APPENDIX G7: LANDSCAPE AND GREEN INFRASTRUCTURE DESIGN AND MANAGEMENT PLAN

1.0 Introduction

1.1 Purpose of Overarching Landscape and Green Infrastructure Design and Management Plan

The purpose of this document is to provide an overarching framework for the Landscape and Green Infrastructure Design and Management Plan (LGIDMP) of the Combined Sandleford Park site.

The intention is that following the agreement of this framework document, a detailed Landscape and Ecology Management Plan (LEMP) will be prepared for the country park and each development parcel (e.g. either as separate LEMPs or as an overarching LEMP with appendices identifying the scope of works required for each land parcel). This will be secured by planning condition.

This document seeks to:

- respond to the development principles set out in the Sandleford Park Supplementary Planning Document (SPD) (adopted March 2015), in terms of open space and recreation, landscape and heritage, ecology and wildlife, and hydrology and drainage;
- respond to the development principles set out in the SPD in terms of the contribution of open space areas to different character areas within the site;
- respond to landscape and ecology management objectives cited within published landscape character guidance, such as the Berkshire Landscape Character Assessment (October 2003);
- set out a landscape and green infrastructure strategy for the country park, and also the green corridor and buffers that form part of the wider green infrastructure of the site (see *ES Figure 4.3*);
- set out management issues to be covered by the Section 106 Agreement and/or specific Planning Condition;
- describe the proposed management regime and mechanism;
- identify overarching management aims and principles to be agreed with West Berkshire Council (WBC), which will then be applied to each parcel of development; identify historic landscape features to be preserved, enhanced or reinstated;
- identify areas to be prioritised for biodiversity and habitat creation/enhancement;
- describe the proposed non-vehicular access strategy;
- describe the proposed play areas;
- describe the proposed SuDS strategy;

- describe the proposed lighting strategy for the country park and open space areas;
- set out the scope of enabling management works; and
- set out the scope and frequency of typical annual maintenance operations.

1.2 Supporting Drawings

This document should be read in conjunction with Environmental Statement (ES) *Figure 4.3: Combined Strategic Landscape and Green Infrastructure Plan*, which illustrates the overarching design strategy for the new country park, as well as the wider green infrastructure within the site, which will comprise open space, structural landscape, habitat creation works and SuDS features.

1.3 Authors

This document has been prepared by the following consultants:

- SLR Consulting Ltd: landscape management issues;
- WYG: ecological issues;
- Brookbank Consulting Ltd: drainage issues; and
- Barrell Tree Consultancy: tree and woodland issues.

2.0 SPD Development Principles

Landscape Development Principles L1 to L8 are set out in Section F of the Sandleford Park SPD (adopted March 2015). Principles L1 to L3 are concerned with the Strategic Landscape and Green Infrastructure Plan, and accompanying LGIDMP.

Principle L1 also makes cross-reference to Development Principles E1, H2, H3, P1 and P3, which are considered in the Planning Statement accompanying the ES and outline planning application.

How all these development principles have been addressed within the LGIDMP is described below.

2.1 Principle L1: Strategic Landscape and Green Infrastructure Plan (SLGIP)

The SLGIP has been informed by the landscape, heritage and ecological impact assessments contained within the ES, and provides an overarching framework for the design of the country park and wider green infrastructure of the site.

2.2 Principle L2: Landscape and Green Infrastructure Design and Management Plan

The intention is that following the agreement of this framework document, a detailed LEMP will be prepared for the country park, and each development parcel.

2.3 Principle L3: Design and Management of the Country Park

This document provides an overarching framework for the landscape and green infrastructure design and management of the country park, which is illustrated by *Figure 4.3*.

A detailed landscape design, and accompanying LEMP, will be produced for the country park, and agreed with WBC as a planning condition. The phasing of the delivery of the country park will provide additional flexibility in its ultimate design and management through the proposed review and feedback process (see Section 5.0).

2.4 Principle L4: Retention and Integration of Existing Woodland, Trees and Hedgerows

All woodland areas will be retained with an appropriate buffer zone around their perimeter (see Section 9.0).

Where practical, other trees and hedgerow vegetation will be retained, and sympathetically incorporated into the proposed development layout with an appropriate buffer from the proposed development (see Section 10.0).

2.5 Principle L5: Protection and Enhancement of Views

Views between the country park and Sandleford Priory will be retained, and enhanced by new planting and landscape treatments within the southern part of the park, including the existing view corridor from the listed St. Gabriel's School towards Pensford to the south-west of the site.

There will be early delivery of the new woodland planting designed to infill the gap between Gorse Covert and Dirty Ground Copse~~,~~ as shown on *Figure 4.3*. This will be secured by planning condition.

New structure planting will be designed to complement site boundary vegetation to mitigate the impact of the new development on views from the surrounding roads and development edges of Newbury and Wash Common. Details of hard and soft landscaping will be secured by planning condition.

2.6 Principle L6: Provision of Green Links and Spaces

A network of recreational routes will be laid out within the country park, which will be designed to function as fitness, natural play, educational and foraging trails. These routes will have a variety of surface finishes (for example, tarmacadam, hoggin, gravel or timber board walk) to suit their function and location.

The network of pathways and green links will be designed to provide permeability through

the development areas, and with good connectivity between these and the country park, as shown on *Figure 4.3*.

The existing public footpath will be upgraded to a shared footpath and cycle link, and will pass through a green corridor where it crosses the central development parcel.

A route, designated the 'Sandleford Mile', will extend between Monks Lane and Warren Road, to meander through the development site and country park, part follow the route of the existing public footpath, and connect with the proposed new footpath routes. Interpretation boards and wayfaring signage will be located at key points along this route, together with seating areas.

