

Appendix 7.4

OUTLINE LANDSCAPE & ECOLOGICAL MANAGEMENT PLAN

(Confidential Appendix 1 Badger Appendix enclosed)

FORT HALSTEAD, KENT

**OUTLINE LANDSCAPE AND ECOLOGICAL
MANAGEMENT PLAN**

A Report to: CBRE Ltd

Report No: RT-MME-151857-03

Date: June 2020



Triumph House, Birmingham Road, Allesley, Coventry CV5 9AZ
Tel: 01676 525880 Fax: 01676 521400

E-mail: admin@middlemarch-environmental.com Web: www.middlemarch-environmental.com

REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

This study has been undertaken in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”.

Report Version	Date	Completed by:	Checked by:	Approved by:
Final	09/06/2020	Hannah Train GradCIEEM (Senior Ecological Consultant)	Tom Docker CEcol MCIEEM (Managing Director)	David Smith MCIEEM (Ecology and Landscapes Director)
DRAFT	21/04/2020	Hannah Train GradCIEEM (Senior Ecological Consultant)	Tom Docker CEcol MCIEEM (Executive Director)	David Smith MCIEEM (Ecology and Landscapes Director)

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management’s Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

DISCLAIMER

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

In February 2020, CBRE Ltd commissioned Middlemarch Environmental Ltd to produce an Outline Landscape and Ecological Management Plan (LEMP) associated with a proposed development at Fort Halstead in Kent. This assessment is required to support a revised planning application for the redevelopment of the site to provide a new employment-led mixed-use village.

Middlemarch Environmental Ltd carried out a suite of ecological baseline surveys for CBRE Ltd at the site in 2018 and 2019, comprising:

- Preliminary Ecological Appraisal (Report RT-MME-127947-01);
- Preliminary Bat Roost Assessment (Report RT-MME-127947-02);
- Nocturnal Emergence and Dawn Re-entry Bat Surveys (Report RT-MME-127947-03);
- Bat Activity Surveys (Report RT-MME-127947-04);
- Badger Survey (Report RT-MME-127947-05 Rev A);
- Breeding Bird Survey (Report RT-MME-127947-06);
- Botanical Survey (Report RT-MME-127947-07);
- Terrestrial Invertebrate Survey (Report RT-MME-127947-08);
- Reptile Survey (Report RT-MME-127947-09);
- Dormouse Survey (Report RT-MME-127947-10);
- Winter Bird Survey (Report RT-MME-127947-11);
- Pre-development Arboricultural Survey (Report RT-MME-128206-01); and
- Arboricultural Impact Assessment (Report RT-MME-128206-02).

These surveys informed the baseline for Chapter 9 Biodiversity of the 2019 Environmental Statement (ES) and an accompanying Framework Ecological Mitigation Strategy (FEMS, Report RT-MME-127947-12).

The Outline LEMP is required to support the revised planning application, along with an ES Addendum (including Chapter 7 Biodiversity), and an updated FEMS (Report RT-MME-127947-12 Rev A). In addition, Middlemarch Environmental Ltd has been instructed to complete an Updated Ecological Walkover (Report RT-MME-151857-01) and an Updated Badger Survey (Report RT-MME-151857-02).

1.2 SITE DESCRIPTION AND CONTEXT

The site is located off Star Hill Road in Halstead, Kent, centred at National Grid Reference TQ 4970 5922. It is an irregular shaped parcel of land that measures 131.89 ha in size.

At the time of the survey, the site comprised a defence research facility which contained a number of buildings with associated areas of hardstanding, surrounded by parcels of semi-natural and plantation woodland. Areas of neutral grassland, calcareous grassland and amenity grassland were also present, as well as patches of scrub and tall ruderal vegetation.

The site was bordered by the A224 Polhill to the north-east and Star Hill Road to the south-west. A mixture of arable and pastoral fields, pockets of woodland and farm buildings surround the site. The wider landscape was dominated by a rural setting, consisting of agricultural land interspersed with pockets of woodland and small settlements.

1.3 DESCRIPTION OF DEVELOPMENT

The proposals for the site are as follows:

Hybrid application comprising, in outline: development of business space (use classes B1a/b/c) of up to 27,773 sqm GEA; works within the X enclave relating to energetic testing operations, including fencing, access, car parking; development of up to 635 residential dwellings; development of a mixed use village centre (use classes A1/A3/A4/A5/B1a/D1/D2); land safeguarded for a primary school; change of use of Fort Area and bunkers to Historic Interpretation Centre (use class D1) with workshop space and; associated landscaping, works and infrastructure. In detail: demolition of existing buildings; change of use and works including extension and associated alterations to

buildings Q13 and Q14 including landscaping and public realm, and primary and secondary accesses to the site.

1.4 SCOPE OF THE LEMP

This LEMP is designed to provide information regarding the long-term management of landscape and ecological habitat features to be retained and created on site. It covers a period of ten years, and contains the following information:

- Chapter 2: Summary of Ecological Baseline
- Chapter 3: LEMP Context
- Chapter 4: Landscape and Ecological Management Proposals
- Chapter 5: Implementation, Monitoring and Review
- Chapter 6: Drawings

The LEMP is a live document and may therefore be subject to review based on the findings of monitoring of the success of initial management or as detail on the landscape proposals is made available. It is anticipated that at the end of the period covered by this plan a new LEMP will be compiled based on the findings of monitoring and in accordance with the best practice principles.

1.5 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client, associated with the current planning application and the previous planning application, is listed in Table 1.1 and Table 1.2, respectively.

Document Name / Drawing Number	Author
Fort Halstead – Design and Access Statement: 00556I	John Thompson and Partners
Site Location Plan: 00556I_S01 Rev P2	John Thompson and Partners
Land Use and Green Infrastructure Plan: 00556I_PP01 Rev P2	John Thompson and Partners
Building Heights Plan: 00556I_PP02 Rev P2	John Thompson and Partners
Access and Movement: 00556I_PP03 Rev P2	John Thompson and Partners
Demolition Plan: 00556I_PP04 Rev P2	John Thompson and Partners

Table 1.1: Documentation Provided by Client for Current Planning Application

Document Name / Drawing Number	Author
Ecological Appraisal: EED12715-102.R.2.3.7.LM	Waterman Group
Protected Species and Habitats Survey: EED12715-102.R.3.3.6.LM	Waterman Group
Environmental Statement - Ecology and Nature Conservation	Waterman Group
Decision Notice (planning application number SE/15/00628/OUT)	Sevenoaks District Council

Table 1.2: Documentation Provided by Client associated with Previous Planning Application

1.6 CONSULTATION

Kent County Council Ecological Advice Service provided a consultation response on 28th November 2019. They recommended that an outline LEMP for the whole site be submitted, which would then inform the detailed LEMP documents produced at each phase. It was requested that the LEMP include details regarding measures to be implemented to limit negative impacts to the woodland within the site, including details of 'buffer-zone' management and specific details regarding signage and provision of quality recreation space within the development site.

2. SUMMARY OF ECOLOGICAL BASELINE

2.1 DESIGNATED SITES

2.1.1 European Statutory Nature Conservation Sites

The desk study completed as part of the Preliminary Ecological Appraisal (Report RT-MME-127947-01) in 2018 identified no European Statutory Sites within a 5 km radius.

2.1.2 UK Statutory Nature Conservation Sites

The site is located within 10 km of Westerham Mines SSSI, which is located 6.55 km south-west. The principal interest of this site is the use of its abandoned ragstone mines by a variety of hibernating bats.

With respect to Westerham Mines SSSI, Chapter 9 Biodiversity of the 2019 ES reported that increased illumination associated with operational lighting has the potential to lead to the severance of commuting routes or a reduction in suitable foraging habitats for bats using this UK statutory site. However, outline proposals for operational lighting have been developed in accordance with best practice guidance, to ensure impacts on valuable ecological features are minimised. An ecological review of detailed lighting designs will be undertaken for each phase of the development. As such, Westerham Mines SSSI will not be discussed further within this LEMP.

