the timing shall be agreed between the Adopting Organisation and the Contractor. Indicative timings are shown with a *)					Total number of visits per year	Additional Comments
	Jan – March (13 weeks)	April – June (13 weeks)	July – Aug (9 weeks)	Sept – Oct (9 weeks)	Nov – Dec (8 weeks)		
<b>GENERAL</b>							
Collection and removal of litter and other debris	Once per month	Once per month	Once per month	Once per month	Once per month	12	All hard and soft areas. Cart away litter/debris and remove off site to licensed tip.
<b>SOFT WORKS</b>							
Visual inspection of mature trees	Once per month	Once per month	Once per month	Once per month	Once per month	12	On each visit or as required.
Annual Arboricultural Assessment of mature trees and hedgerows		*	*	*		1 (plus additional visits as required)	To be completed by a qualified Arboriculturist annually when trees are in leaf or as required when visual inspections identify a health and safety risk.
Tree Surgery and significant works to boundary vegetation/hedgerows	*				*	1	As identified by arboricultural assessment following approvals from LPA. To be carried out outside of the bird nesting season and following advice from an ecologist.
Cutting/trimming of native hedgerows	*				*	1	To be carried out outside of the bird nesting season.
Hand weeding		Once every two months	Once every two months	Once every two months	*	2-4	Weed by hand taking care not to disturb sheet or bark mulch. Remove arisings off site.
Spot herbiciding		Once in late April and once in early June (approx. 6 week intervals)	Once in mid July and once in late August (approx. 6 week intervals)			4	To occur at approximately four per year – only if required. Herbicide weed growth within a 0.5m radius of each plant. Treatment to end when the canopy closes.
Watering		Where required	Where required	Where required		12	Water where required until trees/plants/grass areas are established. Watering frequency should be adjusted by the

Maintenance Operation	Number of Visits (to be dependent on season – where not dependent on season, if appropriate, the timing shall be agreed between the Adopting Organisation and the Contractor. Indicative timings are shown with a *)					Total number of visits per year	Additional Comments
	Jan – March (13 weeks)	April – June (13 weeks)	July – Aug (9 weeks)	Sept – Oct (9 weeks)	Nov – Dec (8 weeks)		
							Landscape Management Contractor depending on climatic conditions. Increase watering during hot and dry weather until plants have established.
General maintenance of planted areas	*	*	*	*	*	12	Check at each visit.
Fertilising new trees (other than those within areas of wildflower meadow)		Once in early May		Once in mid-September		2	Fertilize new trees, once in early May and once in late September. Use a slow release product, ideally granular.
Checking, adjusting, replacing or removing tree stakes and ties	*	*	*	*	*	12	At each visit as required
Pruning trees and shrubs	Optimum time for Cornus				Optimum time for most species	1	As required to sound horticultural practice between December and February. Cut back grasses in spring.
Cutting calcareous grassland			Once in late August			1	Leave cuttings to set seed for 2 days before collecting and removing off site.
Cutting wildflower grassland	*		Once in late August	*		1	In hot dry weather leave cuttings to set seed for 2 days before collecting and removing off site. Cut again in October or in March if required due to weather conditions. Cutting may be varied by ecologist if reptiles are present.
Cutting of sulphur clover			Once after the species has flowered				Cuttings to be collected and removed off site.
Replacement of tree, hedgerow and shrub planting	*				Optimum time for most species	1	As required. To include enhancement planting.
Replacement calcareous grassland				Optimum time		1	As required.



Maintenance Operation	Number of Visits (to be dependent on season – where not dependent on season, if appropriate, the timing shall be agreed between the Adopting Organisation and the Contractor. Indicative timings are shown with a *)					Total number of visits per year	Additional Comments
	Jan – March (13 weeks)	April – June (13 weeks)	July – Aug (9 weeks)	Sept – Oct (9 weeks)	Nov –Dec (8 weeks)		
Replacement of wildflower areas				Optimum time		1	As required.
Removal of woody plants with roots (which are suitable habitat for dormice)			Rest removed between May and Oct.		Cut to 30cm Dec-Feb	2	As required.