Other green corridors will extend through the development areas, including a number of links off Monks Lane; and also, a green route from the eastern end of Kendrick Road which will follow the access drive to 'Wildwoods' before turning east across New Warren Farm to Brick Kiln Copse and Gorse Covert and into the country park.

Public access through the woodland areas will be limited, and actively managed with wayfaring and natural barriers, to avoid disturbance to more ecologically sensitive areas.

2.7 Principle L7: Valley Access Road Design

Details of the proposed new road across the Central Valley are given in the separate Design and Access Statement accompanying the outline planning application.

The new road crossing will be designed to minimise impacts on views along the length of the valley, together with its landform, hydrology and ecological habitats.

The detailed design of the new road crossing will form part of a Reserved Matters Application in due course.

2.8 Principle L8: Designated Heritage Assets and Their Settings

ES Chapter 9 describes the heritage assets of the site and its immediate surroundings.

The new country park will be designed to enhance the setting of the registered historic parkland of Sandleford Park that lies on the eastern side of the A339, together with preserving views towards and from the associated listed building, as described in Section 7.0 of this document.

2.9 Principle E1: Active Management and Promotion of Biodiversity

A separate Ecological Mitigation and Management Plan has been produced that outlines the management of retained, enhanced and created habitats.

This document describes areas that have been prioritised for biodiversity and the associated protection measures, together with the scope of development enabling management work and annual maintenance operations (see Sections 8.0 to 11.0 inclusive).

2.10 Principle H2: Sustainable Urban Drainage Systems (SuDS)

SuDS features will be sympathetically incorporated in the country park and wider green infrastructure of the site, in terms of its landscape character and features; and also, to minimise disturbance to its existing hydrology, landform and biodiversity. The proposed drainage strategy is illustrated on *Figure 4.3*; and also, shown on separate drawings produced by Brookbank Consulting.

2.11 Principle H3: SuDS to Promote Biodiversity

SuDS attenuation basins will comprise depressions within the landscape that store development run-off for filtration into the subsoils. A range of wetland grassland and flora species will be established within the basins to promote enhanced biodiversity. Also where practical, these basins will include small areas of permanently wet land or open water to enhance aquatic invertebrate habitat, foraging habitat for bats and amphibian habitat (see Section 8.0).

2.12 Principle P1: Provision of Open Space

As shown on *Figure 4.3*, the proposed green infrastructure will comprise:

- the new country park, which is described further in Section 3.0;
- a number of green corridors through the housing parcels;
- informal open space, including buffer zones around the retained woodland blocks, and also incidental open spaces within the development parcels;
- a Neighbourhood Equipped Area of Play (NEAP) within the southern part of the country park, adjacent to the existing public footpath which will be upgraded to a shared footpath and cycle link;
- three Locally Equipped Areas of Play (LEAP); one adjoining the northern valley area, a second adjacent to the existing footpath route within the central part of the site, and a third within the western housing parcel south of the primary school;
- natural play trails;
- fitness trails with exercise stations; and
- foraging trails, including several small orchard areas, and areas of nut bearing trees and edible fruit bearing shrubs.

The proposed management regime is described in Section 4.0.

2.13 Principle P3: Accessibility of Open Space

The landscape design strategy for the country park and wider green infrastructure of the site is shown on *Figure 4.3*, and will be designed to:

- have flexible usage;
- serve the needs of the whole community;
- provide a safe and comfortable recreational environment;

- encourage a sense of local community ownership and engagement; and
- provide interpretation of the landscape, ecological and historic interest of the country park.

Footpath routes will be laid out to coincide with the development of the initial development parcels, to reduce potential recreational pressure on woodland areas lying adjacent to these housing areas and Greenham Common Site of Special Scientific Interest.

2.14 Principle P4: Maximise Opportunities Provided by Existing Landscape Features

Natural play trails will be located at the interface of the development parcels and edge of the country park.

Foraging and fitness trails will extend the opportunity for natural exploration of the wider parkland, and together with active wayfaring will be designed to guide the public away from more sensitive areas of woodland.

Picnic and seating areas will be sited at natural vantage points within the country park, where its existing landscape features and views provide interest and/or more sheltered micro-climates. Picnic areas will comprise areas of mown grass geographically separated from longer areas of grass prioritised as reptile and wildlife habitat areas.

An informal kickabout area will be located adjacent to the NEAP within the southern part of the country park and comprise areas of mown grass.

2.15 Lighting Strategy

No lighting is proposed within the country park.

3.0 Country Park and Other SPD Character Areas

3.1 Character Areas

Development Principle C1 within Section F of the SPD identifies ten character areas within the site. The footprint of the new country park overlaps with the following character areas:

- CA7: Valley Crossing;
- CA8: Woodland;
- CA9: Valley Corridors; and
- CA10: The Country Park - Meadows.

Character Area CA3: Park Edge comprises the interface between the edge of the different development parcels and adjacent areas of woodland, valley corridor or parkland meadow.

Key design principles are set out for each of the identified character areas within the SPD.

3.2 Country Park

The southern meadows will be designed as the main open area of the country park, and will be principally managed as a hierarchy of grassland with groups of existing and new tree planting. The grassland will comprise areas prioritised as wildlife habitat, and also areas of mown grass that can be used as informal kickabout and picnic areas. The existing footpath route across the park will be retained and upgraded as a shared footpath and cycle link. Other new surfaced and more informal paths will connect to this route, with seating and interpretation information boards sited at vantage points. Views across the parkland towards Sandleford Priory and the surrounding countryside will be retained and enhanced, as will the view corridor from Sandleford Priory towards Pensford. Degraded woodland margins, site boundary planting and internal hedgerows will be enhanced through complementary native planting and management. New tree and woodland planting will be designed to reflect the historic vegetation pattern formerly associated with the wider Sandleford Estate. A single, managed access point will be provided to the edge of the River Enborne, and agreed as part of the detailed design and LEMP for the country park, which will be secured by planning condition. The remainder of the river frontage will be safeguarded as a wildlife habitat.