2.1.3 Non-Statutory Nature Conservation Sites

Desk study data provided by Kent and Medway Biological Records Centre revealed the presence of six non-statutory nature conservation sites within a 2 km radius of the site. In addition, 81 parcels of ancient woodland are located within a 2 km radius of the site, 17 of which form part of the site.

Chapter 9 Biodiversity of the 2019 ES identified the following sites which have the potential to be impacted by the construction and/or operational phases of the proposed development:

- Chevening Estate LWS, located 10 m south-west;
- Woodlands West of Shoreham LWS, located 10 m east;
- Polhill Bank KWT Reserve, located 150 m north-east; and,
- Ancient woodland sites within and in close proximity to the site.

Chapter 9 Biodiversity of the 2019 ES recognised that once the completed development is operational, there may be an increase in recreational disturbance of Chevening Estate LWS, Woodlands West of Shoreham LWS, Polhill Bank KWT Reserve and ancient woodlands in proximity to the site, which could lead to the degradation of habitats and a subsequent decline in conservation status. Access management measures are provided in this LEMP.

The remaining non-statutory sites are located at least 890 m from the site and are unlikely to be adversely affected by the proposed development. These have been scoped out of further assessment.

2.1.4 Areas of Outstanding Natural Beauty

The site falls within Kent Downs Area of Outstanding Natural Beauty (AONB). AONBs are “*Designated areas where protection is afforded to protect and manage the areas for visitors and local residents...considered to have such natural beauty it is desirable they are conserved and enhanced*” (Natural England, 2019¹). The Kent Down AONB Management Plan 2014-2019 (Kent Downs AONB Unit, 2014²) acknowledges that the AONB comprises a range of ‘biodiversity-rich’ habitats, including semi-natural chalk grassland and ancient semi-natural woodland, which are present within the site (refer to Section 2.2). The AONB Management Plan outlines a series of policies which set out how the AONB will be conserved and enhanced. Of particular relevance to this LEMP are policies relating to Biodiversity and Woodland and Trees. Where relevant, these policies are reflected in the management measures proposed in Chapter 4 of this LEMP.

¹ Natural England. (2019). *Areas of Outstanding Natural Beauty (England)*. Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/6f2ad07d91304ad79cdecd52489d5046_0?geometry=-20.251%2C47.971%2C15.828%2C57.264

² Kent Downs AONB Unit. (2014). *Kent Downs Area of Outstanding Natural Beauty: Management Plan 2014-2019. Revision 2, April 2014*.

2.2 HABITATS

As part of the Preliminary Ecological Appraisal (Report RT-MME-127947-01), an Extended Phase 1 Habitat Survey of the site was undertaken in May 2018. An updated site walkover was completed in March 2020 (refer to Report RT-MME-151857-01). This survey did not identify any significant changes in habitat composition since the previous survey in 2018.

The following habitats are present within the site:

- Amenity grassland;
- Bracken;
- Broad-leaved plantation woodland;
- Broad-leaved semi-natural woodland;
- Buildings;
- Coniferous plantation woodland;
- Fencing;
- Hardstanding;
- Mixed plantation woodland;
- Poor semi-improved grassland;
- Scattered scrub;
- Scattered trees;
- Semi-improved calcareous grassland;
- Semi-improved neutral grassland;
- Species-rich hedgerow with trees;
- Tall ruderal vegetation; and
- Unimproved calcareous grassland.

The proposed development has been designed to fall predominantly within the existing built footprint. Reference to the 'Land Use and Green Infrastructure Plan' (Drawing 00556I_PP01 Rev P2) prepared by JTP illustrates that the most important habitats, including woodland (broad-leaved plantation, broad-leaved semi-natural, coniferous plantation, mixed plantation), grassland (semi-improved calcareous grassland, semi-improved neutral grassland and unimproved calcareous grassland) and species-rich hedgerow with trees will be retained. Many of these habitats will be enhanced for biodiversity. Pockets of bracken, scattered scrub and tall ruderal will also be retained.

Some scattered trees will need to be removed to accommodate the development, and some semi-improved grassland will be temporarily lost to enable cut-and-fill works, but replacement grassland will be created in these areas following completion of the works. Small pockets of semi-natural broadleaved woodland may be removed to accommodate attenuation features, although this is subject to further detailed design.

The majority of habitat loss will be limited to common and widespread habitats of low or negligible ecological value (amenity grassland, buildings, fencing and hardstanding).

New habitats are to be created as part of the proposed development include wildflower meadow and Sustainable Drainage System (SuDS) ponds.

Management proposals for the retained and created habitat features are outlined in Chapter 3 and specific objectives and management prescriptions are provided in Chapter 4 of this report.

2.3 PROTECTED/NOTABLE SPECIES

2.3.1 Bats

Surveys completed by Waterman Group between 2007 and 2013 confirmed the presence of roosting bats in ten buildings: A13, A14, A25, F6, H38, HR1, HR2, M10, N10 and R29. Roosts used by low numbers of common pipistrelle were recorded in Buildings A13, A14, A25, M10, N10 and R29. Buildings HR1 and HR2 were each found to support a single hibernating brown long-eared bat. A small number of droppings resembling those of a *Myotis* species were recorded in Building F6, indicating use of this building as a summer roost. Since these surveys were completed, Buildings A25 and M10 have been demolished, and R29 has been subject to repair works.

The 2018 surveys completed by Middlemarch Environmental Ltd identified bat roosts in six buildings: A3, F11, N2, Q4, Q7 and R64. Building R64 was found to support a brown long-eared bat maternity roost. The other buildings supported day roosts for common pipistrelle. No bats emerged from or re-entered buildings A13, A14, F6, H38, HR1, HR2 or N10 during the 2018 surveys. However, bats are known to regularly move between roosts and as such these buildings remain a roost whether occupied or not.

A Preliminary Ground Level Bat Roost Assessment of trees was undertaken, focusing on the area which is the subject of the detailed planning application. The majority of the trees possessed no potential roosting features and were therefore considered to have negligible potential to support roosting bats. However, nine trees were considered to have high potential, three trees were considered to have moderate potential and ten trees were considered to have low potential.

Several buildings supporting confirmed bat roosts will be lost (in accordance with a Development Licence from Natural England), and a small number of trees with roost potential will be removed (subject to further surveys and in accordance with a Development Licence from Natural England as required). Replacement roosts will be provided in line with the licence, and additional roosts, including a bat barn, will be installed to enhance the site for bats. Furthermore, the areas of woodland will be retained, which are likely to contain numerous trees with features suitable for roosting bats.

Nine species of bat (common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule, Daubenton's bat, whiskered bat, Natterer's bat, brown long-eared bat and serotine) were recorded utilising the application site for foraging and commuting purposes during the 2018 suite of surveys. Common pipistrelle was the most frequently recorded species, whilst low levels of activity by other species were recorded. Activity was recorded across the site, particularly in proximity to areas of broad-leaved semi-natural woodland, which will be retained and incorporated into the landscaping scheme.

2.3.2 Badger

A confidential chapter relating to badgers is provided in Appendix 1.

2.3.3 Dormice

The 2018 survey work confirmed the presence of dormice at the site. A single dormouse was recorded in October 2018, in a nest tube located within an area of bramble scrub adjoining broadleaved semi-natural woodland in the southern part of the site, opposite the southern security fence. The majority of habitat suitable for dormouse will be retained, with any works which have the potential to impact dormouse being carried out under licence from Natural England, as required.

2.3.4 Other terrestrial mammals (brown hare and hedgehog)

The mosaic of hedgerows, scrub, woodland and grassland on site offer suitable refuge and foraging opportunities for hedgehogs and brown hares and will largely be retained as part of the proposed development.

2.3.5 Birds

During the 2018 Breeding Bird Survey, a total of 55 bird species were recorded, of which 44 were confirmed to have bred or probably/possibly did so. This included six Species of Principal Importance and Birds of Conservation Concern 4 (BoCC4) Red List species, namely linnets, skylark, song thrush, spotted flycatcher, yellowhammer and marsh tit. Mistle thrush and nightingale, also BoCC4 Red List Species, were also recorded. The vast majority of territories on site were associated with the woodland, scrub and hedgerow habitats located around the peripheries.

