

**NORTH LITTLEHAMPTON PHASE 2 RESIDENTIAL
DEVELOPMENT (PARCEL C1 AND
PART OF PARCELS B2, B4 AND C2), WEST SUSSEX

ECOLOGICAL MANAGEMENT PLAN**

Final Document

March 2017

Preliminary Ecological Appraisals • Protected Species Surveys and Licensing • NVC • EclA • Management Plans
Habitats • Badger • Bats • Hazel Dormouse • Birds • Reptiles • Amphibians • Invertebrates • Riparian and Aquatic Species

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This report may or may not be suitable to support a planning application. Should this report contain recommendations for further survey work or assessment, the results of this would be required in order to support a planning application.

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¹ Chartered Institute of Ecology and Environmental Management (2015). *Guidelines for Ecological Report Writing*. Technical Guidance Series. <http://www.cieem.net/publications/23/ecological-report-writing>

**NORTH LITTLEHAMPTON PHASE 2 RESIDENTIAL
DEVELOPMENT (PARCEL C1 AND
PART OF PARCELS B2, B4 AND C2), WEST SUSSEX**

ECOLOGICAL MANAGEMENT PLAN

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1.0 INTRODUCTION

1.1 Background

Ecological Survey & Assessment Limited (ECOSA) have been contracted by Persimmon Homes Limited to prepare an Ecological Management Plan (EMP) for North Littlehampton Phase 2 Residential Development (Parcel C1 and part of Parcels B2, B4 and C2) centred on National Grid Reference (NGR) TQ 03431 04155.

Parcel C1 and part of Parcels B2, B4 and C2 are located within the wider North Littlehampton development which comprises the construction of up to 1,260 dwellings, associated facilities, employment areas and open space (Arun District Council planning reference LU/47/11).

Within this document where reference is made to 'the site' this refers to Parcel C1 and part of Parcels B2, B4 and C2 and reference to the 'wider site' relates to the wider North Littlehampton development. The location of the site in relation to the wider site is shown in **Map 1**.

This EMP has been written to support a Reserved Matters application to Arun District Council for the site. Under LU/47/11 there are three conditions relating to ecology (**Table 1**).

Table 1: Ecological conditions

Condition	Details
19	Development shall not begin until further ecological surveys have been carried out and submitted to the Local Planning Authority. These surveys shall relate to water voles, bats, birds, invertebrates and reptiles.
20	Prior to the commencement of development on any phases of development east of the new road than spans the railway line (running north – south), details of appropriate mitigation, and a programme of implementation, in relation to water voles, bats, birds, invertebrates and reptiles shall be submitted to an approved in writing by the LPA.
21	No development within any phase or sub phase shall commence until details of an ecological management plan for the construction phase of that element of the development has been submitted to and approved in writing by the Local Planning Authority. The management plan shall be implemented in accordance with the approved plans.

The EMP is based on the results of ecological surveys and assessments carried out by ECOSA and White Young and Green (WYG) between 2008 and 2016 (**Table 2**). Further details of the species surveys and results are provided in Section 4.0.

Table 2: Summary of ecological surveys

Species Group/Species	2008	2009	2014	2017
Ecological scoping Phase One habitat survey ²	✓	-	-	-
Ecological constraints appraisal ³			✓	
Updating walkover survey ⁴	-	-	-	✓
Reptile survey ⁵	-	✓	✓	-
Great crested newt survey ⁶	-	-	✓	-
Water vole survey ⁷	-	-	✓	✓
Breeding Bird Survey ⁸	✓	-	✓	-

The results of the surveys have been used to provide mitigation and enhancement proposals within Parcel C1 and part of Parcels B2, B4 and C2. Updating surveys for bats, birds, reptiles and invertebrates have not been updated since 2014 as the site provides limited habitat for these species groups.

1.2 Aims and Scope of Document

The aim of this document is to outline the proposed ecological management required at the site. The management plan sets out the management prescriptions for the site in order to retain the long-term ecological value. This plan covers a period of 10 years following the commencement of the development.

1.3 Site Setting and Description

Parcel C1 and part of Parcels B2, B4 and C2 are situated in the South Coast Plain Natural Character Area, described by Natural England as follows⁹:

“The South Coast Plain National Character Area (NCA) is a flat, coastal landscape with an intricately indented shoreline lying between the dip slope of the South Downs and South Hampshire Lowlands and the waters of the English Channel, Solent and part of Southampton Water. The coastline includes several major inlets which have particularly distinctive local landscapes and intertidal habitats of international environmental importance for wildfowl and waders. Chichester Harbour Area of

² White Young and Green (2009) Proposed Lymminster Bypass (South) North Littlehampton - Ecological Scoping / Phase 1 Habitat Survey. White Young and Green, Droxford, Hampshire

³ White Young and Green (2014) Toddington Lane, North Littlehampton - Ecological Constraints Appraisal. White Young and Green, Droxford, Hampshire

⁴ An ecological walkover survey was undertaken by ECOSA on 13th January 2017

⁵ White Young and Green (2014) Proposed Lymminster Bypass (South) North Littlehampton - Reptile Presence / Absence Survey Report. White Young and Green, Droxford, Hampshire