The valley corridors will be designed to retain their undeveloped character, with new footpath routes and SuDS features sympathetically incorporated. Similarly, the new valley road crossing will be designed to minimise impacts on its landform, hydrology, ecological habitats and visual continuity. The existing areas of marshy grassland, and associated mature and veteran trees and hedgerow species, will be retained and sensitively managed.

The woodland areas will be retained with the required 15m buffer around their perimeters, and actively managed to enhance their biodiversity. Dedicated recreational routes through the woodland will be agreed with WBC as part of the detailed design of the country park, which will be secured by planning condition. These will be managed with active wayfaring to guide the public away from more ecologically sensitive areas within them. There will be no public access to Crook's Copse. Maintenance vehicle access points will be agreed, and designed to deter usage by motorcyclists and cyclists. The buffer zones will comprise a mix of grassland types and native planting, and will be principally managed for biodiversity. The buffers will also include natural play features (e.g. boulders, log balancing posts and mown mazes) in agreed locations. Street lighting within development areas adjacent to the perimeter of the woodlands will be sensitively designed to minimise light spill.

4.0 Reserved Matters and Planning Conditions

The phased delivery of the various phases of the country park will be dealt with through the planning conditions, and will include designated equipped play areas, and laying out of footpath routes across parts of the country park, to coincide with occupancy of the initial phases of development; refer to *Figure 7.7: Country Park Phasing Plan*.

It is proposed that the following matters will be dealt with by planning conditions:

- delivery of advanced planting within the country park, including woodland planting to infill the gaps between Dirty Ground Copse and Gorse Covert, and a new hedgerow to the south of the playing fields;

- early habitat creation of receptor sites for protected species within the country park;
- woodland, tree and hedgerow retention and protection;
- submission of a detailed LEMP for the country park and each development parcel;
- provision of a separate Ecological Mitigation and Management Plan (EMMP) for each development parcel;
- provision of a separate Construction Environmental Management Plan (CEMP) for each development parcel; and
- SuDS design and management strategy.

The valley road crossing and bridge will be dealt with by a Reserved Matters Application.

5.0 Proposed Management Regimes

5.1 Management Responsibilities

It is anticipated that each phase of the country park, and wider green infrastructure associated with the different development parcels, will be maintained by the relevant Developer for a 12 month period following implementation. However, the long-term management of the country park and green infrastructure will be agreed with WBC either as planning obligation or planning condition. A range of long-term management options have been considered, as follows:

- private management company;
- retention of areas by the landowners, with management to an agreed specification; and
- areas handed across to WBC and/or local wildlife trust.

Within the final regime, the option of a country park warden/ranger will be considered, together with provision of an appropriate on-site office and storage facility.

The new primary school sites will be managed by the Local Education Authority after their transfer.

On-plot planting and grass areas will be conveyed to individual property owners, in the normal way.

5.2 Review Process

A joint review of the scope of effectiveness of the management regime for each area of the country park, and development parcels, will be undertaken towards the end of each 12 month maintenance period by WBC and the Applicants to:

- ensure that the agreed management objectives are being achieved; and
- discuss refinement of prescribed management operations, in terms of their scope and frequency, for the benefit of the wider site.

It is anticipated that the review will take the form of a meeting and walkabout on-site, with a

list of any agreed changes to the management regime noted during the meeting.

6.0 Overarching Management Objectives

Management objectives will seek to:

- secure the long-term maintenance of the strategic landscape and green infrastructure;
- establish a flexible maintenance regime that delivers the core design and management objectives of the Sandleford Park SPD, as well as addressing arising management issues;
- preserve, enhance and reinstate historic landscape and parkland features; for example, former tree planting pattern within the southern parkland;
- enhance important landscape and ecological features through sensitive and proactive management;
- reinforce the existing vegetation framework, and diversify its structure and age composition;
- reinforce and reinstate degraded boundary planting features, and also enhance these as wildlife movement corridors where practical;
- maintain and diversify the nature conservation value of the site; for example, through the adoption of a hierarchy of grassland areas;
- minimise disturbance to wildlife habitats; for example, restricting public access to more sensitive woodland areas, such as Crook's Copse, to reduce disturbance to its ancient woodland ground flora;
- compensate for the loss of existing wildlife habitat through habitat enhancement and creation, and improved connectivity links; for example, new reptile receptor sites, bat and barn owl foraging areas within the southern country park area, and establishment of new hedgerow links;
- maintain and improve the conservation status of known 'target species'; for example, dormice, badgers, reptiles, bats, notable breeding birds, including barn owls, terrestrial invertebrate and aquatic invertebrate species; and also, prevent degradation of associated key habitat areas;
- provide an attractive, green environment for the new housing development, which has a strong sense of place;
- provide a range of integrated recreational and play facilities, as well as providing a stimulating and safe play environment for children;
- provide a hierarchy of new footpath routes such as the Sandleford Mile and foraging and fitness trails, which are accessible to all members of the community;
- create an educational resource, and promote the understanding of the landscape, historic and ecological value of the site through appropriate signage and interpretation;
- ensure satisfactory future performance of SuDS features, and promote enhanced biodiversity through the creation of new wetland-related habitat areas; and
- ensure the safety and security of those using the site.

7.0 Historic Landscape Features to be Preserved, Enhanced or Reinstated

7.1 Parkland Features

Historic landscape and parkland features are diagrammatically shown on *Figure 7.5*, and include the remnants of registered historic parkland around Sandleford Farm, blocks of ancient woodland, veteran/near veteran status trees, old hedgerow boundaries and former footpath and track routes.