Overall, the site is considered to be of District value in terms of its breeding bird interest, supporting a number of species of conservation concern, in addition to a range of more common generalist bird species. The majority of habitats suitable for breeding and foraging birds will be retained and enhanced. A series of bird nest boxes will be installed across the site.

2.3.6 Reptiles

During the 2018 Reptile Survey, populations of slow worm and common lizard were recorded within the southern part of the site. These species were identified within areas of semi-improved calcareous grassland and semi-improved neutral grassland. Areas of grassland which remained un-grazed appeared to provide much more suitable habitat for reptiles, with a taller, tussocky sward and adjacent areas of scrub and tall

ruderal. The mosaic of habitats suitable for reptiles within the southern part of the site will be retained and enhanced.

2.3.7 Terrestrial invertebrates

A Terrestrial Invertebrate Survey (Report RT-MME-127947-08) was undertaken at the site by Middlemarch Environmental in 2018. This confirmed that the most important area for invertebrates is the area of unimproved calcareous grassland in the southern part of the site. This habitat is being retained as part of the development and as such the most notable invertebrate species will not be displaced from the site as a result of the proposed works. Furthermore, it is anticipated that the general habitat retention, creation and enhancement measures provided as part of the landscaping scheme will increase the suitability of the site for a range of species groups, including invertebrates.

No records of stag beetle were provided in the desk study. However, this species is predominantly distributed across south-east England, and the site supports suitable habitat for this species, including dead wood. The majority of woodland habitat is being retained, including all ancient woodland, and therefore stag beetle, if present, is unlikely to be displaced from the site. The enhancement of the woodland and provision of more dead wood will further increase the suitability of the site for stag beetles.

2.3.8 Great crested newt and common amphibians

There is no aquatic habitat suitable for breeding within the site. Reference to Ordnance Survey mapped data identified three waterbodies within a 250 m radius of the survey area, but these are located over 470 m away from the proposed works footprint and therefore it was considered unlikely that any amphibians, particularly great crested newts, will be encountered during the development works.

Several attenuation features will be created within the site, which, in addition to providing a drainage function, are likely to support a range of species groups including amphibians and invertebrates.

2.3.9 Otter, water vole and white-clawed crayfish

There are no watercourses or waterbodies on or adjacent to the site, and as such, otter, water vole and white-clawed crayfish are not notable considerations with respect to the proposed development.

2.3.10 Other protected/notable species

The following species have been scoped out of further assessment due to a lack of desk study records and/or the absence of suitable habitats within the site and its surroundings and/or the location of the site outside of their known distributions: pine marten *Martes martes*, polecat *Mustela putorius* and red squirrel *Sciurus vulgaris*.

2.4 NON-NATIVE INVASIVE PLANT SPECIES

During the Phase 1 Habitat Survey completed in 2018 as part of the Preliminary Ecological Appraisal (Report RT-MME-127947-01), a small amount of rhododendron was recorded growing within the Old Fort area, which is located in the centre of the site. In addition, an unidentified cotoneaster species was recorded within the area of mixed plantation woodland located to the north of Armstrong Close and west of Fort Road. As this cotoneaster could not be identified to species level, the possibility of it being an invasive species could not be ruled out.

Japanese knotweed was also recorded during the survey. This was located off site, approximately 300 m from the boundary, within an area of scrub adjacent to London Road.

There is the potential for vegetation clearance, groundworks and other landscaping activities to cause rhododendron or cotoneaster to spread in the wild. Rhododendron and five cotoneaster species (cotoneaster *Cotoneaster horizontalis*, entire-leaved cotoneaster *C. integrifolius*, Himalyan cotoneaster *C. simonsii*, hollyberry cotoneaster *C. bullatus* and smallleaved cotoneaster *C. microphyllus*) are listed as a non-native invasive species under Schedule 9 of the Wildlife and Countryside Act 1981, as amended, and therefore allowing these plants to spread in the wild is considered to be an offence under this legislation.

Management measures for controlling non-native invasive species are detailed in the FEMS (Report RT-MME-127947-12) and reiterated in this LEMP.

3. LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN CONTEXT

3.1 FEATURES TO BE MANAGED

Table 3.1 provides a summary of the landscape and ecological features on site for which management proposals are provided in this report. The locations of retained and created habitat features are shown on the 'Land Use and Green Infrastructure Plan' (Drawing 00556I_PP01 Rev P2), provided in Chapter 6 of this report.

Habitat	Description
Existing woodland	Broadleaved semi-natural woodland is located throughout the site, the majority of which is ancient woodland. All ancient woodland will be retained, protected and managed. Broadleaved plantation woodland borders the grassland fields in the western part of the site, whilst three blocks of mixed plantation woodland are present in the south-western and north-eastern parts of the site.
Existing hedgerows	Various lengths of species-poor defunct hedgerow, species-poor intact hedgerow and species-rich hedgerow with trees are located in the southern and western parts of the site. Existing hedgerows will be enhanced by planting gaps with native species such as hawthorn <i>Crataegus monogyna</i> , blackthorn <i>Prunus spinosa</i> , elder <i>Sambucus nigra</i> , field maple <i>Acer campestre</i> and hazel <i>Corylus avellana</i> .
Newly planted hedgerow	Lengths of native hedgerow will be planted across the site, primarily to delineate boundaries between gardens. A native species mix sensitive to the surroundings will be used.
Existing scrub	Patches of scattered scrub are located within areas of semi-improved neutral grassland and unimproved calcareous grassland in the southern part of the site. The scrub will be retained and enhanced.
Newly planted scrub / native shrub	Native scrub will be planted around the site peripheries, particularly adjacent to areas of semi-natural broadleaved woodland. Thorny native species such as hawthorn and blackthorn will be planted.
Existing trees	Early-mature and mature trees are present throughout the site, many of which will be retained.
Newly planted trees	A range of native trees are to be planted across the site. Native species in keeping with the surrounding will be planted.
Existing grassland	The large expanse of unimproved calcareous grassland, the semi-improved calcareous grassland within the Old Fort area and smaller pockets of semi-improved neutral grassland which are present in the southern part of the site will be retained and enhanced. Much of the western part of the site is occupied by poor semi-improved grassland, some of which will be temporarily lost to enable cut-and-fill works.
Newly created grassland	Areas of wildflower grassland will be created across the site, within areas set aside for public open space, around SuDS features and in mitigation zones. Areas of amenity grassland will be created across the site in areas likely to be subject to regular use.
Newly created attenuation features	A series of attenuation features will be created within landscaped areas of the site, designed for both functionality and wildlife.
Species-specific features	In line with the FEMS (Report RT-MME-127947-12 Rev A), a purpose-built bat barn, a range of bat, bird and dormice boxes and herpetofauna hibernacula are installed across the site.
Non-native invasive plant species	Rhododendron or cotoneaster will be removed from site prior to construction works commencing, in accordance with the measures detailed in Section 4.11.

Table 3.1: Summary of Landscape and Ecological Features to be Managed

3.2 ECOLOGICAL VALUE OF FEATURES TO BE MANAGED

This section outlines the ecological value of each of the landscape and ecological features to be managed and indicates whether they provide a contribution to national or local biodiversity targets.

Existing woodland

Ancient woodland is an irreplaceable habitat, taking centuries to develop. As detailed in the Woodland's Trust Practical Guidance document 'Planning for Ancient Woodland: Planners' Manual for Ancient Woodland

and Veteran Trees' (July 2019), "*Ancient woodlands support a high proportion of rare and threatened species many of which are dependent on the particular conditions that this habitat affords. For this reason, ancient woods are reservoirs of biodiversity...*"

The broad-leaved semi-natural woodland within the site is classed as 'Lowland Mixed Deciduous Woodland', a Habitat of Principal Importance and Kent Biodiversity Strategy priority habitat.

Although not Habitats of Principal Importance, the blocks of broad-leaved, mixed and coniferous plantation woodland provide connectivity across the site and support a range of protected and notable species.