⁶ White Young and Green (2014) Toddington Lane, North Littlehampton - Great Crested Newt Presence / Likely Absence Survey Report. White Young and Green, Droxford, Hampshire

⁷ White Young and Green (2014) Toddington Lane, North Littlehampton - Water Vole Presence / Likely Absence Survey Report. White Young and Green, Droxford, Hampshire

⁸ White Young and Green (2014) Toddington Lane, North Littlehampton – Breeding Bird Report. White Young and Green, Droxford, Hampshire

⁹ Natural Areas are defined by Her Majesty's Stationery Office as 'biogeographic zones which reflect the geological foundation, the natural systems and processes and the wildlife in different parts of England, and provide a framework for setting objectives for nature conservation' (Biodiversity: The UK Steering Group Report, HMSO, 1995).

Outstanding Natural Beauty lies within the NCA and the foothills of the South Downs, along the northern boundary, fall within the South Downs National Park.

Some three per cent of the area is designated as a Site of Special Scientific Interest, and there are four Special Protection Areas, two Special Areas of Conservation and four Ramsar sites: Chichester and Langstone Harbour, Pagham Harbour, The Solent and Southampton Water and Portsmouth Harbour.”

The site is located in the County of West Sussex situated centrally along the south coast of England. The immediate surrounds of the site are dominated by infrastructure associated with the previous usage of the site as a horticultural facility.

The site is located towards the western edge of the wider development (see **Map 1**) and covers an area of approximately 1.9 hectares (ha). Prior to demolition and clearance works taking place on site between 2016 and early 2017 the site contained greenhouses, a balancing pond with associated scrub, hardstanding and a number of overgrown ditches. At the time of submission (March 2017) the greenhouses have been demolished and balancing pond has been drained and cleared of vegetation.

The wider landscape comprises the agricultural land associated with the floodplain of the Black Ditch (a river) to the north, an allotment to the west and housing to the east and south of the wider site. Littlehampton town centre is located approximately 1.3km south.

1.4 Site Proposals

Proposals detailed in the outline planning permission were for the demolition of all buildings on site, draining and filling of the balancing pond, removal of vegetation and filling in of ditches. As of March 2017 the majority of clearance and demolition works have now been completed.

Construction within Parcels will comprise building 126 residential dwellings with associated garden landscaping, greenspace, parking and roads. Details of the proposals are provided in Persimmon Homes Drawing No SK01 (see **Appendix 1**).

The housing to the west of site is currently being built and construction associated with Parcel C1 and part of Parcels B2, B4 and C2 is due to start in 2017. For the purposes of this management plan, construction works are referred to as “Year 0” with the management plan covering subsequent years “Year 1 – 10”.

2.0 MANAGEMENT PLAN OBJECTIVES

2.1 Introduction

This section provides an overview of the objectives of the EMP for Parcel C1 and part of Parcels B2, B4 and C2. Specific objectives for each individual habitat type are detailed within the management prescriptions.

2.2 Overview of Management Plan Objectives

The overarching objective of the EMP is to retain and enhance the long-term ecological value of the site. These will be achieved through the following measures:

- Prescriptions for safeguarding protected species through the site preparation and construction works
- Creation of new, native species-rich and wildlife friendly habitats to enhance biodiversity at the site; and
- Establishment of long-term management prescriptions for new and retained habitats to ensure the habitat diversity and suitability for wildlife is maintained.

2.3 Structure of the Management Plan

Species specific management and mitigation measures detailed in Section 4.0. Management prescriptions for each of these habitat types are detailed individually within Section 5.0.

3.0 GENERAL MANAGEMENT PRESCRIPTIONS

3.1 Introduction

This section provides an overview of the general management prescriptions for Parcel C1 and part of Parcels B2, B4 and C2.

3.2 Review

As part of on-going monitoring and review process, the management plan will be periodically reviewed in order to ensure that the objectives are being met. Details of this review process are provided within Section 6.0.

3.3 Responsibilities

Management responsibilities will be transferred to the management company that has been established for the development.

3.4 Contractors

The proposed management works will be undertaken by specialist contractors with suitable experience in the management measures proposed. Monitoring and review will be undertaken in conjunction with suitably qualified ecologists with other specialists, such as arboricultural consultants employed/consulted as necessary.

4.0 SPECIES-SPECIFIC MANAGEMENT

4.1 Introduction

This section provides an overview of the species-specific mitigation measures and management prescriptions for Parcel C1 and part of Parcels B2, B4 and C2.

4.2 Bats

Pre-demolition the site contained large greenhouses and a smaller warehouse building (see **Map 2**). All buildings were assessed to have negligible bat roosting potential by WYG Ecology³ and were consequently demolished in summer 2016. In addition, trees on site were surveyed by ECOSA in January 2017⁴ for potential bat roosting features such as cracks, splits or holes, but none were identified as containing bat roosting features (see **Map 2**).