As part of the proposals, the intent is to reflect the former historic:

- tree planting pattern within the southern parkland;
- footprint of ancient woodland areas and hedgerows to reflect their former coverage, as practical; and
- use former tracks and pathways as part of the new public access network.

7.2 Views

Also, there is a historic visual association between St. Gabriel's School, within the Registered Historic Parkland of Sandleford Priory, and the southern parkland area. The new structure planting within the country park will be designed to preserve the view corridor from Sandleford Priory towards Pensford, to the south-west of the site.

Existing vantage points with views towards Sandleford Priory and the surrounding countryside will be retained and enhanced by new seating and interpretation signage.

8.0 Areas Prioritised for Biodiversity and Habitat Creation/Enhancement

8.1 Ancient Woodlands/Sites of Importance for Nature Conservation

There are eight woodlands within the site, which are designated Wildlife Heritage Sites (WHS).

Six of the woodlands are registered as ancient woodland; namely High Wood, Slockett's Copse and the adjacent outlier woodland, Crook's Copse, Barn Copse, Dirty Ground Copse and part of Waterleaze Copse. Brickkiln Copse and Gorse Covert also contain ancient woodland indicator species, but are not classified as ancient woodland according to Multi-Agency Geographic Information for the Countryside (MAGIC). However, they are considered likely to qualify as ancient woodland habitat based on the number of ancient woodland indicator species, as described in the ES Ecology Chapter.

The woodlands will be managed partly as woodland 'nature' reserves, with dedicated recreational routes through them, which will have active wayfaring and appropriate surfacing, to minimise disturbance of key wildlife habitats and protected species in other parts. No

public access route will be provided through Crook's Copse.

Access points and routes for maintenance vehicles will be agreed as part of the detailed design and LEMP for the country park, together with barriers to prevent motorcycle access to woodlands if this proves to be required.

The woodlands will be managed to bring them back into good condition, as currently they are not actively managed for biodiversity, and to enhance their age structure and species diversity. A programme of selective thinning and replanting will be agreed with WBC.

In addition, some woodland blocks will be complemented by areas and belts of new connective planting, as shown on *Figure 4.3*. Woodland edge habitats will be retained, and new edge habitats will be created, to enhance the biodiversity and amenity value of the woodlands.

Appropriate buffer zones will be retained around the woodlands, and managed as a mix of grassland and native shrub planting for biodiversity.

8.2 Hedgerow Network

Species-rich hedgerows will be retained, where practical, and will be managed appropriately for their wildlife value. As shown on *Figure 4.3*, these hedgerows will be supplemented by the new hedgerow links, which collectively will form good connective routes between woodland and grassland areas for a range of species.

8.3 Central and Northern Valleys and Aquatic Invertebrate/Grassland Habitat Enhancement Areas

The two valley areas, which will form part of the country park, will be prioritised as a wetland and marshland zone, and will be managed to benefit a range of damp flora species and enhanced biodiversity.

The existing ground flora within the valley bottoms and along the existing watercourses will be retained in-situ, as practical, to minimise disturbance to:

- current invertebrate assemblages, and aquatic species; and
- foraging bats.

Along selected sections of the banks of the central and northern watercourses, some of understorey trees will be removed to allow increased light onto the streams, which will be beneficial in terms of the establishment and growth of new aquatic plants and increasing the habitat value to aquatic invertebrates and fish.

Silt will be removed from selected sections of the stream beds to provide deeper water areas and refuge habitats in times of low water level for aquatic invertebrates.

Veteran trees within the valley areas will be appropriately managed, and if necessary fenced off, so that their form and biodiversity value is not compromised by the need to undertake health and safety works that would impact upon their veteran status.

New footpath routes will be sited on the upper sides of the valleys, and use existing culvert crossing points across the watercourse, where possible.

New SuDS features, such as surface water attenuation basins, and connecting swales, will be sympathetically incorporated into the valley landforms; and also be designed to respect their natural hydrology.

Within proposed new SuDS features, margins will be designed to support areas of reed and sedge planting, to provide additional aquatic habitat areas and water quality treatment.

8.4 Southern Parkland (Meadows) and Terrestrial Invertebrate Enhancement Areas

A hierarchy of grassland management regimes will be adopted within the southern parkland to accommodate a range of recreational activities (e.g. informal footpath routes, picnic and informal kickabout areas) and wildlife habitats, including compensation habitat for reptiles, invertebrates, breeding birds (including two skylark plots) and barn owl foraging habitat, commuting and foraging bats, and badgers.

Provision of a matrix of tall and short sward grassland will enhance conditions for many invertebrates species.

The creation of bare, or sparsely vegetated ground, with a sunny aspect will enhance nesting opportunities for ground-nesting Hymenoptera.

Translocation of goats-beard plants, and/or collection/scattering of seed, into fields NG 9829 and NG 9214 within the proposed country park area (see ES Ecology Chapter) will be beneficial for the nationally scarce picture - winged fly (*Orellia falcate*), as Goats-beard is its host plant.

The opportunity for introducing an appropriate grazing regime in selected areas will be considered by the Applicants and WBC as part of the detailed design of the country park.

Existing mature and veteran trees within the valley areas will be appropriately managed so that their form and biodiversity value is not compromised by health and safety works.

Hedgerows within the meadow areas will be reinstated and enhanced through complementary native planting.