Woodlands form an integral part of the Kent Downs AONB, and the retention and enhancement of this habitat within the site will contribute towards the policies of the Kent Downs AONB Management Plan², particularly those relating to 'Biodiversity' and 'Woodland and Trees'.

Existing and newly planted hedgerows

Ancient and species rich hedgerows are an ecologically important habitat on both a local and national scale, being a Habitat of Principal Importance. Hedgerows are also listed as a Kent Biodiversity Strategy priority habitat. Hedgerows act as important wildlife corridors and the creation of species-rich native hedgerows within developments contributes towards a landscape-scale approach to biodiversity conservation. Newly planted hedgerows will take time to become established mature wildlife corridors.

Existing and newly planted scrub

Bands of native scrub will provide a diversely structured buffer, discouraging residents from accessing adjacent woodland. Once established, these habitats are likely to support a range of invertebrate and bird species and provide ecological connectivity across the site.

Existing and newly planted trees

Existing mature trees have intrinsic ecological value and cannot be readily replaced. They also contribute to a diversely structured habitat of value to a range of species. The newly planted trees will contribute towards the formation of a varied mosaic of habitats and, once established, are likely to support a range of invertebrate and bird species.

Existing grassland

The areas of unimproved and semi-improved calcareous grassland meet the criteria to be classed as 'Lowland Calcareous Grassland', a Habitat of Principal Importance and Kent Biodiversity Strategy priority habitat. This habitat is particularly valuable for invertebrates.

Chalk grassland is a valuable habitat within the Kent Downs AONB, and the retention and enhancement of this habitat within the site will contribute towards the policies of the Kent Downs AONB Management Plan², particularly those relating to 'Biodiversity'.

The small areas of neutral semi-improved grassland do not qualify as Habitats of Principal Importance but are likely to support a range of invertebrate species, as well as reptiles. Retention and enhancement of these grassland areas will contribute towards a varied mosaic of habitats within the site.

Newly created wildflower grassland

Wildflower grassland provides a valuable habitat resource for a range of invertebrate species, which in turn provide a valuable foraging resource for a variety of birds, mammals and herpetofauna.

Newly created amenity grassland

Amenity grassland does not meet any national or local biodiversity criteria, although the use of a species-rich seed mix will enhance this habitat for a range of invertebrates.

Newly created attenuation features

The proposed attenuation features, seeded with a wildflower wetland mix, will be both functional and of value to a wide range of species groups, including amphibians and invertebrates.

Species-specific features

These features will provide roosting opportunities for bats, nesting habitat for birds and dormice and hibernation features.

4. LANDSCAPE AND ECOLOGICAL MANAGEMENT PROPOSALS

4.1 INTRODUCTION

This chapter provides aims and objectives of management, and outlines specific management prescriptions, for each of the following features:

- Existing woodland (Section 4.2);
- Existing and newly planted hedgerow (Section 4.3);
- Existing and newly planted scrub (Section 4.4);
- Existing and newly planted trees (Section 4.5);
- Existing grassland (Section 4.6);
- Newly created wildflower grassland (Section 4.7);
- Newly created amenity grassland (Section 4.8);
- Newly created attenuation features (Section 4.9);
- Species-specific features (Section 4.10); and
- Non-native invasive plant species (Section 4.11).

4.2 EXISTING WOODLAND

4.2.1 Aims and Objectives

Aim: Protect, maintain and enhance retained woodland.

Objectives:

1. Maintenance and enhancement of woodland at the site to contribute to the Kent Biodiversity Strategy and the Kent Downs AONB Management Plan.
2. Continue to provide valuable habitat for a range of fauna.
3. Ensure ecological and structural diversity and habitat connectivity is maintained.
4. To avoid disturbance to nesting birds during habitat management.

4.2.2 Management Prescriptions

Table 4.1 presents management activities in order to meet the aims and objectives outlined above.

Feature	Prescription	Purpose	Timing	Year															
				1	2	3	4	5	6	7	8	9	10						
Existing woodland	Woodland thinning will be undertaken. Thinning will favour the retention of the strongest trees and those that offer the longest future useful life. Adequate spacing between plants will be created to promote healthy future development of crowns of favoured trees. Edge treatment will favour the retention of lower branches and understory of younger trees or shrubs. Thinned plants will be cut down to 25-30 mm above ground level parallel with ground slope.	To allow habitat to establish and provide features for nesting birds and insects. To develop a range of age classes of appeal to a broad range of species. To increase light and the creation of rides and glades, to encourage regeneration and allow development of targeted understory species.	November to February (to avoid bird nesting season).	x					x									x	
	Within areas of no public access and where dead trees are not in prominent positions, they will be retained. If this is not possible, tree to be felled and tree stump retained as dead wood on site.	To provide valuable habitat for invertebrates and bird species.	n/a	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Provision of information boards in strategic locations, encouraging people to keep dogs on leads and stay on designated footpaths.	To prevent disturbance to ancient woodland habitats.	n/a	x															
	Maintenance of footpaths.	To encourage use of designated footpaths and prevent disturbance to ancient woodland habitats.		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Table 4.1: Habitat Management Prescriptions – Woodland

4.3 EXISTING AND NEWLY CREATED HEDGEROW

4.3.1 Aims and Objectives

Aim: Maintenance and enhancement of existing native hedgerows and establishment of newly planted native hedgerows.

Objectives:

1. Encourage hedgerow management techniques at the site to support Kent Biodiversity Strategy priorities.
2. Encourage species diversity.
3. Encourage hedgerow buffer strips.
4. Maintain connectivity between habitats.
5. To avoid disturbance to nesting birds during habitat management.

4.3.2 Management Prescriptions

Table 4.2 provides management activities in order to meet the aims and objectives for this habitat.

Feature	Prescription	Purpose	Timing	Year												
				1	2	3	4	5	6	7	8	9	10			
Existing hedgerows	Gaps to be infilled with native woody species.	To enhance the biodiversity of the hedgerows.	November to February	x	x	x	x	x								
Newly planted hedgerows	Newly planted sections of hedgerow to have half the height of the hedge removed soon after planting.	Encourage bushy growth near the base, helps roots establish and reduce chances of wind damage.	When planted	x												
	Water newly planted hedgerow sections during dry periods.	To ensure survival during establishment.	Summer	x												
	Replace any losses within newly planted areas within vegetation establishment phase (first five years after planting).	To ensure appropriate establishment of plants.	November to February		x	x	x	x	x							
	During vegetation establishment phase (first five years after planting), adjacent grassland vegetation to be strimmed / cut back.	Maximise opportunities for newly planted hedgerow to establish.	n/a	x	x	x	x	x								
Existing hedgerows and newly planted hedgerows, once established	Hedgerows to be cut so that 50% of each side is trimmed every year.	To enhance the biodiversity of the hedgerows.	November to February (to avoid bird nesting season).	x	x	x	x	x	x	x	x	x	x	x	x	x
	Standing trees to be retained and left unmanaged. Mature trees within hedgerows will only be managed for health and safety reasons.	Retain a diversity of age ranges within the species composition of the hedgerow.	n/a	x	x	x	x	x	x	x	x	x	x	x	x	x
	Maintain a buffer strip of 2 m adjacent to existing and established hedgerows where grass is not cut.	Promote a hedgerow edge 'ecotone' for use by small birds, mammals and invertebrates.	n/a					x	x	x	x	x	x	x	x	x

Table 4.2: Habitat Management Prescriptions – Hedgerows

4.4 RETAINED AND NEWLY CREATED SCRUB

4.4.1 Aims and Objectives

Aim: To maintain and create valuable scrub habitats across the site.

Objectives:

1. To provide a suitable 'buffer' between areas of ancient woodland and development areas, of value to wildlife and to discourage access to woodland areas.
2. To provide habitat for a range of fauna.
3. To avoid disturbance to nesting birds during habitat management.

4.4.2 Management Prescriptions

Table 4.3 presents management activities in order to meet the aims and objectives for this habitat.