Prior to clearance works, the site provided limited bat foraging and commuting opportunities in the form of a small reservoir, hedgerows, scattered trees and scrub. Bat transect surveys undertaken by WYG Ecology² had recorded a small range of common and widespread species across the wider site.

Information from the Bat Conservation Trust interim guidance on Artificial Lighting and Wildlife¹⁰ has been used to provide further information on the site lighting strategy. There are two strands to the lighting strategy in relation to biodiversity:

- Lighting design, specifically in relation to the technical specification of the lighting and design of the luminaires
- Location of the lighting, whilst considering public Health and Safety

With these considerations in mind, the lighting engineers have used the following recommendations to design strategy to minimise light spill onto hedgerows:

- The minimum amount of lighting will be used to fulfil the task;
- Utilising the lowest lux level luminaire available which conforms to the lighting requirements for adopted roads and in turn minimises the light output onto on-site and adjacent woody vegetation;
- Luminaires set at 0° inclination to minimise light spill onto areas outside of road adoption extents;
- Luminaires in close proximity to woody vegetation dimmed to ensure minimum light output on to these areas;
- Luminaires fitted with back louvres, where necessary, to prevent backwards light spill onto woody vegetation;

¹⁰ Bat Conservation Trust (2014) Artificial Lighting and Wildlife, Interim Guidance: Recommendations to Help Minimise the Impact of Artificial Lighting

- Use of dimming; 35% dimming between sunset to midnight; a further 25% dimming between midnight and 05.00hrs, 35% dimming between 05.00hrs and sunrise

An ecologist will have input into the detailed lighting design before it is submitted for approval.

As an enhancement bat boxes will be erected, this will include two Schwegler 1FF and two Schwegler 2F bat boxes within suitable trees or buildings on or within close proximity to the site. If Schwegler bat boxes are unavailable a suitable alternative woodcrete / WoodStone[®] box will be used.

In England, bats and their habitat are fully protected under the Wildlife and Countryside Act 1981 through inclusion in Schedule 5. In addition, all bat species are protected under the Conservation of Habitats and Species Regulations 2010. Refer to **Appendix 3** for details.

4.3 Water Vole

Surveys undertaken by WYG in 2008² and 2014⁷ identified the presence of water vole within the Black Ditch (river) in the north of the site. No records were made from the ditch immediately east of Parcels B2, B4, C1 and C2 (**Figure 1**, **Figure 2** and **Map 2**). No water vole were recorded by WYG within the on-site reservoir and this waterbody has subsequently been drained.

An updating water vole survey undertaken by ECOSA in January 2017 did not record evidence water vole in the ditch to the east of the site. However the ditch, especially in the north had suitability for water vole, although the habitat was of poor quality.

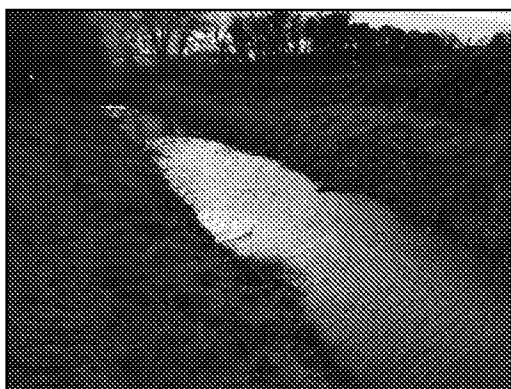


Figure 1: Southern end of ditch immediately east of the site.



Figure 2: Northern end of ditch immediately east of the site

This ditch immediately to the east of the site is due to be filled in a part of site levelling works. Before the ditch is filled a survey of the banks will be undertaken by a suitability qualified ecologist to assess the site for water vole presence and identify if

the status of the species on the site has changed. If the species is identified on site a licence from Natural England will be required prior to filing works commencing.

If no evidence of water vole is located it will be possible to continue with the infilling of the ditch under the supervision of a suitably qualified ecologist. If water vole evidence is recorded during infilling, work will stop and a licence from Natural England obtained.

As an enhancement for water vole within the wider site a 'central wetland area' is to be constructed (**Appendix 2**). This will provide a water feature through the centre of the site connecting to the Black Ditch. Wetland habitat with suitability for water vole will be created.

Water vole are protected under the Wildlife and Countryside Act 1981, see **Appendix 3** for details.

4.4 Birds

Breeding bird surveys were carried out by WYG Ecology in 2008² covering the floodplain grazing land to the north of the wider development site. Updating surveys carried out by WYG Ecology in 2014⁸ covered the whole site, these surveys recorded eight red listed and seven amber listed Birds of Conservation Concern¹¹. A single Schedule 1¹² species the Cetti's warbler *Cettia cetti* was frequently recorded around the reservoirs to the west of the site. Occasional records of this species were also made from the ditches within the wider site.

Prior to clearance works the reservoir and associated scrub provided suitable habitat for common breeding birds. This area was cleared under the supervision of a suitably qualified ecologist in May 2016 (**Figure 3**). No evidence of breeding birds was recorded during the clearance works. The Greenhouses and warehouse on site provided limited suitability for breeding birds and were demolished in 2016.