8.5 Barn Owl Enhancement Areas

With reference to the ES Ecology Chapter, and the separate Barn Owl Survey map, habitat areas will be enhanced by:

- installation of one nest box on the edge of each woodland block (8 in total);
- maintenance of optimal barn owl foraging habitat;
- installation of fencing along the edge of the existing public footpath route adjacent to trees T1 to T3, to prevent potential disturbance to barn owls; and
- clear marking of footpaths across the site to encourage the public away from active nests or potential nest sites, and therefore discourage disturbance.

8.6 Nightjar Enhancement Areas

Clearings will be created in selected areas of woodland management to enhance nightjar habitat areas.

8.7 Reptile Enhancement Areas

Suitable areas of the meadow areas within the country park will be identified and managed as receptor sites for translocated reptiles. These areas will be sown with a suitable reptile habitat grass seed mix. Hibernacula will be sited within areas of taller grass, which will be cut only to 6 inches during September/October.

8.8 Badger Enhancement Areas

Suitable areas of the country park will be enhanced as badger foraging areas; for example, through the provision of several small orchard areas, which will be provided as part of wider foraging trails with edible fruit shrub planting.

Other native fruit bearing shrubs will be planted as part of new hedgerows, including blackthorn and fruit trees (including apple and plum).

New footpath routes will be designed to guide the public away from active badger setts, and avoid disturbance.

8.9 Dormouse Enhancement Areas

Dormouse habitat will be enhanced through:

- maintenance of connectivity over the public footpath at the north-east extent of Waterleaze Copse;
- maintenance of connectivity over the public footpath at the north-east extent of Gorse Covert;
- new dormouse crossing point where the new road, crossing the Central Valley, cuts through the existing hedgerow between Barn Copse and Dirty Ground Copse; ideally, this will be beneath the road if light levels are appropriate to allow vegetation to grow;
- new hedgerow planting to enhance connectivity between High Wood and Waterleaze Copse; and
- installation of twenty nest boxes in retained woodland habitat.

The ES Ecology Chapter identifies areas of infill planting of gappy hedgerows to enhance dormouse habitats.

8.10 Bat Enhancement Areas

Suitable areas of the country park will be enhanced to encourage bat commuting and foraging, as follows:

- maintenance of connectivity over the existing public footpath at the north-east extents of

both Waterleaze Copse and Gorse Covert;

- new native hedgerow planting to enhance connectivity between Gorse Covert and Brickkiln Copse; and
- creation of continuous vegetation between Barn Copse and Dirty Ground Copse, such as beneath the road, if light levels are appropriate to allow vegetation to grow. Bat hopovers will be created at vehicular access points, where these bisect existing hedgerows, to guide bats over these roads, maintaining connectivity between the woodland blocks and reduce the risk of traffic collisions. This will include bat hopovers either side of the new vehicular access points off Monks Lane, which will be created by appropriate tree planting.

With reference to the ES Ecology Chapter, it identifies that infill planting of gappy hedgerows will enhance hedgerows as habitats for commuting and foraging bats.

Bat boxes will be located on suitable features such as trees, or buildings, to provide additional roosting sites, as agreed with WBC's ecologist.

9.0 Buffer Zones

Appropriate buffer zone widths and off-sets will be adopted between the interface of new development areas (including highway infrastructure serving them) and areas of retained woodland, trees and hedgerows, or habitat areas associated with protected species; for example:

- 15m buffer zone measured from outer line of trunks in ancient woodland blocks, with 10m buffer zones for other woodland areas;
- the root protection zones for individual trees, in accordance with BS 5837:2012;
- 3m to 5m off-set from centreline of hedgerows to edge of road/footpath kerb or development fenceline, where possible;
- 30m buffer zones around three confirmed barn owl nest sites; with further buffers established around additional trees identified with particular features making them suitable for nesting barn owls; and
- 15m buffer retained on both sides of all streams to retain existing assemblages of marshy grasslands and associated plants.

To further protect sensitive woodland areas, the following measures will also be adopted to help reduce disturbance of habitats as a result of unauthorised public access:

- use of interpretation boards to explain the value of ancient woodlands;
- signage to clearly indicate where the public are authorised to enter woodlands and along which routes, and where they should not enter;
- deadwood hurdles to restrict access to the perimeter of woodlands;
- reinforcement of sections of woodland perimeters with appropriate new edge/understorey planting; and
- clearly delineated footpaths routes through woodlands (excluding Crook's Copse).

Natural regeneration will be encouraged in selected areas of the buffer zones around the woodlands.

10.0 Enabling Management Works

A CEMP will be prepared to address the relevant planning condition for each development parcel.

10.1 Protection of Existing Vegetation During Construction

All trees retained as part of the development proposals will be protected in accordance with the relevant approved Arboricultural Impact Assessment and Method Statement, and Tree Protection Plan. Fence barriers, ground protection and other special engineering techniques will be implemented, and installed, in accordance with the report to ensure compliance with the provisions of BS 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'.

Barriers will be erected prior to construction activity commencing within each development parcel, or along connecting highway routes, and will be maintained until practical completion of all building and engineering works.

Where appropriate, barriers will be erected between different development parcels to contain construction activities within a defined area.

New services close to trees will be installed to comply with the National Joint Utilities Group (2007) Volume 4, Issue 2: Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

10.2 Protection of Ecological Features During Construction

Depending upon the location, either reptile-proof fencing or Heras type fencing will be installed around suitable habitat within the proposed construction work areas. The fencing will be sufficiently robust to remain intact for the duration of the construction period for each development parcel, to prevent reptiles moving back into the working area.

Agreed buffer zones (e.g. average 15m width) will be fenced off either side of the central and northern streams to minimise disturbance during the construction phase of the adjacent development parcels. No construction materials will be stored within this zone, and special care will be taken to ensure no surface water run-off contaminated with pollutants drains into the streams.