Feature	Prescription	Purpose	Timing	Year											
				1	2	3	4	5	6	7	8	9	10		
Newly planted scrub	Water newly planted shrubs during dry periods.	To ensure survival during establishment.	Summer	x											
	Keep surrounding areas clear of weeds by maintaining full thickness of mulch.	Control excessive weed growth to reduce competition for water and nutrients	n/a	x	x										
Existing scrub and newly planted scrub, once established	Scrub to be coppiced on a rotational basis, with 20% cut every three years.	To maintain a diverse structure of scrub within areas of grassland and adjacent to woodland.	November to February (to avoid bird nesting season).	x			x				x				x

Table 4.3: Habitat Management Prescriptions – Scrub

4.5 EXISTING AND PROPOSED TREES

4.5.1 Aims and Objectives

Aim: Ensure protection of existing standing trees and establishment of newly planted trees.

Objectives:

1. Protect existing trees at the site to contribute to overall biodiversity.
2. To add structural interest to the site.
3. To provide suitable habitat for a range of invertebrate, bird and bat species.
4. To avoid disturbance to nesting birds during habitat management.

4.5.2 Management Prescriptions

Table 4.4 presents management activities in order to meet the aims and objectives outlined above.

Feature	Prescription	Purpose	Timing	Year										
				1	2	3	4	5	6	7	8	9	10	
Existing trees	Minimal intervention strategy. Tree condition to be reviewed annually to ensure no risk to public from damaged / dead trees. Qualified arboriculturalist to be consulted regarding potential issues.	Reasons of public health and safety. Maintain tree health.	n/a	x	x	x	x	x	x	x	x	x	x	x
	Any tree felling will consider a need to retain tree stumps. This is to be agreed on an individual basis in each situation.	Retention of tree stumps as standing dead wood to provide habitat for invertebrates.	November to February (to avoid bird nesting season).	x	x	x	x	x	x	x	x	x	x	x
	If dead trees are identified within prominent public locations and need to be removed, trees are to be replaced.	To maintain suitable quantity and quality of tree habitat across site.	n/a	x	x	x	x	x	x	x	x	x	x	x
Newly planted trees	Stakes, ties and tree guards to be checked regularly during establishment phase and loosened, tightened, or replaced as necessary. Tree protection will be removed in Year 5 if no longer required.	To ensure trees/shrubs become successfully established.	n/a	x	x	x	x	x						
	If for any reason large-scale losses of trees/shrubs occur then an arboricultural assessment may be required to determine reasons for failure and identify appropriate remedial action.	To ensure trees/shrubs become successfully established.	n/a		x	x	x	x	x	x	x	x	x	x
	Within areas that do have public access, tree condition to be reviewed annually to ensure no risk to public from damaged / dead trees.	Reasons of public health and safety.	Management completed November to February (to avoid bird nesting season).		x	x	x	x	x	x	x	x	x	x

Table 4.4: Habitat Management Prescriptions – Trees

4.6 EXISTING GRASSLAND

4.6.1 Aims and Objectives

Aim: Maintenance and enhancement of calcareous and neutral grassland.

Objectives:

1. Encourage grassland management techniques at the site to support Kent Biodiversity Strategy priorities and Kent Downs AONB Management Plan policies.
2. Increase the botanical diversity within the grassland sward.
3. Enhance suitability of the habitat for invertebrates.

4.6.2 Management Prescriptions

Table 4.5 presents management activities in order to meet the aims and objectives outlined above.

Feature	Prescription	Purpose	Timing	Year										
				1	2	3	4	5	6	7	8	9	10	
Existing grassland	Use 'spot' treatments where necessary to control the spread of noxious weed species. Treat species with an approved translocated herbicide and apply through a weed wiper or wand.	Maintain the diversity of the grassland sward by reducing competition from vigorous species.	June to September	x	x	x	x	x	x	x	x	x	x	x
	Grassland to be subject to occasional light grazing, or cut annually after flowering in late July or August, to a height of 50 mm. Arisings left for a maximum of one week. Mowing or light grazing to continue through to late autumn/winter to 50 mm.	To enhance the floral biodiversity of the grassland habitat. To allow seed to drop.	Late July / August to November	x	x	x	x	x	x	x	x	x	x	x
	Encroaching scrub to be cut back annually.	To maintain diversity and extent of valuable grassland habitat.	November to February (to avoid bird nesting season).	x	x	x	x	x	x	x	x	x	x	x

Table 4.5: Habitat Management Prescriptions – Existing Grassland

4.7 NEWLY CREATED WILDFLOWER GRASSLAND

4.7.1 Aims and Objectives

Aim: Creation and maintenance of diverse floral species grasslands, accounting for soil properties and environmental factors.

Objectives:

1. Manage areas of wildflower grassland meadow at the site to provide zones of species-rich habitat.
2. Increase the botanical diversity within the grassland sward.
3. Enhance suitability of the habitat for invertebrates and amphibians.

Given the presence of surrounding calcareous grassland, new areas of wildflower meadow will be created using a meadow mixture suitable for chalk and limestone soils, such as Emorsgate Seeds EM6 mixture (or similar). Emorsgate seeds offer a number of seed origin options, and, if feasible, a seed mix matched to the region will be obtained. Table 4.6 details the species included within the Emorsgate Seeds EM6 mix.

Common name	Latin name	%
Wildflowers		
Yarrow	<i>Achillea millefolium</i>	0.5
Agrimony	<i>Agrimonia eupatoria</i>	0.3
Kidney Vetch	<i>Anthyllis vulneraria</i>	1.2
Common Knapweed	<i>Centaurea nigra</i>	1.5
Greater Knapweed	<i>Centaurea scabiosa</i>	1.5
Crosswort	<i>Cruciata laevipes</i>	0.3
Wild Carrot	<i>Daucus carota</i>	1
Dropwort	<i>Filipendula vulgaris</i>	1
Lady's Bedstraw	<i>Galium verum</i>	2
Field Scabious	<i>Knautia arvensis</i>	1.2
Rough Hawkbit	<i>Leontodon hispidus</i>	0.8
Oxeye Daisy - (Moon Daisy)	<i>Leucanthemum vulgare</i>	0.5
Musk Mallow	<i>Malva moschata</i>	0.8
Spiny Restharrow	<i>Ononis spinosa</i>	0.1
Wild Marjoram	<i>Origanum vulgare</i>	1
Hoary Plantain	<i>Plantago media</i>	1
Salad Burnet	<i>Poterium sanguisorba - (Sanguisorba minor)</i>	1.8
Cowslip	<i>Primula veris</i>	1.6
Selfheal	<i>Prunella vulgaris</i>	0.4
Bulbous Buttercup	<i>Ranunculus bulbosus</i>	1
Small Scabious	<i>Scabiosa columbaria</i>	0.5
Grasses		
Quaking Grass (w)	<i>Briza media</i>	4
Glaucous Sedge	<i>Carex flacca</i>	0.2
Crested Dogstail	<i>Cynosurus cristatus</i>	20
Sheep's Fescue	<i>Festuca ovina</i>	24
Slender-creeping Red-fescue	<i>Festuca rubra</i>	24
Crested Hair-grass (w)	<i>Koeleria macrantha</i>	2
Smaller Cat's-tail (w)	<i>Phleum bertolonii</i>	4.6
Yellow Oat-grass (w)	<i>Trisetum flavescens</i>	1.2
Key: (w) – wild		

Table 4.6: Meadow Mixture for Chalk and Limestone Soils (EM6 from Germinal Seeds)

4.7.2 Management Prescriptions

Table 4.7 presents management activities in order to meet the aims and objectives outlined above.