¹¹ The UK's birds are split in to three categories of conservation importance - red, amber and green. Red is the highest conservation priority, with species needing urgent action. Red List criteria include species which are: globally threatened; have been subject to historical population decline in UK during 1800–1995; are in severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period, or; subject to severe (at least 50%) contraction of UK breeding range over last 25 years, or longer-term period.

¹² Birds listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended) are afforded additional protection receive further protection making it an offence to: Intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or; Intentionally or recklessly disturb the dependent young of any such bird.



Figure 3: Reservoir vegetation clearance and drainage
in progress (May 2016)

Remaining vegetation clearance with suitability for breeding birds is present on and in the immediate vicinity of the site (**Map 2**). Clearance to facilitate the development will be undertaken outside the main breeding bird season of March to August, inclusive, or if this is not possible, an ecologist will be present immediately prior to clearance to check vegetation. Active nests will be left with an undisturbed 5-10m buffer until nesting ends naturally. If nests are identified then there is the potential for the programme of the works to be affected.

The ditch immediately east of the site is clear of vegetation at its southern edge, common reed *Phragmites australis* becomes more prevalent in the north (**Figure 1** and **Figure 2**). The habitat present is of limited suitability for breeding Cetti's warbler as this species prefers more extensive areas of reed and scrub. A site visit undertaken in January 2017 did not record any evidence of Cetti's warbler within the on-site ditches. However the species is less vocal at this time of year so might have been harder to detect. As a result the presence of breeding Cetti's warbler cannot be completely ruled out.

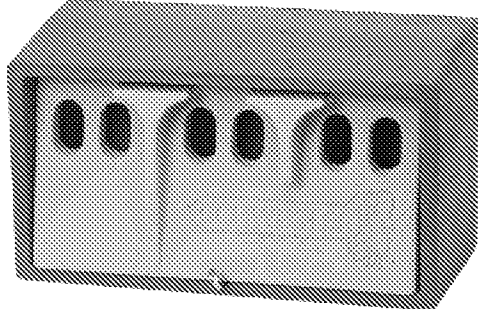
Where ditch filling occurs in the Cetti's warbler breeding season which runs from April to mid-August (the species has two broods¹³) a detailed study of the ditches will be undertaken to ascertain whether this species is present and breeding. If a nesting attempt is recorded in the vicinity of works then further ecological advice will be provided. The species is protected from disturbance during its breeding cycle and therefore a significant standoff distance may be required.

On-site inclusion of new native tree planting (**Paragraph 5.4**) will provide new suitable nesting habitat for breeding birds. Ecological gains associated with the wider development will provide significant enhancement for breeding birds, especially in association with the Central Wetland and retained reservoirs to the west of the site.

¹³ Frances Le Sueur (1980) Some Cetti's Warbler breeding observations, Bird Study, 27:4, pgs. 249-253,

Enhancement will be provided through the provision of urban bird boxes (details are provided in **Table 3** below). Locations of these boxes will be discussed with the developer at the time of building works taking place.

Table 3: Urban bird boxes

Species	Box Type	Number	Examples
House sparrow <i>Passer domesticus</i>	Schwegler 1SP	3	
Swift <i>Apus apus</i>	Schwegler no.16	3	

4.5 Reptiles

Reptile surveys were carried out across the wider by WYG Ecology during 2008² and 2014⁵. No reptiles were recorded within the area covered by Parcel C1 and part of Parcels B2, B4 and C2. Low populations of common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis* were recorded in the wider site.

As an enhancement measure, two log piles will be installed within greenspace areas on the northern edge of the site (**Figure 4, Map 3**). Log piles do not require regular maintenance but will be repaired / replaced if subject to damage/vandalism. The log piles will be constructed by an ecologist.

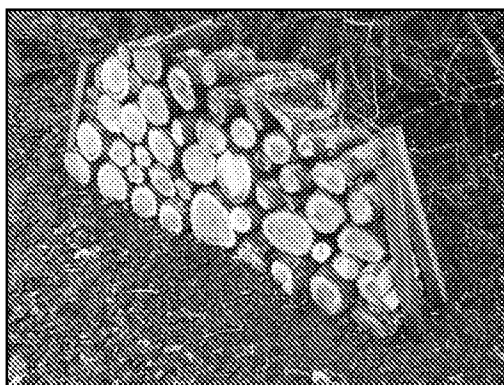


Figure 4: Log pile example

Widespread reptile species (slow-worm, common lizard and grass snake *Natrix natrix*) are protected under the Wildlife and Countryside Act 1981 against harm, see **Appendix 3** for details.

4.6 Invertebrates

The site largely supports common and widespread habitats which are likely to support a range of common and widespread terrestrial invertebrate species. No evidence to suggest the presence of any rare or notable assemblages of terrestrial invertebrates were recorded as part of walkover survey undertaken by ECOSA in January 2017. Previous invertebrate surveys have concentrated on surveying the area associated with the Black Ditch².