During construction of the valley road crossing, special care will be taken to avoid unnecessary disturbance to the adjacent buffer zones, and a fenced construction corridor will be agreed with WBC. All construction material and arisings will be stored outside the protected buffer zone.

10.3 Management of Vegetation to Facilitate Development

Tree management works required to facilitate development, as specified in the relevant

Arboricultural Impact Assessment and Method Statement, will be carried out by a qualified tree surgeon.

Where hedgerows require pruning to facilitate constructions works, this will be carried out using a reciprocating blade cutter to reduce the height of the hedgerow to that specified on the approved landscape drawings.

Works to remove hedgerows or scrub will be completed under the guidance of an ecologist. It is proposed that all vegetation clearance works will be undertaken in a two-stage process to avoid the main dormouse hibernation and breeding seasons, in addition to the peak nesting bird season.

10.4 Vegetation Removal: Potential Dormouse Habitat

Vegetation with potential as dormouse habitat will be removed in two stages, as follows:

- winter vegetation clearance: the above-ground vegetation will be cut to a minimum of 300mm; this will be undertaken between November and February; the ecologist will undertake hand searches of all the vegetation to be removed prior to cutting; as dormice hibernate at ground level, the remaining height of vegetation will be left undisturbed in-situ until the following May; and
- summer vegetation removal: stump and root removal will be undertaken between May and October, after the hibernation season is over, when dormice will be using arboreal habitats; all vegetation clearance will be completed under the supervision of an Ecological Clerk of Works.

10.5 Vegetation Removal: Potential Bat Roosts

Trees with the potential to support bat roosts will be checked by a licensed bat worker prior to felling or arboricultural works being undertaken. This is likely to involve a combination of tree climbing inspections and/or nocturnal emergence/return surveys between May and August.

If the presence of a bat roost is confirmed within a tree to be felled, or subject to proposed tree works, a EPS licence will be obtained from Natural England. The works will be carried out under the supervision of a licensed bat worker, outside the times when hibernating bats or bats with dependent young could be present.

10.6 Vegetation Removal: Bird Nesting Period

To avoid a conflict with nesting birds, all vegetation removal will be undertaken between mid-September to February, which is the optimum period (bearing in mind the requirements for two phase vegetation clearance outlined with regards to dormice), unless a qualified ecologist has confirmed that the vegetation is free from active nests with eggs or fledglings.

10.7 Early Woodland and Hedgerow Planting

As shown on *Figure 4.3*, an area of new woodland structure planting has been identified between Gorse Covert and Dirty Ground Copse,as shown by the pink dash outline on the plan, and will be implemented in early stages of the development so that it has time to

establish and provide further screening of the latter parcels of housing within the central part of the site. This woodland planting will provide enhanced connectivity for wildlife, such as dormouse.

10.8 Translocation of Reptiles

The reptile mitigation strategy will be detailed within the EMMP, and agreed with WBC's ecologist and/or Natural England, and is likely to include either translocation or displacement.

No excavation below the turf layer, or use of heavy machinery, will be undertaken within the root protection areas of retained trees and woodland.

Reptile trapping/displacement will only be undertaken during the animals' active period, which runs from March until October (weather depending).

10.9 Seasonal Ecological Constraints

The key seasonal constraints to construction and management activities, in terms of protected species, are described in the table below. These seasonal constraints will be factored into the construction and management programmes, which will be agreed between the Applicants and WBC as part of the LEMP and/or EMMP:

Constraint	Time Period
Bird nesting period (covering vegetation which could be used by nesting birds), extended into September to cover later cirl bunting breeding behaviour.	March - mid-September inclusive
Bat hibernation period.	November - March (weather conditions may extend)
Bat activity period.	April/May - September/October
Badger 'breeding' season.	December - June inclusive
Hazel dormouse hibernation period.	October/November - April/May
Reptile activity period.	March - October inclusive
Reptile hibernation period.	October - March

10.10 Seasonal SuDS Constraints

Between December and February, no earthworks to form SuDS features will be undertaken when ground frost has been forecast or persists, as frost prevents the safe placement and compaction of materials.

11.0 Annual Maintenance Operations (Years 1-5 Establishment Period)

The scope and frequency of annual maintenance operations will be agreed for each land parcel within the corresponding detailed LEMP, which will be secured by planning condition.

11.1 Woodland Areas

An annual condition inspection of tree stock will be undertaken to identify essential works in terms of safe and healthy actions, and to prolong its useful lifespan, including phased programme of:

- selective felling of dead/dying or dangerous trees, or retention of these as monoliths, as appropriate;
- cyclic coppicing of selected understorey species, such as hazel;
- selective removal and thinning of invasive tree species, such as sycamore, to provide space for new tree planting and/or increase light to areas of ground flora, as appropriate; prior to clearance works, a bat roost assessment and dormouse mitigation is to be undertaken, as determined by an ecologist;
- replanting of appropriate long-term replacements;
- creation of small clearings to encourage diversification of ground flora;
- for reasons of safety, removal of ivy at 3m above ground level to prevent it growing up into crowns, to lessen the chance of further wind-throw, and to enable future inspections; however, ivy to be retained on trees is likely to be used by bats; and
- creation of deadwood eco-piles from tree works/fallen branches every two years; and also, if appropriate, use deadwood hedgerows to discourage access to sensitive habitat areas.

Remedial tree surgery will be:

- approved by WBC; and
- undertaken by a qualified arboriculturist, between November-February to avoid the bird breeding season, unless posing an imminent health and safety risk.

A quarterly visit will be undertaken to monitor the condition of the woodlands in terms of health and safety and general condition, and to also remove litter or fly-tipped waste at the same time.

11.2 Existing Trees

Annual condition, and health and safety, inspection will be undertaken to identify essential works.