Feature	Prescription	Purpose	Timing	Year												
				1	2	3	4	5	6	7	8	9	10			
Wildflower Meadow	Grassland to be cut regularly and vegetation cleared, from mid-July onwards, throughout first year of establishment, to a height of 40-60 mm.	Controls annual weeds and allows slower growing wildflowers to develop.	Mid-July to October	x												
	Once established, grassland to be cut annually after flowering in late July or August, to a height of 75-100 mm. Arisings left for a maximum of one week. Second cut to be undertaken at the end of the growing season.	To enhance the floral biodiversity of the grassland habitat. To allow seed to drop.	Late July / August to November		x	x	x	x	x	x	x	x	x	x	x	x
	Use 'spot' treatments where necessary to control the spread of noxious weed species. Treat species with an approved translocated herbicide and apply through a weed wiper or wand.	Maintain the diversity of the grassland sward by reducing competition from vigorous species.	June to September	x	x	x	x	x	x	x	x	x	x	x	x	x

Table 4.7: Habitat Management Prescriptions – Wildflower Meadow

4.8 NEWLY CREATED AMENITY GRASSLAND

4.8.1 Aims and Objectives

Aim: Provide a range of nectar bearing plants to support a variety of invertebrates within areas of amenity grassland.

Objectives:

1. Maintain grassland habitat for its aesthetical value.
2. Encourage species richness.

Amenity grassland areas will be created using Emorsgate EL1 Flowering Lawn Mixture (or similar), a seed mix which contains slow growing grasses and a selection of wildflowers that respond well to regular short mowing. Table 4.8 details the species included within this seed mix.

Species	Common Name	%
Wildflowers		
<i>Galium verum</i>	Lady's bedstraw	3
<i>Leontodon hispidus</i>	Rough hawkbit	0.5
<i>Leucanthemum vulgare</i>	Oxeye daisy	1
<i>Lotus corniculatus</i>	Bird's-foot trefoil	3
<i>Primula veris</i>	Cowslip	1.5
<i>Prunella vulgaris</i>	Selfheal	5
<i>Ranunculus acris</i>	Meadow buttercup	3
<i>Rumex acetosa</i>	Common sorrel	2
<i>Trifolium pratense</i>	Wild red clover	1
Grasses		
<i>Agrostis capillaris</i>	Common bent	8
<i>Cynocurus cristatus</i>	Crested dogstail	40
<i>Festuca rubra</i>	Slender-creeping red-fescue	28
<i>Phleum bertolonii</i>	Smaller cat's-tail	4

Table 4.8: Amenity Grassland Seed Mixture (EL1 from Emorsgate Seeds)

4.8.2 Management Prescriptions

Table 4.9 presents management activities in order to meet the aims and objectives above.

Feature	Prescription	Purpose	Timing	Year										
				1	2	3	4	5	6	7	8	9	10	
Amenity grassland	Grassland to be cut throughout the growing season (March to October inclusive) to a height between 30 mm. All arisings to be removed.	Maintain close packed sward.	n/a	x	x	x	x	x	x	x	x	x	x	x

Table 4.9: Habitat Management Prescriptions – Amenity Grassland

4.9 NEWLY CREATED ATTENUATION FEATURES

4.9.1 Aims and Objectives

Aim: Maintain attenuation features to balance biodiversity and functional requirements.

Objectives:

1. Maintain wildflower wetland habitat to aid percolation of precipitation into the ground.
2. Encourage species diversity within site with establishment of wet grassland species.
3. Provide habitat for a range of fauna.

Attenuation features will be seeded with Emorsgate EM8 'Meadow Mixture for Wetlands' (or similar). Table 4.10 details the species included within this seed mix.

Common Name	Scientific Name	Percentage
Wildflowers		
Yarrow	<i>Achillea millefolium</i>	0.5
Sneezewort	<i>Achillea ptarmica</i>	0.2
Betony	<i>Betonica officinalis</i> - (<i>Stachys officinalis</i>)	1
Common Knapweed	<i>Centaurea nigra</i>	2.5
Meadowsweet	<i>Filipendula ulmaria</i>	2
Lady's Bedstraw	<i>Galium verum</i>	1
Water Avens	<i>Geum rivale</i>	0.5
Oxeye Daisy	<i>Leucanthemum vulgare</i>	0.6
Greater Birdsfoot	<i>Lotus pedunculatus</i>	0.8
Ribwort Plantain	<i>Plantago lanceolata</i>	1
Cowslip	<i>Primula veris</i>	0.2
Selfheal	<i>Prunella vulgaris</i>	1.5
Meadow Buttercup	<i>Ranunculus acris</i>	2.5
Yellow Rattle	<i>Rhinanthus minor</i>	1.5
Common Sorrel	<i>Rumex acetosa</i>	1.5
Great Burnet	<i>Sanguisorba officinalis</i>	1
Ragged Robin	<i>Silene flos-cuculi</i> - (<i>Lychnis flos-cuculi</i>)	0.2
Tufted Vetch	<i>Vicia cracca</i>	1.5
Grasses		
Common Bent	<i>Agrostis capillaris</i>	10
Meadow Foxtail (w)	<i>Alopecurus pratensis</i>	4
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>	1
Quaking Grass (w)	<i>Briza media</i>	1
Crested Dogstail	<i>Cynosurus cristatus</i>	32
Tufted Hair-grass (w)	<i>Deschampsia cespitosa</i>	1
Red Fescue (w)	<i>Festuca rubra</i>	24
Meadow Barley (w)	<i>Hordeum secalinum</i>	1
Meadow Fescue (w)	<i>Schedonorus pratensis</i> - (<i>Festuca</i>	6

Table 4.10: Wildflower Wetland Seed Mixture (EM8 from Emorsgate Seeds)

4.9.2 Management Prescriptions

Table 4.11 presents management activities in order to meet the aims and objectives outlined above.

Feature	Prescription	Purpose	Timing	Year												
				1	2	3	4	5	6	7	8	9	10			
Attenuation features	Grassland to be cut regularly and vegetation cleared, from mid-July onwards, throughout first year of establishment, to a height of 40-60 mm.	Controls annual weeds and allows slower growing wildflowers to develop.	Mid-July to October	x												
	Once established, grassland to be cut annually after flowering in late July or August, to a height of 50 mm. Arisings left for a maximum of one week. Mow regrowth through to late autumn.	To enhance the floral biodiversity of the grassland habitat. To allow seed to drop.	Late July / August to November		x	x	x	x	x	x	x	x	x	x	x	x
	Check condition of feature and implement remedial action if required. Remove rubbish / debris.	Ensures that feature remains functional and suitable for biodiversity.	Check April / May. Remove rubbish in winter.	x	x	x	x	x	x	x	x	x	x	x	x	x
	Any reed bed to be cut once annually. All arisings to be removed.	To ensure continued water filtration performance	Late autumn / winter.	x	x	x	x	x	x	x	x	x	x	x	x	x

Table 4.11: Habitat Management Prescriptions – Attenuation Features

4.10 SPECIES-SPECIFIC FEATURES

4.10.1 Aims and Objectives

Aim: To ensure long-term provision of habitat features for bats, birds, dormice and reptiles.

Objectives:

1. Monitoring of species-specific features to ensure they remain in favourable condition.
2. Replacement of any features lost or damaged to ensure no net-loss of habitat for notable species.

In accordance with the FEMS (Report RT-MME-127947-12 Rev A), features to be provided for bats, dormice, birds and reptiles are detailed below.

Bats

- One purpose-built bat barn, located in the south-western part of the site;
- One Schwegler 2F bat box and two Schwegler 2F-DFP (or similar specification) bat boxes, installed on each of ten retained mature trees around the site peripheries; and
- 20 integrated Habitat bat boxes are installed within buildings across the site.

Dormice

- A series of dormouse nest boxes, to be installed within suitable undisturbed locations around the site peripheries.

Birds

- A wide range of nest boxes, installed on retained mature trees within woodland / along woodland edges around the site peripheries, comprising:
 - 24 Schwegler 1B boxes, with 32 mm hole, suitable for use by small bird species such as great, marsh and coal tits, redstart, house sparrow and tree sparrow;
 - 24 Schwegler 1N boxes, suitable for species such as robin, wren and pied wagtail;
 - 24 Schwegler 3S Starling Boxes;
 - Six Schwegler Owl Box No. 4, suitable for use by stock dove (woodpeckers will sometimes spend the night in this box too) and four Schwegler Owl Box No. 5, suitable for use by tawny owl; and
 - Three Barn Owl Nest Boxes and three Kestrel Nest Boxes.
- Nesting features to be installed on / integrated within new buildings:
 - 12 Habitat Terraced Sparrow Boxes;
 - 12 Habitat Swift Boxes;
 - 12 Habitat Starling Nest Boxes; and
 - 12 House Martin Terrace No 11 features.