There are no specific recommendations for invertebrates, however the new habitat creation and management regimes will provide enhanced resource for terrestrial invertebrate species. The proposed log piles to be installed within the site will also provide new habitat for terrestrial invertebrates.

5.0 HABITAT-SPECIFIC MANAGEMENT

5.1 Introduction

This section provides an overview of the habitat and specific management objectives and prescriptions for Parcel C1 and part of Parcels B2, B4 and C2.

5.2 Site Overview

Prior to demolition and clearance works taking place on site between 2016 and early 2017 the site contained greenhouses, a balancing pond with associated scrub and hardstanding. An overgrown ditch, defunct hedgerow and scattered trees were also present to the east of the site. The site contained common and widespread habitat with limited ecological value. At the time of preparation of the report the site mainly comprised bare ground with defunct hedgerows, ditches and scattered trees remaining on the eastern edge of the site.

The proposed development will result in the loss of all of the remaining woody vegetation and ditches to the east of the site. As a result there are no recommendations for protection of ecological features required. Details of ecological enhancements are provided below.

5.3 Grassland

At the time of the preparation of this management plan there were no areas of grassland present within the site.

5.3.1 Objectives for Grassland

The specific objectives for the grassland habitat are to:

- Increase ecological value of grassland habitats on site through creation of native species rich areas of planting; and
- Introduce a suitable management regime for grassland, in order to encourage herbaceous diversity and provide suitable habitat for a range of species.

5.3.2 Mitigation and Enhancement

New areas of grassland associated with the northern boundary will comprise a native wildflower lawn turf such as Wildflower Turf Species Rich Lawn Turf, or similar (**Map 3**). Those areas of grassland in proximity to the proposed housing will be seeded with an appropriate mix specified by the landscaping contractor and detailed in the landscaping strategy.

5.3.3 Management Prescriptions

The northern boundary grassland will be cut on a rotational basis, once during the spring (April to May) and once during the autumn (August to September), arisings will be removed.

5.4 Native Tree

Native trees and hedgerows will be removed to facilitate the development the treatment of removal work in relation to protected species is detailed in Section 4.0. A small number of trees present on the boundary of the site will be retained.

5.4.1 Objectives for Native Tree and Hedgerow

The specific objectives for the native tree are:

- The protection of retained trees
- The establishment and maintenance of new tree planting and hedgerow.

5.4.2 Mitigation and Enhancement

Any trees not to be removed during construction will follow protective measures in line with BS 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*. This document outlines the use of tree protection barriers to be used for the duration of the construction phase. These barriers are proposed to shield the boundary vegetation from damage during construction.

A number of trees will be included within the development, these will comprise native species. Following previous comments from the Local Planning Authority it is recommended that a proportion of these specimens comprise whitebeam *Sorbus aria* as this is a characteristic native species associated with the area. A native species hedgerow will be located immediately north of Parcels C1 and C2 (see **Map 3**).

Recommended species include:

- Rowan *Sorbus aucuparia*;
- Elder *Sambucus nigra*;
- Hawthorn *Crataegus monogyna*;
- Blackthorn *Prunus spinosa*;
- Hazel *Corylus avellana*;
- Traveller's joy *Clematis vitalba*;
- Dog rose *Rosa canina*;
- Wild privet *Ligustrum vulgare*;
- Spindle *Euonymus europaeus*;
- Holly *Ilex aquifolium*; and

- Wayfaring tree *Viburnum lantana*.

5.4.3 Management Prescriptions

The hedgerow planting will be subject to management annually in order to maintain a dense bushy structure, ensure health and safety. Management works will be undertaken over winter (October to February) in order to avoid the nesting bird period.

6.0 MONITORING AND REVIEW

A review of the mitigation and enhancement measures implemented will be undertaken by a suitably qualified ecologist following the completion of the development. Following the implementation of the proposed mitigation and enhancement measures, any necessary revisions to the EMP will be made.

It is proposed that the third party responsible for implementation of this management plan carry out regular *ad hoc* monitoring at the site to establish any obvious deviations or faults. Where any issues are highlighted, a suitably qualified ecologist will be consulted for advice where necessary.

An integral part of the management plan process will be a system of monitoring and a formal progress review. There will be a review meeting at the end of five years, post-completion, attended by the landowner and management contractor, to discuss the progress of the activities undertaken. This will enable issues to be identified and resolved where required. The meeting will take place to judge the effectiveness of the plan's aims, objectives and prescriptions.