Remedial tree surgery (e.g. removal of broken limbs and deadwood) will only be undertaken where necessary, and will be:

- approved by WBC; and
- undertaken by a qualified arboriculturist, between November-February, to avoid the bird breeding season, unless posing an imminent health and safety risk.

11.3 New Tree Planting

An annual inspection will be undertaken of tree stakes and ties, which are to be adjusted as necessary and removed once tree anchorage has been established. Similarly, trees that are

supported by underground guys will be inspected for wind-throw or rotation within their planting pits, and the pits excavated and guys repositioned and tightened, if necessary.

Formative pruning will be undertaken to remove dead, dying or diseased wood and suckers, to promote healthy growth and ensure balanced crown shape; assume 1 visit per year.

Inward facing branches of apple and pear fruit trees will be pruned/removed to create a 'goblet' shaped crown. Pruning will be undertaken between late autumn and winter. 'Tip bearing' varieties that fruit on the previous season's growth and not along the branch shall be pruned accordingly to avoid reducing future fruit crops.

Tree grilles will be adjusted, if necessary, to ensure that they lie flat on their frames. Litter, weed/grass growth or debris will be removed at the same time; assume 2 visits per year.

11.4 Existing Hedgerows

An annual inspection will be undertaken to replace dead/diseased plants at the end of each growing season. Pruning to promote healthy growth will be carried out between November and February to avoid the bird breeding season.

Gaps due to removal of invasive bramble, or death of plant stock, will be infilled with complimentary native species.

11.5 New Hedgerows and Matrix Planting

Base of new hedgerows, and matrix planting areas, will be kept 95% weed-free to aid establishment with a combination of visits to manually remove weeds, in conjunction with the use of herbicide. Litter will be cleared at the same time; assume 8 visits per year.

Where hedgerows are identified as being important reptile/dormouse habitat, selected areas of basal vegetation will be retained.

An annual inspection to replace dead/diseased plants will be undertaken at the end of each growing season, and pruning to promote healthy growth, where required. Pruning will be carried out between November - February to avoid the bird breeding season.

Adjustment or removal of rabbit protection measures where they are no longer required will be undertaken as part of annual works.

Invasive brambles will be dug out when small, or, if established, treated with appropriate foliar herbicide where its removal is required.

Herbicides will not be applied as blanket spray near watercourses.

11.6 New Shrub Planting (including edible berry shrubs)

Groups of edible berry shrubs are included at intervals along the proposed foraging trails.

Planting beds will be kept 95% weed-free with a combination of visits to manually remove weeds, in conjunction with the use of herbicide. Litter will be cleared at the same time; assume 8 visits per year.

Herbicides will not be applied as blanket spray near watercourses.

An annual inspection will be undertaken to review and replace dead/diseased plants at the end of each growing season. Pruning to promote healthy growth will be undertaken, where required. Pruning of edible berry shrubs will avoid reducing fruit bearing capacity of plants.

Adjacent to the footpaths: edge plants will be cut back (45° chamfer) to retain sightlines, and to prevent overhanging in accordance with good horticultural practice; 1 visit per year in November.

11.7 Existing Marshy Grassland

Areas of marshy grassland will be retained either side of the two existing streams within the main valley areas where they lie beyond woodland edges.

Marshy grassland will be grazed or haycropped in late September to 150mm height, with all cut vegetation removed. Selected areas may receive aftermath grazing, subject to the final management regime agreed with WBC.

The opportunity to introduce an appropriate grazing regime will be considered by the Applicants and WBC as part of the detailed design of the country park.

11.8 Grass Areas: Mown/Amenity

Mown grass areas include those amenity grass areas within open space areas in the development parcels, around play areas, within kickabout areas, and mown margins to paths.

Grass will be kept 95% free of broadleaved weeds and moss by an application of selective herbicide spot treatment in early April. Herbicides will not be applied as blanket spray near watercourses.

Mown/amenity grass areas will have 16 cuts between April and October to a height of 40mm.

All arisings will be removed from site. Litter will be removed prior to each cut, and leaves will be raked off grass prior to autumn cuts.

All grass areas will be reviewed annually for wear and tear, areas of settlement, and damage by wheel ruts. Damaged areas will be made good by oversowing of grass seed mix (to suit type of grassland) in March/April or September/October.

An annual visit in May will be undertaken to trim and maintain grass/weed-free edges adjacent to paths.

11.9 Grass Areas: Meadow Areas

Large grassland meadow areas lie within the country park area. Elsewhere within the proposed development and associated open space areas, wildflower/meadow margins will be located around the perimeter of woodlands and SuDS basins.

A haycrop will be undertaken in late September to 150mm height, with all cut vegetation removed.

All arisings will be removed from site. Litter will be removed prior to each cut, and leaves to be raked off grass prior to autumn cuts.

All grass areas will be checked annually for wear and tear, areas of settlement, and damage by wheel ruts. Areas will be made good by oversowing of grass seed mix (to suit type of grassland) in March/April or September/October.

An annual visit will be undertaken in May to trim maintain grass/weed-free circles (1.5m diameter) around new trees.

Herbicides will not to be applied as blanket spray near watercourses.

The opportunity to introduce an appropriate grazing regime will be considered by the Applicants and WBC as part of the detailed design of the country park.

11.10 Grass Areas: Bulb Planting

Selective herbicide will not be applied to bulb areas until foliage has completely died down.

Grass areas with bulb planting will not be cut until foliage has died down or 6 weeks after flowering, whichever the longer.

All arisings will be removed from site; for example, in April/May.

11.11 Grass Areas: New Wetland Grass within SuDS Features

New wetland grass located within and around the SuDS basin will comprise a spring meadow wildflower mix.