Reptiles

- A series of hibernacula, to be created in undisturbed areas in close proximity to attenuation features and areas of scrub/grassland mosaic.

4.10.2 Management Prescriptions

Table 4.14 outlines the management activities required regarding the species-specific features.

Feature	Prescription	Purpose	Timing	Year										
				1	2	3	4	5	6	7	8	9	10	
Bat barn	Annual monitoring to assess condition and implement remedial actions as required. To be completed by a licensed surveyor.	To ensure ongoing provision of bat roosting features on site.	October	x	x	x	x	x	x	x	x	x	x	x
Bat boxes	Annual monitoring to assess condition of boxes. To be completed by a licensed surveyor. Replacement of failed boxes.	To ensure ongoing provision of bat roosting features on site.	October	x	x	x	x	x	x	x	x	x	x	x
Dormouse boxes	Bi-annual monitoring by a licensed ecologist to assess condition of boxes. To be completed by a licensed surveyor. Replacement of failed boxes.	To ensure ongoing provision of dormouse nesting features on site.	May/June and September/October	x	x	x	x	x	x	x	x	x	x	x
Bird boxes	Condition of bird boxes features to be checked annually. If problems are identified, remedial action will be agreed with an ecologist and implemented promptly.	To ensure ongoing provision of bird nesting features on site.	September	x	x	x	x	x	x	x	x	x	x	x
Herpetofauna hibernacula	Annual monitoring to assess condition and replace vegetation if necessary.	To encourage invertebrates, and subsequently provide habitat for herpetofauna and small mammals.	May to September, to avoid disturbing hibernating animals.	x	x	x	x	x	x	x	x	x	x	x

Table 4.14: Habitat Management Prescriptions – Species-Specific Features

4.11 NON-NATIVE INVASIVE PLANT SPECIES

4.11.1 Aims and Objectives

To ensure that the works do not cause non-native invasive plant species to spread in the wild.

4.11.2 Control and Removal Prescriptions – Rhododendron

The following methodologies for controlling rhododendron are detailed within Forestry Commission best practice guidelines 'Managing and Controlling Invasive Rhododendron' (Edwards, 2006), which detail several options for the control of rhododendron within a development site.

Managing Rhododendron

All material within the rhododendron stand including soil around the root system which may be contaminated with seeds will be considered as contaminated. Rhododendron areas will be clearly marked out on site. All site operatives will be made aware of the requirements associated with the management of this species in order to help limit accidental spread through a toolbox talk or similar mechanism.

Treatment of Above Ground Rhododendron Material

The top woody growth of rhododendron can be manually removed to leave cut stumps with no remaining live branches or shoots. This operation can be performed by operators with chainsaws or clearing saws. The resulting cut woody material can be removed to a safe area for burning or chipped on site. Chips can be left on site or bagged and removed. Freshly cut rhododendron material is difficult to ignite and benefits from being allowed to dry first.

Burning rhododendron waste is covered by the Waste Management Licensing Regulation (1994). The regulator (the Environment Agency) must be notified in advance and the amount burned in any 24 hour period must be less than 10 tonnes.

A build up of chipped rhododendron material can act as a mulch and prevent desirable vegetation species growing on the cleared site so, where possible, avoid this. Alternatively, a mulch of chipped material can be used to reduce the potential encroachment of rhododendron or other weed species.

If eradication of the rhododendron bushes is required a cut stump herbicide application can be applied. This technique involves applying Glyphosate herbicide to the surface of a stump on the same day of cutting. Drilling a reservoir on the stump surface to contain the herbicide has been shown to be a highly effective technique.

For removal of large plants, the Forestry Commission (2019) report that 'A stem injection control method has been successfully trialled in Western Scotland and Wales'. They continue:

Injecting herbicide directly into the stems of large rhododendron results in their death within six months. Not only is the dead material then easier to remove, but the application of the herbicide is more precise than in traditional methods, uses less product producing overall cost savings.

Control of Rhododendron Roots and Seed Bank

To control the spread of rhododendron on-site:

- Use of plant machinery and vehicles within the whole site will be limited until areas polluted with rhododendron have been identified and cleared.
- Only essential vehicles and plant machinery will be present in areas polluted with rhododendron. Care will be taken to ensure that polluted material is not dropped or transferred to other areas of the site. The use of wheeled rather than tracked vehicles is recommended as they are easier to clean if contaminated with rhododendron material.
- On leaving areas of the site known to contain rhododendron, any machinery that has been used will be thoroughly cleaned within a designated area. All hand tools and footwear will be cleaned off in a similar manner.
- Even with great care, a certain amount of regrowth would be expected and any will be treated by hand pulling of seedlings. Rhododendron is persistent, and repeat visits may be required at the site.

Disposal of Material Off-Site

The topsoil at the site is likely to be contaminated with rhododendron seeds and therefore removal from site will be avoided. However, if soil is to be removed from the site it will be disposed of at a licensed landfill site. Material will be excavated straight into awaiting containers to reduce the possibility of spreading the plant. Details of disposal will be set out in a Code of Construction Management Plan.

Hauliers must also ensure that during the removal of material off site, vehicles do not carry rhododendron containing soils on the wheels or bodies of their vehicles and that the vehicle is suitably covered or enclosed to prevent escape during transport.

Where the material is being carried to landfill sites for disposal or where vehicles are involved in movements on the site of production great care will be taken to clean off material at the point of discharge so as not to transport the rhododendron elsewhere. Vehicles will be brushed down to avoid spreading the seed bank. The disposal site will be checked in advance to ensure that that they can receive material containing rhododendron.

Further Treatment of the Rhododendron Contaminated Area

In order to address any re-growth of rhododendron from the works area a long-term strategy involving hand pulling of seedlings will be required.

Hand-pulling is a simple procedure – operators walk in line through the area to be cleared and hand-pull all live seedlings by gripping the base of the stem and pulling at an oblique angle.

Control of small or young seedlings can be achieved without using herbicides, but only if the area involved is small, the density of seedlings to pull is low or sufficient numbers of operators are available. Larger seedlings or small bushes can also be pulled by hand.

A bag must be used to collect pulled seedlings for removal from site, or seedlings must be hung upside down on the branch of adjacent trees; if seedlings are left on top of the soil they can re-root in the humid/wet conditions where rhododendron is typically found.

Hand-pulling control usually takes a minimum of two years to totally eradicate rhododendron.

4.11.3 Control and Removal Prescriptions – Cotoneaster

Cotoneaster can be controlled / removed by the following methods:

- Mechanical – pulling out young seedlings and excavating the root mass.
- Chemical – spraying smaller plants with herbicide and treating stumps of larger plants after cutting.

Any contaminated material will be chipped or burned on site or removed to a licensed landfill facility as controlled waste.

Works should be completed by a suitably qualified contractor.

4.11.3 Monitoring Prescriptions – Japanese Knotweed

The recognition and early (appropriate) management of Japanese knotweed can reduce the risk of excessive cost, potential prosecution and prevent physical damage to buildings and hard surfaces. As such, regular monitoring of the site and boundaries will be undertaken prior to and during construction works, to ensure that Japanese knotweed has not colonised the site. In the event that any Japanese knotweed is identified, all works will cease and a suitable method statement will be prepared to ensure that the works do not cause this species to spread.

5. IMPLEMENTATION, MONITORING AND REVIEW

5.1 IMPLEMENTATION

Landscape and Ecological Management works will be carried out in accordance with the following principals:

- Land ownership will be retained by Merseyside Pension Fund.
- Ecological supervision of habitat management works and revisions to the LEMP will be carried out by Middlemarch Environmental Ltd, Triumph House, Birmingham Road, Allesley, Coventry, West Midlands, CV5 9AZ. Tel: 01676 525880.
- Practical habitat management works will be carried out by a contractor to be appointed by Merseyside Pension Fund.