The monitoring and review process will comprise a review report to include the following elements:

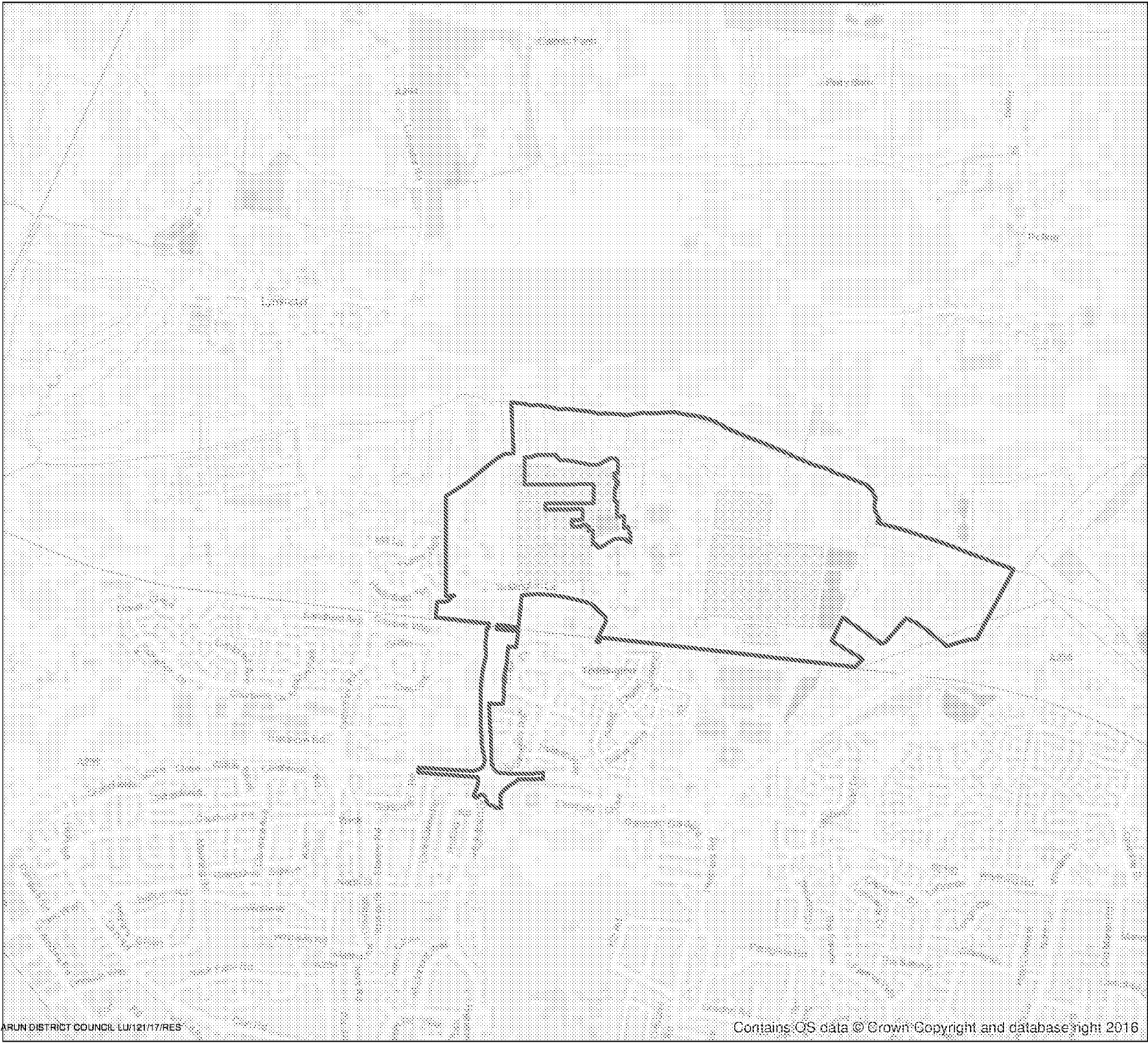
- Details of extent, timing and outcome of all works undertaken in the previous five years;
- Managing agent's assessment of effectiveness of works undertaken and the EMP as a whole; and
- Recommendations for next five year's management requirements.

7.0 TIMETABLE OF MANAGEMENT AND MONITORING WORKS

Management Prescription		Section Reference	Year ¹⁴										
			0	1	2	3	4	5	6	7	8	9	10
Construction Phase Mitigation and Enhancement	Protection of retained trees in accordance with BS 2012:5387	5.4.2	+										
	Vegetation clearance necessary to be undertaken outside of nesting bird season (March to August), where this isn't possible supervision of an ecologist required	4.3	+										
	Erection of new bat and bird boxes within the site	4.2, 4.3	+										
	Creation of log piles	4.5,	+										
	New landscaping implemented at the site including new grassland seeding and tree and hedgerow planting	5.3.2, 5.4.2	+										
	Water vole survey in advance of ditch filling works, supervision during filling	4.3	+										
Habitat Management	Amenity Grassland Management, as necessary (year-round) and Wildflower Meadow Management (spring/early summer and late summer), arisings removed	5.3.3	+	+	+	+	+	+	+	+	+	+	+
	Management of hedgerow habitat to be undertaken outside of nesting bird season (March to August)	5.4.3	+	+	+	+	+	+	+	+	+	+	+
Monitoring and Progress Review	<i>Ad hoc</i> monitoring by management contractors	6.0		+	+	+	+	+	+	+	+	+	+
	Five-year management review	6.0						+					+

¹⁴ The exact timescales for the construction of the development are unknown. For the purposes of this management plan, construction works are referred to as "Year 0" with the management plan covering subsequent years "Year 1 – 10".