Herbicides will not to be applied as blanket spray near watercourses.

Wetland grass areas will receive 6 cuts between April and September to a height of 150mm.

All arisings will be removed from site. Litter will be removed prior to each cut and leaves raked off grass prior to autumn cuts.

All grass areas will be checked annually for wear and tear, areas of settlement, and damage caused by wheel ruts. Areas will be made good by oversowing of grass seed mix (to suit type of grassland) in March/April or September/October.

11.12 Existing Streams

Quarterly visits will be undertaken to clear built-up litter and debris from channels, inlets, outlets and overflows which could cause blockage to downstream flow patterns.

The removal of algae growth in stagnant water will be undertaken in summer; 2 visits.

11.13 SuDS Basins and Wetland Planting

Where practical, the SuDS basins will include small areas of permanently wet land and planted with a reed mix. The remainder of its base and side slopes will be covered with wetland grassland species.

In addition to the wetland grass maintenance regime set out above, the following maintenance items will be undertaken:

- monthly visits to clear built-up litter and debris from channels, inlets, outlets and overflows which could cause blockage of inflow/outflow pipes less than 300mm diameter, and additional inspections after heavy rain, severe storms and snow fall to clear blockage;
- removal of algae growth in stagnant water in summer; 2 visits;
- submerged and emergent aquatic/marginal plants (including areas of invasive species or bulrush) will be hand cut on 25% per year rotational basis (at a minimum 0.1m above pond base); and
- remove/tidy all dead plant growth prior to start of growing season.

11.14 Pathways (including the new cycle link)

Footpaths will be checked annually for wear and tear. Areas of settlement or damage will be made good in accordance with current UK and EU safety standards.

Footpaths will be kept free of litter, weeds, grass cuttings, and general debris. All weed growth will be sprayed; 12 visits per year.

Weeds and moss on hard surfaces and along kerbs will be prevented from becoming established by being removed manually or using suitable herbicides when they are less than 50mm in height.

Pathways will be maintained free of algae through the use of a preparatory cleanser applied each winter. Jet cleaning will not be carried out to prevent undermining paving sub-base materials.

11.15 Site Furniture and Boundary Features

Site furniture includes seating, dog and litter bins, interpretation boards, directional/wayfaring signage, timber footpath bridges, and disabled access points.

Street furniture will be inspected monthly to ensure there is no vandalism or missing features, and no health and safety issues. Missing or broken items will be replaced. Necessary repairs to be carried out in accordance with UK and EU safety standards.

Boundary walls, railings and fences will be checked annually for damage and deterioration. Necessary repairs will be carried out in accordance with UK and EU safety standards.

52 weekly visits will be undertaken to empty dog and litter bins.

11.16 Play Areas

A routine inspection of all play areas and equipment, and fitness station equipment on the fitness trail, will be undertaken weekly, by a competent (trained) person in strict accordance with the manufacturer's instructions. The routine inspection will include:

- visually checking the equipment for obvious faults or hazards that can be a danger to children, parents or carers; and
- ensuring that the safety surface and surrounding areas are free from debris, which could cause injury or be a hazard to health or the environment, for example, litter or fouling.

A maintenance inspection of equipment with moving parts (e.g. swings, roundabouts, fitness equipment) will be undertaken every three months. The inspection of the equipment will be carried out by a competent person in strict accordance with the manufacturer's instructions. The maintenance inspection will include:

- all aspects of routine inspection;
- checking that fixings are secure;
- lubrication of bearings;
- touching-in scratches to paintwork using the appropriate paint; and
- repairing safety surfacing and other elements.

An overall inspection of all equipment will be undertaken annually by an independent inspector (e.g. RoSPA).

Complete, accurate and dated records of routine, maintenance and annual inspections will be kept.

11.17 Health and Safety Audit

A health and safety audit will be carried out twice a year, and a written record will be maintained. Deficiencies will be rectified as soon as possible.

11.18 Summary of Annual Maintenance Operations

A summary of annual maintenance operations during the establishment period is given below in terms of season and frequency:

Operation	J	F	M	A	M	J	J	A	S	O	N	D
1. Existing Woodland, Trees and Hedgerows: - annual safety and condition inspection;										1		
- litter/fly-tipping removal.	1			1			1			1		
2. New Planting and Trees: - annual tree inspection, remedial pruning, hedgerow trimming, as required;										1		
- coppice selected species (e.g. hazel) on rotational basis;												1

Operation	J	F	M	A	M	J	J	A	S	O	N	D
- adjustment of tree grilles;				1						1		
- weeding and litter pick.	1		1	1	1	1	1	1	1		1	
3. Grass Areas: - mown paths/amenity grass: cutting;			1	1	2	3	3	3	2	1		
- SuDS wetland grass: cutting;				1	1	1	1	1	1			
- wildflower/meadows grass: autumn hay cut (or possible grazing, as agreed);									1			
- marshy grass cutting: autumn haycrop (or possible grazing, as agreed).									1			
4. Paths: - kept free of litter, grass cuttings, and general debris;	1	1	1	1	1	1	1	1	1	1	1	1
- annual wear and tear inspection.			1									
5. Site Furniture: - monthly inspection for wear and tear.	1	1	1	1	1	1	1	1	1	1	1	1
6. Play Areas: - weekly, routine inspection;	1	1	1	1	1	1	1	1	1	1	1	1
- quarterly maintenance inspection;	1			1			1			1		
- annual safety audit.				1								
7. Waterbodies: - annual inspection of stream;				1								
- SuDS basins: litter and debris removal, and marginal planting: maintenance.	1	1	1	1	1	1	1	1	1	1	1	1
Note: Numbers in columns denote frequency and monthly seasons when visits are to be undertaken.												