Should any of the organisations highlighted above no longer be involved in the project Merseyside Pension Fund will be required to identify an alternative organisation with suitable competence and experience to fulfil the necessary role.

Any new bodies taking over responsibility for the site will need to agree to implement the LEMP.

5.2 MONITORING

Monitoring is required to check whether habitats are establishing correctly and to provide input into future amendments to site management. Table 5.1 outlines the recommended outline monitoring schedule for ten years following the completion of the each phase of works.

Feature	Monitoring	Timing	Year											
			1	2	3	4	5	6	7	8	9	10		
All Habitats	Check on the establishment and management of planted areas and compile report with remedial recommendations as required.	May				x					x			
Trees	To be monitored on an annual basis to check tree establishment (planted) and health (retained) and address any issues.	Carry out remedial works over winter, to avoid nesting bird season.	x	x	x	x	x	x	x	x	x	x	x	x
Attenuation features	Annual check of feature to ensure it remains both functional and suitable for biodiversity.	Check April / May. Carry out any remedial works in late-autumn, to cause least disturbance to species likely to be using pond.	x	x	x	x	x	x	x	x	x	x	x	x
Species-specific features	Checks of bat barn and bat and bird boxes to be undertaken annually. Hedge clippings added to herpetofauna hibernaculum annually.	Bat boxes: October Bird boxes: November to February	x	x	x	x	x	x	x	x	x	x	x	x
Invasive plant species	Annual monitoring to determine presence/absence of non-native invasive plant species and inform remedial action as required.	June/July	x	x	x	x	x	x	x	x	x	x	x	x
All habitats	Litter to be removed from site as and when required.	n/a	x	x	x	x	x	x	x	x	x	x	x	x

Table 5.1: Proposed Landscape and Ecological Monitoring

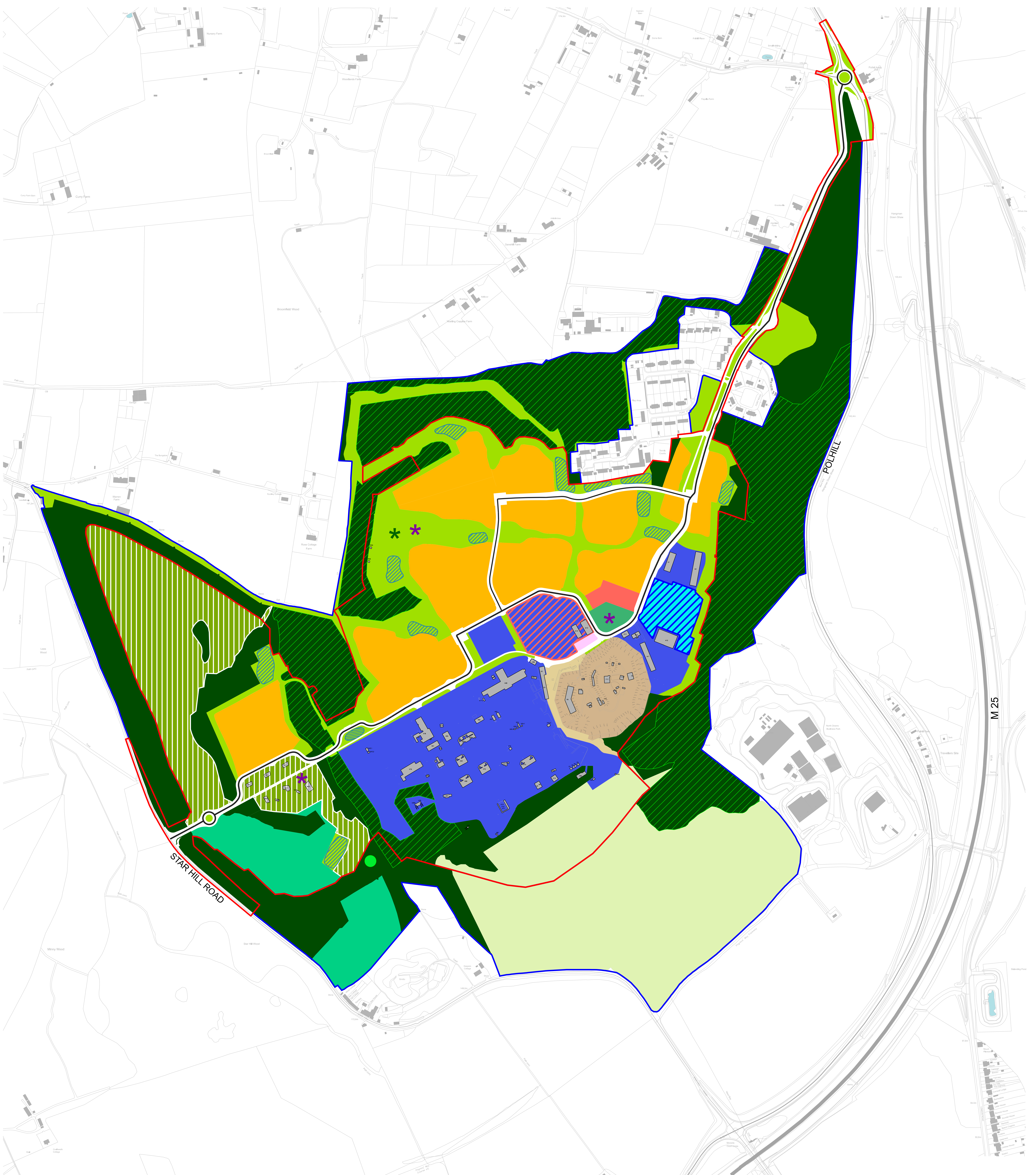
5.3 REVIEW

The results of the surveys are to be used to inform any modifications to the management plan. The plan is intended to be a rolling five-year plan. Advice should be sought from the Kent County Ecologist, or Middlemarch Environmental Ltd.

6. DRAWINGS

JTP Drawing 00556I_PP01 Rev P2 – Land Use and Green Infrastructure Plan

Notes:
 Do not scale from this drawing.
 All contractors must visit the site and be responsible for taking and checking Dimensions.
 All construction information should be taken from figured dimensions only. Any discrepancies between drawings, specifications and site conditions must be brought to the attention of the supervising officer.
 This drawing and the works depicted are the copyright of JTP.
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- KEY**
- Application boundary
 - Applicant's land ownership boundary
 - Existing buildings for retention
 - Proposed vehicular routes
 - Scheduled monument (The Fort)
 - Residential
 - Mixed Use
 - Employment
 - Employment / Mixed Use
 - Primary school / Employment
 - Village Square
 - Hardstanding
 - Village Green
 - Public Open Space (incl. woodland buffer, SuDs, Children's play area)
 - Community Recreation Area
 - Existing Woodland
 - Existing Ancient Woodland
 - Ecologically Enhanced Grassland / Mitigation Zone
 - Existing Chalk Grassland
 - Indicative bat barn location
 - Indicative Local Equipped Area for Play (LEAP)
 - Indicative location for a Multi-Use Games Area
 - Indicative location for SuDS ponds

Notes:
 All land uses can deviate +/-3m within the application boundary, subject to on-site constraints.
 *The shapes and sizes of the ponds as shown on the plan are indicative only.

P2	18.05.20	Submitted for Planning	ECC	RT
P1	10.03.20	Submitted for Planning	CDS	ECC
Rev	Date	Description	Drawn	Chkd

Drawing Status
FOR PLANNING

Client
 Merseyside Pension Fund

JTP Studios
 Unit 5, The Run Warehouse
 Pennington Street
 London, E1W 2AP
 +44 (0)20 7017 1780
 www.jtp.co.uk

Project
 Fort Halstead

Drawing Title
Land Use and Green Infrastructure Plan

Scale @ A0 1:2500 Job Ref. 005561
 Drawing No. 005561_PP01 Revision P2

Scale Bar
 0 20 40 60 80 100m

M 25

APPENDIX 1

CONFIDENTIAL BADGER APPENDIX