Map 1 Site Location Plan



**NORTH LITTLEHAMPTON (PARCEL C1
AND PART PARCELS B2, B4 AND C2),
WEST SUSSEX**

ECOLOGICAL MANAGEMENT PLAN

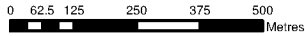
Map 1 - Site Location

Client:	Persimmon Homes Thames Valley
Date:	March 2017
Status:	Final

KEY

-  Site Boundary
-  Wider Site Boundary

Scale at A4: 1:15,000



ECOSA

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Map 2 Ecological Constraints



**NORTH LITTLEHAMPTON (PARCEL C1
AND PART PARCELS B2, B4 AND C2),
WEST SUSSEX**

ECOLOGICAL MANAGEMENT PLAN

Map 2 - Ecological Constraints

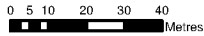
Client:	Persimmon Homes Thames Valley
Date:	March 2017
Status:	Final

KEY

-  Site Boundary
-  Wider Site Boundary
-  Buildings Demolished (2016):
Negligible Bat Roost Suitability
-  Vegetation Cleared Under Ecological
Supervision (May 2016)
-  Reservoir Drained (Spring 2016)
Vegetation with Suitability for
Breeding Birds
-  Ditch With Limited Suitability for
Water Vole
-  Trees to be Removed: Negligible Bat
Roost Suitability

N.B. Impacts associated with the wider site boundary
are not shown.

Scale at A4: 1:2,000



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Map 3 Ecological Enhancements

**NORTH LITTLEHAMPTON (PARCEL C1
AND PART PARCELS B2, B4 AND C2),
WEST SUSSEX**

ECOLOGICAL MANAGEMENT PLAN

Map 3 - Ecological Enhancements

Client: Persimmon Homes Thames Valley

Date: March 2017

Status: Final

KEY

-  Site Boundary
-  Wildflower Turf
-  Native Species Hedgerow
-  Log Pile



Basemap reproduced from WY13 Landscape Layout, Drawing No. A085461 (DRAFT), dated 16.03.17.



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Appendix 1 Proposed Site Layout



Persimmon Homes

North Littlehampton: Parcel C1 and part Parcels B2, B4 and C2

Landscape Layout **LA100**
DRAFT

Key

- Site boundary
- Existing vegetation retained
- Vegetation to be removed

Soft landscape proposals

- Tree planting
- Shrub planting
- Amenity grass areas
- Single species hedge planting
- Native hedge planting
- Species rich turf

Hard landscape proposals

- Parking bays: tarmac or block paving (Bracken colour)
- Private paths: Marshall's slab paving in Buff colour
- Shared / private driveways: Marshall's block paving, Bracken colour
- Raised junction: Marshall's block paving, Brindle colour
- Tree grille: with granite setts
- LEAP: Refer to drawing X for equipment and surface finish

Boundaries

- Rear garden fence: 1.8m high close-boarded timber fence
- Boundary wall: 1.8m high brick wall
- Timber knee rail

Ecology

- Log piles: refer to Ecosa report



Scale 1:500 @ A3



A088461 LA100.dwg

22 March 2017

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Appendix 2 Central Wetland Concept

Persimmon Homes
South Coast

North Littlehampton

Central Wetland
Concept

sk.01

- Key
- 1

Footpath and cycleway linkages across the central wetland
- 2

Formal park edge, including the planting to frame views, visitor parking, seating etc.
- 3

Retain existing trees where earthworks are not necessary
- 4

Central swale
- 5

Permanent pond
- 6

Runoff attenuation wetlands along swale
- 7

Proposed tree planting to add interest
- 8

Amenity and species rich grassland areas off valley side sloping
- 9

Water meadows retained along 'Black Ditch'
- 10

Retained water meadow field boundaries
- 11

Clearly defined routes to keep pedestrians away from ecologically sensitive habitats
- 12

Path along 'Black Ditch' avoiding retained vegetation



Swale



Annual meadow



Detention basin and recreation



Species rich grassland



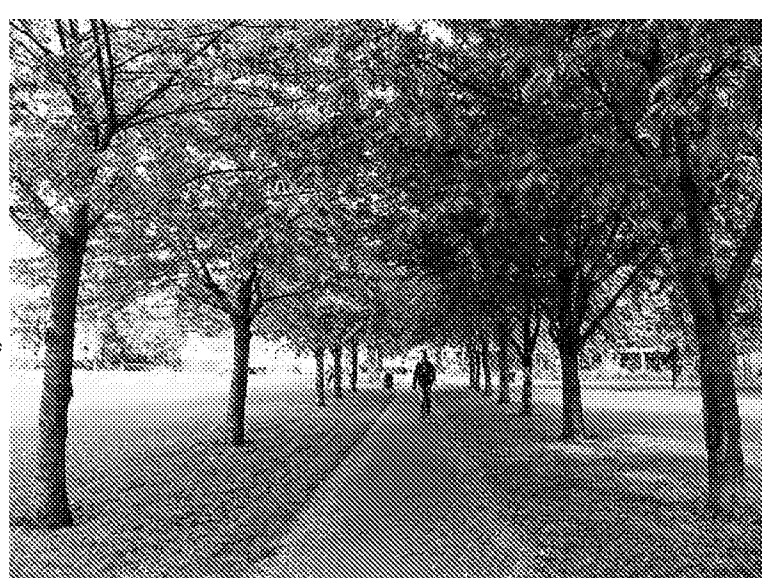
Walkway within wetland



Swale and detention basin



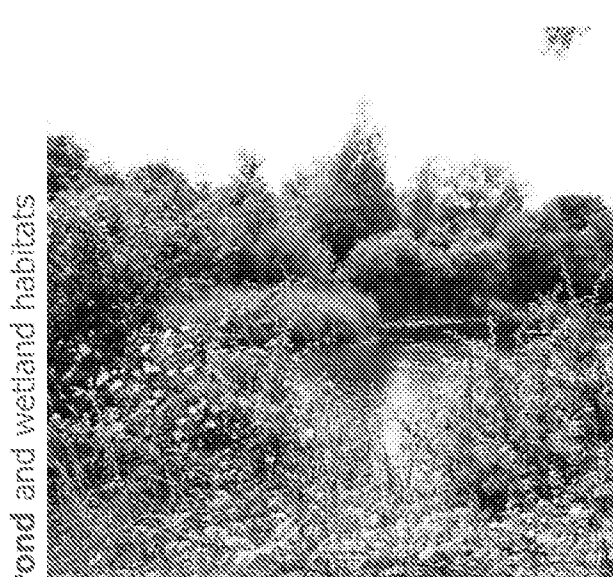
Orchard and species rich grassland



Avenue defining routes



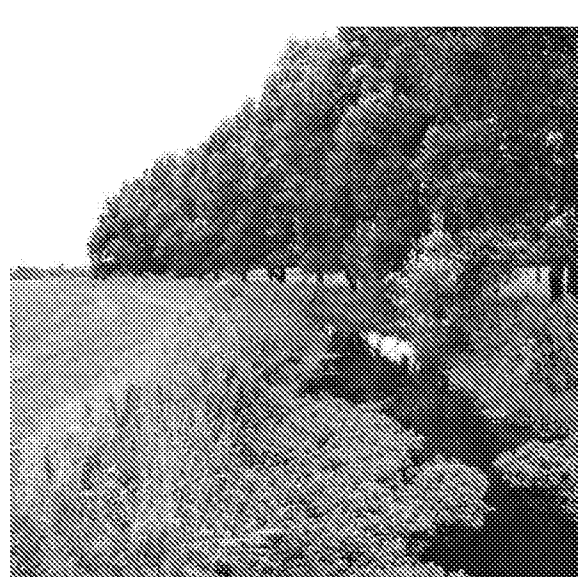
Swale and mown grass margin



Pond and wetland habitats



Pond and wetland habitats



Black Ditch and wetland habitats

Appendix 3 Protected Species Legislation

Bats

All UK bat species are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2010. They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence to:

- Deliberately capture, injure or kill any such animal;
- Deliberately disturb any such animal, including in particular any disturbance which is likely:
 - To impair its ability to survive, breed, or rear or nurture their young;
 - To impair its ability to hibernate or migrate;
 - To affect significantly the local distribution or abundance of that species;
- Damage or destroy a breeding site or resting place of any such animal;
- Intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

In addition, five British bat species are listed on Annex II of the Habitats Directive. These are:

- Greater horseshoe bat *Rhinolophus ferrumequinum*;
- Lesser horseshoe bat *Rhinolophus hipposideros*;
- Bechstein's bat *Myotis bechsteinii*;
- Barbastelle *Barbastella barbastellus*; and
- Greater mouse-eared bat *Myotis myotis*.

In certain circumstances where these species are found the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favourable conservation status. Outside SACs, the level of legal protection that these species receive is the same as for other bat species.

Water vole

The water vole is listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is afforded limited protection under Section 9 of this Act. This makes it an offence to:

- Intentionally kill, injure, or take (handle) a water vole;
- Intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection; or
- Intentionally or recklessly disturb water voles while they are using such a place.

Breeding Birds

With certain exceptions, all wild birds, their nests and eggs are protected by Section 1 of the Wildlife and Countryside Act 1981 (as amended). Therefore, it is an offence, to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- Intentionally take or destroy the egg of any wild bird.

These offences do not apply to hunting of birds listed in Schedule 2 subject to various controls. Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- Intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- Intentionally or recklessly disturb the dependent young of any such bird.

Reptiles

The four widespread species of reptile that are native to Britain, namely common or viviparous lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, adder *Vipera berus* and grass snake *Natrix natrix*, are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence to:

- Intentionally kill or injure any of these species.

The remaining native species of British reptile (sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*) receive a higher level of protection via inclusion under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. They are afforded full protection

under Section 9(4) of the Act and Regulation 41 of the Regulations (in England and Wales only) and the Wildlife and Countryside Act 1981 (as amended). The distribution of these species are restricted to only a few sites in England.